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**Pharmacy's Perspectives of Interprofessional  
Education and Collaborative Practice:  
An Investigative Study  
in Qatar & the Middle East**

**Alla El-Awaisi**

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## Abstract

The need to incorporate interprofessional education (IPE) as part of any healthcare profession curricula is growing in an approach to prepare a collaborative practice-ready workforce. Pharmacy students should be equipped with the necessary competencies and skills needed for them to practise interprofessionally, commensurate with the expanding and evolving role of the pharmacist. Thus, the Qatar University College of Pharmacy has decided to incorporate IPE initiatives formally into the pharmacy curriculum in collaboration with other healthcare institutions in Qatar to meet the accreditation standards set by the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) and fulfil the recommendations set in the World Health Organization (WHO) framework. To implement effective IPE strategies, it is important to consider the prior attitudes and expectations of various stakeholders in the process -- particularly students, faculty, and practising pharmacists. The overall aim of this PhD research is to explore the pharmacy perspectives of IPE and collaborative practice from a Middle Eastern context.

The research started with a comprehensive systematic review of the literature focusing on the perspectives of pharmacy students, pharmacy faculty, and practising pharmacists on IPE and collaborative practice. Five themes have been identified from the systematic review: inconsistency in reporting IPE research, professional image of the pharmacist, lack of longitudinal follow-up, lack of IPE research on faculty, and lack of mixed method studies. This was followed by three sequential explanatory mixed method designs, to explore the perception of faculty, students, and practising pharmacists, individually. This was undertaken to gain an in depth understanding of the strengths and challenges of each group that can affect the implementation and perspectives toward IPE and collaborative practice. Two data collection methods were used: quantitative surveys and qualitative focus groups. Quantitative data were imported into SPSS® version 22 and analysed using both descriptive and inferential statistics. Qualitative data from the focus groups were analysed using thematic analysis.

For the quantitative surveys, the overall response rate was 117 out of 334 (35%) for pharmacy faculty in the Middle East, 102/132 (77%) for pharmacy students in Qatar and 178/285 (63%) for practising pharmacists in Qatar. This was followed by seven focus groups with a total of 51 participants. Findings, from both the survey and focus groups, support that students, faculty and practising pharmacists are ready to engage in IPE and collaborative practice. The findings further identified positive attitudes that reinforce the need to incorporate IPE into healthcare curricula. They perceive anticipated benefits to them as professionals and to the patients. However, a large number of challenges have been highlighted, including the existence of a hierarchical culture, pharmacists' role and image, a weak sense of professional identity among pharmacists, their marginalised contribution, resistance from the healthcare teams to the evolving role of the pharmacists, and the heterogeneous background of healthcare professionals. Promisingly, the education and healthcare system in Qatar is undergoing significant changes with some positive influences noted within education and practice settings.

This is the first study investigating pharmacy perspectives of IPE in Qatar, the Middle East, and worldwide. The findings from this research generated a body of knowledge regarding the pharmacy perspectives of IPE and provided a better understanding of what shapes this perspective from a Middle Eastern context. The research presents a new model based on collective input, efforts, and readiness in five key stages: academic institution, faculty, student, practice, and environment. The model moves beyond focusing on the individual stages separately and expands to consider the complexity of linking and aligning the stages together. Coordinated efforts, between the stages, focused on a more comprehensive and holistic implementation, is essential for successful implementation of IPE and collaborative practice.

**Keywords:** Interprofessional education, interprofessional collaboration, collaborative practice, attitude, readiness, perspectives, pharmacy, pharmacist, Qatar, Middle East and mixed method.

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*'He who does not thank the people is not thankful to Allah' – Prophetic Tradition*

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*'It always seems impossible until it's done' – Nelson Mandela.*

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## External Output related to this PhD research

The PhD research has resulted in the following outputs to date:

### **Published peer reviewed articles related to this research:**

- **El Awaisi A**, El Hajj M, Joseph S, Diack H. Interprofessional education in the Arabic-speaking Middle East: Perspectives of pharmacy academics. *Journal Of Interprofessional Care* 2016, 30:6, 769-776.
- **El Awaisi A**, Diack H, Joseph S, El Hajj M. Perspectives of pharmacy students, pharmacy academics and practicing pharmacists on interprofessional education and collaborative practice: a comprehensive systematic review protocol. *The JBI Database of Systematic Reviews and Implementation Reports* 2015, VOL 13, NO 12.

The following papers are in development:

- Perspectives of pharmacy students, pharmacy academics and practicing pharmacists on interprofessional education and collaborative practice: a comprehensive systematic review
- Mixed Method study exploring pharmacy students perspectives to interprofessional education and collaborative practice.
- Mixed Method study exploring practicing pharmacist perspectives to interprofessional education and collaborative practice.
- Qualitative study investigative enablers and barriers as perceived by pharmacy academics.
- Key to successful IPE planning and implementation: a proposed model.

### **Peer reviewed conference abstracts:**

- **El Awaisi A**, Diack H, Joseph S, El Hajj M. Pharmacy Perspectives of pharmacy students, pharmacy academics and practicing pharmacists on interprofessional education and collaborative practice: a comprehensive systematic review (Poster 459). Australasian Pharmaceutical Science Association (APSA), The University of Sydney December 02-05, 2016.
- **El Awaisi A**, El Hajj M, Joseph S, Diack L. Middle Eastern Perspectives of Pharmacy Academics towards Interprofessional Education and Collaborative practice. (Oral Presentation). All Together Better Health VIII. The 8th International Conference on Interprofessional Practice and Education: Values Based Interprofessional Practice and Education. September 08, 2016.
- **El Awaisi A**, Diack H, Joseph S, El Hajj M. Perceptions of Pharmacy Students, Pharmacists & Pharmacy Academics in Qatar to Interprofessional Education and Collaborative Practice. (Poster 40). First Middle Eastern Conference on Interprofessional Education, Qatar University. Doha, Qatar. December 4-6, 2015.
- **El Awaisi A**, Diack H, Joseph S, El Hajj M. Pharmacy perspective of Interprofessional Education & Collaborative Practice in Qatar. Interprofessional Health, Education & Practice International Conference. Victoria University, Melbourne, Australia. October 6, 2015.
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- **EI-Awaisi A**, Barr H. Editorial: EAST MEETS WEST: Working together in interprofessional education and practice. *Journal of Interprofessional Education & Practice*. 2017, 7, 72-74.
- Zolezzi, M.; Abdallah, O.; Aden, S.; Major, S.; White, D.; **EI-Awaisi**, A. Perceived Preparedness of Health Care Students for Providing Cardiovascular Disease Risk Assessment and Management. *Pharmacy* 2017, 5, 9.
- **EI-Awaisi A**, Wilby KJ, Wilbur K, El Hajj M, Awaisu A. A Middle Eastern Journey of Integrating Interprofessional Education into the Healthcare Curriculum: A SWOC Analysis. *BMC Medical Education*, 2017, 17:15.
- **EI-Awaisi A**, Anderson E, Barr H, Wilby KJ, Wilbur K, Bainbridge L. Important steps for introducing interprofessional education into health professional education. *Journal of Taibah University Medical Sciences*. 2016; 11(6):546-551.
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- **EI-Awaisi A**. Invited Topic of the Month: A Glance of Interprofessional Education in Qatar. Division of Continuing Professional Development at Weill Cornell Medicine in Qatar (WCM-Q). February, 2016. Accessed at: <https://qatar-weill.cornell.edu/continuing-professional-development/topic-of-the-month/archive/a-glance-of-interprofessional-education-in-qatar>.

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- Jaam M, Arevalo F, Dsouza N, Abdelaziz G, Al Syyed F, Khairat A, Hamza M, Babiker A, **EI-Awaisi A**. IPE Student Society in A Middle Eastern Setting: Take on the challenge and ride the journey. (Oral Presentation). All Together Better Health VIII. The 8th International Conference on Interprofessional Practice and Education: Values Based Interprofessional Practice and Education. September 08, 2016.
- **EI-Awaisi A**, Jaam M, AlHaddad A, Alhamad N. Student Journey of Interprofessional learning in a Middle Eastern Context. (Poster 21). All Together Better Health VIII. The 8th International Conference on Interprofessional Practice and Education: Values Based Interprofessional Practice and Education. September 07, 2016.
- **EI-Awaisi A**, Wilbur K, Wilby K, Bainbridge L, Anderson E, Barr H. Workshop: Educator Toolkit for interprofessional Education. First Middle Eastern conference on interprofessional Education: New Frontiers in Healthcare Education. Doha, Qatar. December 05, 2015.
- Abdallah O, Aden S, Zolezzi M, **EI-Awaisi A**, Major S, White D, de Leon-Demare K, Nikaiin B. Health care students' views on their training and role in cardiovascular disease risk assessment and management. (Poster 20). First Middle Eastern



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- **EI-Awaisi A**, Awaisu A, El-Hajj M, Alemrayat B, Al-Jayyousi G, Wong N, Verjee M. Student Perspective of interprofessional Learning Approach for Teaching Tobacco Cessation Module among Healthcare Professional Students in Qatar. (Poster 30). First Middle Eastern Conference on Interprofessional Education, Qatar University. Doha, Qatar. December 4-6, 2015.
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## Abbreviations

ANOVA	Analysis of Variance
ATHCT	Attitudes Toward Health Care Teams
CAIPE	Centre for Advancement for Interprofessional Education
CCAPP	Canadian Council For Accreditation of Pharmacy Programs
CNAQ	College of North Atlantic
CPH	College of Pharmacy
FIP	International Pharmaceutical Federation
GP	General Practitioner
HMC	Hamad Medical Cooperation
IEPS	The Interdisciplinary Education Perception Scale
IPC	Interprofessional Collaboration
IPE	Interprofessional Education
IPEC	Interprofessional Education Committee
JBI	Joanna Briggs Institute
JCI	Joint Commission International
MMAT	Mixed Methods Appraisal Tool
NPRP	National Priorities Research Program
QIHC	Qatar Interprofessional Healthcare Council
QU	Qatar University
RIPLS	Readiness for Interprofessional Learning Scale
SPEP	Structured Practical Experiences in Pharmacy
SPSS	Statistical Package for the Social Sciences
UAE	United Arab Emirates
UK	United Kingdom
UCQ	University of Calgary Qatar
WHO	World Health Organisation
WCMC	Weill Cornell Medical College

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# Chapter 1: Introduction

The aim of this chapter is to set the context for this PhD research. The chapter starts with a general background to interprofessional education (IPE) and collaborative practice definitions, implications, and the link between IPE and collaborative practice. An overview of IPE in the literature, the Middle East, and Qatar is given followed by a highlight of the role of the pharmacist in the healthcare team. The chapter provides an insight into how the study evolved based on a theoretical framework of readiness for change needed in preparation for the incorporation of IPE at multiple levels of engagement at the organisational, academic, and practice levels. The chapter presents the overall aim and objectives for the study and concludes with an outline of the subsequent chapters.

## 1.1 Setting the context

With the increased complexity of healthcare due to an aging population, patients suffering from multiple pathologies, the demand for coordinated, cost effective, and collaborative work between healthcare professionals from different backgrounds geared towards providing safe and high quality patient care increases (1-3). Therefore, healthcare professionals need to develop the knowledge, skills, and attitude required to work together effectively to positively impact patient care (4, 5). Miscommunication and failure of collaboration can have a negative impact on the healthcare system and health outcomes and is a primary cause of preventable errors to patients and quality of care (6, 7).

Recognising the importance and impact of successful interprofessional collaboration, the World Health Organisation (WHO) published a seminal document titled 'Framework for Action on Interprofessional Education and Collaborative Practice' in 2010 (8). In this framework, the WHO strongly advocated the development and integration of IPE into healthcare curricula. They emphasised the importance of adapting team based collaborative models in all the different settings to enhance the delivery of healthcare services. One of the key messages echoed in the WHO framework is that the mechanisms shaping IPE and collaborative practice are not the same in every health system. These mechanisms are very different and hence health policy-makers should introduce policies and strategies appropriate and applicable for their local challenges and needs. A model that is successfully implemented in one geographical location might not meet the needs of another geographical location with different cultural and health system organisation. Furthermore and in alignment with the WHO framework, the International Pharmaceutical Federation (FIP) has published its first report entitled: 'Interprofessional Education in a Pharmacy Context: Global report' in 2015 endorsing IPE incorporation into pharmacy education and training and promoting the importance for collaborative practice (9).

### 1.1.1 Interprofessional education definition and implications

Traditionally, healthcare students are educated unprofessionally with little or no interaction with other healthcare professions. As such, students are trained in silos with a focus on their own professional competencies. These students lack opportunities to develop interprofessional communication skills and their understanding of other healthcare professionals' contributions to the healthcare team. This impedes collaborative practice in healthcare settings after they graduate (10). However, in the last twenty years, IPE has gained momentum globally and it is becoming more pronounced in countries such as Canada, United States, Australia, and the United Kingdom (11).

Unfortunately, there is still an ongoing confusion relating to IPE terms and definitions with many similar but different terms such as multidisciplinary, interdisciplinary, multiprofessional, shared learning, and integrated learning (12). One of the most widely used definitions for IPE is the one by the Centre for the Advancement of Interprofessional Education (CAIPE) as 'two or more professions learning with, from and about each other to improve collaboration and the quality of care' (13). It should be noted that IPE is different from shared learning or multidisciplinary learning. Shared learning occurs when different health care students learn together with minimal interaction between them, which is very different from the CAIPE IPE definition. This is often implemented on economic reasons rather than being adopted for educational principles (14). 'Multidisciplinary' is a term describing how healthcare disciplines work side by side but without significant interaction or collaboration. Multidisciplinary learning is where they may share the same class and common topic, but with very limited interaction (15, 16). The prefixes of multi, inter and trans refers to the complexity of interaction and collaboration between the professions (Table 1).

*Table 1: the Prefixs of Multi, Inter and Trans (16, 17)*

The prefixes of	Implications
<b>Multi</b>	Professions working and/or learning alongside each other independently. They would be focused on achieving their own tasks rather than shared tasks.
<b>Inter</b>	Professions would have their own competencies to achieve but also have shared competencies. The skills of the different healthcare professions overlap with the development of interactive relationships.
<b>Trans</b>	There is no apparent distinction between the different professions and the skills are mutually interchangeable. This is dependent on effective and frequent collaboration between the team members.

In an IPE environment, students are provided with a structured opportunity enabling them to interact with other healthcare professionals where they acquire the knowledge, skills, professional attitudes, and attributes as part of their undergraduate learning experience (18). It is expected the students will have a better understanding of the roles, responsibilities and contribution of other healthcare professions, feel at ease when interacting with other healthcare students, build trust and respect, enhance interprofessional working and collaboration, and

break down professional hierarchy, with an end result of improving patient-centred and team-based care (19-21). Overall, students respond positively to IPE with improved perceptions and a gain in the knowledge and skills needed for collaborative practice (4). Once they graduate, it is anticipated that they will be able to translate this into practice. The practice environment is often complex and intense, and requires a high level of interpersonal skills for the health care professional to be able to work in an adaptable, flexible and collaborative environment and to appreciate the roles of the different health care professionals (22). Health professionals learning together and understanding each other better for the enhancement of quality care is the way forward, as identified in the international research evidence (4, 8, 22-25).

### **1.1.2 Collaborative practice definitions and implications**

It is important to be innovative for the future and realise that health care graduates are required to work collaboratively to deliver effective and safe health care. IPE has been recognised as an innovative strategy for the transformation of the health system and the development of a collaborative practice-ready health workforce (8). It is true the concept of the multidisciplinary teamwork already exists, but interacting together is different from collaborating together, which is the cornerstone in interprofessional collaborative practice and is vital for patient safety as highlighted below (7).

A number of definitions for interprofessional collaboration (IPC) exist. The WHO defined collaborative practice in healthcare settings as occurring ‘when multiple health workers from different professional backgrounds provide comprehensive services by working with patients, families, carers and communities to deliver the highest quality of care across settings’ (8) p 13. Reeves et al. defined collaboration as an active and ongoing partnership involving health and social care professionals from different backgrounds working together to solve problems or provide services (26). The Institute of Medicine of the National Academics defined collaboration as ‘an active and ongoing partnership, often involving people from diverse backgrounds who work together to solve problems, provide services, and enhance outcomes’ (27) p xi. The International Pharmaceutical Federation has defined Collaborative Pharmacy Practice (CPP) as ‘the advanced clinical practice where pharmacists collaborate with other healthcare professionals to care for patients, carers and public’. This includes ‘initiation, modification and monitoring of prescription medicine therapy; ordering and performing laboratory and related tests, assessing patient response to therapy; counselling, educating partnering with a patient regarding their medications and administering medications’ (28) p. 6-7.

In many of the available definitions, key concepts of collaboration stem from shared responsibilities, collective decisions, interprofessional communication, accountability, and education (29). Therefore, collaboration involves solving challenging problems together, interacting, negotiating, and jointly working with healthcare professionals from any background. This is where two or more healthcare professionals work cohesively to address

patient needs. Six key criteria are required for effective collaborative practice: interprofessional communication, team function, leadership, confidence in one's own professional role, knowledge of other healthcare team roles and responsibilities, and the possession of negotiation skills for conflict resolution (30). However, for effective collaboration, goals and professional tasks need to be established, regular interprofessional debriefing and feedback is required, and an understanding of the roles and responsibilities of the different members of the healthcare team need to be clearly defined (31). The benefits of collaborative practice can be summarised in terms of organisational, healthcare team, patient and healthcare professional benefits, as highlighted in Table 2 .

*Table 2: Benefits of Effective Collaboration (4, 7-9, 32-35)*

Organisational benefits	Healthcare team benefits	Patient benefits	Healthcare professional benefits
<ul style="list-style-type: none"> <li>• Shortened hospitalisation duration.</li> <li>• Reduced cost.</li> <li>• Improved health quality and outcomes.</li> <li>• Strengthened healthcare system and service delivery.</li> </ul>	<ul style="list-style-type: none"> <li>• Enhanced teamwork effectiveness.</li> <li>• Improved coordinated care.</li> <li>• Increased efficiency.</li> <li>• Enhanced interprofessional communication skills.</li> <li>• Shared decision-making.</li> <li>• Trust, respect and appreciation.</li> </ul>	<ul style="list-style-type: none"> <li>• Improved patient care in terms of quality and safety provided.</li> <li>• Enhanced patient satisfaction.</li> <li>• Reduction in errors.</li> </ul>	<ul style="list-style-type: none"> <li>• Improved healthcare professional satisfaction.</li> <li>• Better understanding of roles and responsibilities of other healthcare team members.</li> <li>• Enhanced self confidence</li> <li>• Enhanced well-being.</li> <li>• Shared workload.</li> </ul>

### **1.1.3 The link between interprofessional education and collaborative practice**

It can be argued that unless healthcare students are introduced to IPE during their undergraduate studies, they may be resistant to collaborative practice once they graduate. If collaborative practices are essential and healthcare schools are expected to graduate healthcare professionals with the ability to be part of a collaborative practice healthcare team, as shown in Figure 1, then students need to be exposed to learning opportunities of IPE during their studies (8). Otherwise, healthcare students will continue learning unprofessionally, in a traditional outdated static curricula, leading to ill prepared graduates influenced by healthcare professional tribalism and the existence of hierarchical relationship (36). Therefore, interprofessional education should be rooted in the undergraduate curriculum so that the future health workforces are 'collaborative practice ready' on graduation. It is not sufficient for health workers to be professional, they are also required to be interprofessional (8). However, before that, faculty need to be trained and have the skills to incorporate IPE into their courses and deliver it effectively.



Figure 1. The Outcome of Interprofessional Education Adapted from WHO (8)

Although a collaborative practice-ready health workforce is needed to promote and create an effective collaborative practice environment, on its own it does not lead to optimal health services. WHO emphasised the importance of also acquiring support from the healthcare organization to promote collaborative practice environment (8). Practising healthcare professionals are required to work in increasingly challenging and complex circumstances, which means they need to become more skilled at coping with today's health issues. These collaborative practice-ready health workforce entering the collaborative practice setting have the potential to ensure optimal provision of health services as demonstrated in Figure 2 (8).

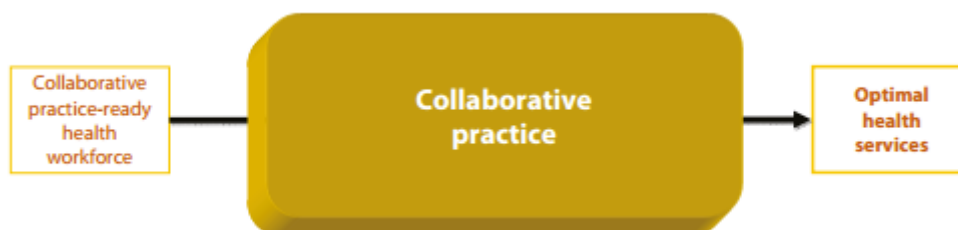


Figure 2. The Outcome of Collaborative Practice Adapted from WHO (8)

However, there is a lack of strong evidence to link IPE and collaborative practice to patient health outcomes. Recommendations have been made to improve the quality of evidence for IPE by focusing on three important areas: measuring the effectiveness for IPE interventions, the need for controlled studies such as randomised controlled trials with included qualitative elements, and cost benefit analysis (2, 9).

#### 1.1.4 The evidence base for interprofessional education

There have been a number of literature and systematic reviews on IPE. The first one dating back to 1999 found no rigorous quantitative evidence on the effects of IPE (37). A later literature review by Abu-Rish et al. categorised the reviews completed on IPE into three domains (38):

1. The conceptual basis for IPE and development of shared IPE competencies i.e. role knowledge and clarification, mutual trust and respect, shared decision making, interprofessional team communication and patient centred care;
2. Strengthening research methods for demonstrating effective teamwork and communication as facilitating factors of IPE;
3. Developing sustainable models for IPE implementation that can be mainstreamed into health professions' curricula and clinical practices.



Between 2005 and 2010 there was only one study on IPE from the Middle East, in Turkey. Most studies were published in the United States, followed by Canada, and the United Kingdom. This highlights the lack of studies generating from the Middle East on this topic and triggers the need for more IPE research in this area as the development of cultural and geographical understanding is critical. A model that works in one geographical location may not work in the other (8).

Four key themes in the current IPE literature pertaining to the undergraduate curriculum have been identified in this cross sectional review (38) and these findings have been echoed in previous IPE literature. The first was that IPE programmes are not guided by theoretical or conceptual frameworks and the authors argue the reason behind this is an apparent gap between theory and practice. Second, there has been inconsistency in the reporting of detailed descriptions of key research components such as study settings, population samples, and outcomes, making it hard to replicate or even compare. Third, there are only a few follow-up studies to ensure previous recommendations have been implemented. This is crucial to address to provide a better understanding of the existing IPE models and to provide a stronger theoretical basis for future IPE implementation. Fourth, there are limited studies assessing the long term impact of IPE on professional practice and collaboration, in the form of longitudinal follow-up of IPE outcomes (22). This has many limitations, including preventing the development of best strategies for targeting long-term behaviour changes and the potential to positively impact on patient outcomes. Longer-term interventions and longitudinal follow-up of learning outcomes are needed to identify enduring outcomes that may lead to practice changes. Finally, limited attention has been given to issues relating to faculty development, which is a crucial element in teaching and facilitating IPE structured activities. Without focused IPE training for faculty development, they will not be equipped with the necessary knowledge and skills needed to develop IPE content, deliver and facilitate IPE activities with students from various healthcare disciplines (38).

A recent systematic review update on the effects on IPE, for the period between 2005-2014, reported much more positive outcome resulting from IPE than a neutral or mixed outcome in the included studies. Based on the included 46 articles, the review highlighted that students responded well to IPE with positive attitudes and perspectives and an enhancement in their interprofessional knowledge and skills (4). However, the evidence relating to the impact of IPE on behaviour, practice, and patients is building up but limited at the current time (4). Furthermore, the Committee on Measuring the Impact of IPE on Collaborative Practice and Patient Outcomes convened by the Institute of Medicine, in the United States, has highlighted four areas that need to be addressed to evaluate the impact of IPE on collaborative practice and on patient and healthcare system outcomes (27). These areas include aligning education with practice, measuring the impact of IPE by developing a conceptual framework, the

strengthening of the evidence base for IPE, and the importance of linking IPE with behavioural change in the practice setting (27).

### 1.1.5 Competency framework for interprofessional education

Many models of IPE exist but to date the best practices for translating IPE into interprofessional practice and team based care are not very well defined (38). There is no consensus or guidelines of when is it best to integrate IPE into the curriculum, the amount of content, and the best practices to develop interprofessional faculty (39). However, there are agreements of shared competencies that students need to acquire before graduation. These competencies are usually referred to as 'IPE Shared Core Competencies' to prepare students to work in healthcare teams and provide collaborative care upon graduation (39). One of the early ones issued was the UK Interprofessional Capability Framework in 2004 and since then a number of IPE Shared competencies/capability frameworks have been developed, including the Canadian interprofessional competency frameworks, the American core competencies IPE Collaborative, and the Curtin University Interprofessional Capability Framework (40-42).

Furthermore, a group of researchers in Qatar developed a pyramid model with IPE core shared competencies placed at the top, as shown in Figure 3 (43). For example, the interprofessional activity can be a structured activity, escalating through complexity, throughout the different professional years, or it can be condensed into an intensive week where students focus on the most important elements of IPE at times when the students experience less stress from their busy timetables.



Figure 3. A Pyramid Model with Interprofessional Education Core Shared Competencies (43)

Interprofessional education is perceived as a complex intervention and this can be attributed to many factors including the backgrounds of learners and their learning styles, the format and curriculum, the abilities of facilitators, and the organisational context in which IPE is delivered (44). One of the key elements for effective and well-received IPE is faculty development to ensure facilitators are competent and confident. Faculty attitudes, perception, lack of respect and limited understanding of the role and contribution of other healthcare team members can be central barriers to IPE delivery (45, 46).

Facilitating an IPE programme or even a course should be a shared responsibility and the faculty, from different backgrounds, need to be able to work together. Faculty need to be role models to their students, who will need to learn together with an interprofessional collaborative spirit. Another important factor in influencing positive outcomes is the authenticity of the learning experience to ensure it imitates real life and practice, perhaps accomplished through simulated scenarios. Additionally, for successful IPE, the principles of adult learning should be utilized (20, 22). Two issues should be taken into account for learning to be meaningful. First, students need to have control over the content and pace of learning and, second, the topic under discussion should be relevant to the students (22).

One critical part in IPE is making sure students understand their own professional identity while learning about the roles of the other health care professionals in the interprofessional team. It is true that students during their first years of study do not understand their roles and its complexity, but this should not prevent educators from introducing the concept of IPE at an early stage. This will ensure developing a common framework in their curriculum and reduces the tendency to stereotype other health care professionals (47).

#### **1.1.6 Barriers to interprofessional education**

Implementing IPE is a huge undertaking and one of the biggest obstacles to incorporating IPE are the prevailing attitudes and readiness to engage in IPE on the part of the students, faculty, and institutions. When IPE initiatives fail, it is usually due to unfamiliarity with roles and responsibilities of other professions, stereotypes, hierarchies, attitudinal biases, and lack of shared competencies needed for effective collaboration (22, 39). Other known barriers faced during the implementation and developing stages include scheduling conflicts, time limitations, having unequal number of healthcare students, geographical distances, contrasting learning needs, lack of commitment, lack of faculty expertise, inequality in assessments, different program lengths, planning and resource difficulties, and lack of institutional support (10, 18, 22, 48, 49). Barriers can be divided into three categories: organisational, structural, and attitudinal (50).

Parsell and Bligh argued that although organisational and structural barriers can be very challenging to overcome, it is the attitudinal barrier that might be the most problematic (50). Therefore, a lot of work has been undertaken to measure learners' attitudes. Another factor

that could be a barrier to implementing IPE is the attitude of the faculty (46, 51). Most of the faculty members would have had their training in different learning environments and they might be uncomfortable with an IPE learning style or they may have not enough knowledge about it (46). The theoretical framework of readiness for change needed to stimulate such change will be discussed further later in this chapter.

Lawlis and colleagues conducted a literature review to identify barriers and enablers critical for IPE sustainability and have highlighted five fundamental elements that may inhibit or enhance IPE success and sustainability in healthcare curricula. These include funding from the government, funding from academic institutions, faculty development programmes, support from academic institution to integrate IPE into healthcare curricula, and commitment by faculty from across the healthcare disciplines (52). They added that successful IPE programmes have shown to have one or more of these elements or at least have recognised their importance (52).

## **1.2 Interprofessional education in the Middle East**

While there is strong emphasis on incorporating IPE into the curricula across Western countries, the status of IPE in Middle Eastern countries is largely unexamined (9, 53-58). Rodger and Hoffman reported the results of a WHO survey of health care faculty where a very small percentage (4%) of faculty from the Middle East reported any IPE activity (54). Additionally, there are few health profession schools in the Middle East that report IPE experiences (59, 60). There could be a number of reasons for these findings. First, there may be no consensus on an IPE definition or no data regarding students' attitudes and views of IPE (61). Cultural and contextual factors in the Middle East may be significantly different from those in other areas of the world, which would result in diverse interpretations and perspectives. Other reasons could be that IPE is perceived to be a Western phenomenon; studies may have been published in other languages and are less accessible; or resources are lacking to evaluate the programmes in this region (55). Irajpour et al. explains:

What is clear is that: information about the incidence, objectives, form, content and effectiveness of Interprofessional Education throughout much of the world is at best patchy making generalisation hazardous, dependent on inferences drawn with difficulty from spasmodic and sporadic published sources (55).

In a recent work published by CAIPE entitled 'Interprofessional Education: The Genesis of a Global movement', Professor Hugh Barr listed the countries included in the WHO reports in 1973 and 2010, as shown in Table 3. In his review conducted in 2015, he highlighted 73 countries where IPE is being pioneered worldwide including Iran, Pakistan, Qatar, and Turkey from the Middle East region (11). Furthermore, in the international Pharmaceutical Federation entitled: 'Interprofessional Education in a Pharmacy Context: Global Report' published in 2015 included nine diverse case studies demonstrating IPE initiatives from around the world with only one case study from a Middle Eastern country: Lebanon (9).

Table 3: Arab Countries Reporting IPE Initiatives according to WHO Report (adapted from Barr (11))

Year	Initiated by	Total of participating countries	Arab countries included
1973	WHO Expert Committee reviewing medical education	14 countries	Algeria, Egypt and Sudan
2008	WHO scan report	41 countries	Egypt, Iraq, Jordan, Saudi Arabia, United Arab Emirates.

It is worth noting that there is a lack of consensus on the definition of the Middle East and in many instances it is more of a political rather than a geographical definition (62). For the purpose of this research, the researcher will refer to Arabic speaking Middle East which consists of 14 countries: Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Yemen, and United Arab Emirates. These countries belong to the same geographical region and have similar cultural traditions and social characteristics and have been used in previous pharmacy research in the region (63, 64).

At the start of this PhD research in 2012, only three articles were available on IPE from the Arabic speaking Middle East region, as shown in Table 4 (61, 65, 66). The first study conducted in the Middle East was research completed by El-Zubeir et al. in 2006. It validated an extended Readiness for Interprofessional Learning Scale (RIPLS) specifically assessing medical and nursing students' readiness for IPE in undergraduate Middle Eastern students (61). These students were in the final two years of education and training. Learning was uniprofessional in both disciplines. This study was unique that it was the first study using RIPLS from a non-Western perspective. The results suggested that there were significant although small differences in the perceived value of IPE between nurses and doctors as well as differences in professional identity with doctors being more secure in their identity than others. The authors acknowledged that responding students needed to have an adequate grasp of the English language to enable them to answer the survey, which the students possessed. The authors did not feel they would reach a different conclusion if they had the survey translated to Arabic. The need for more qualitative studies to explore the student's perspectives of IPE was noted by the authors (61). However, there seems to be some confusion regarding the meaning of IPE. The authors seem to have used the terms 'shared learning and IPE' interchangeably, which does not confirm to the CAIPE definition stated earlier (67).

Since then, there has been a steady increase in the number of articles published (Figure 4). More than 50% of the articles were from Qatar (52.6%, n=10), followed by Saudi Arabia (21%, n=4). The rest came from Egypt, Lebanon, Oman, and United Arab Emirates.

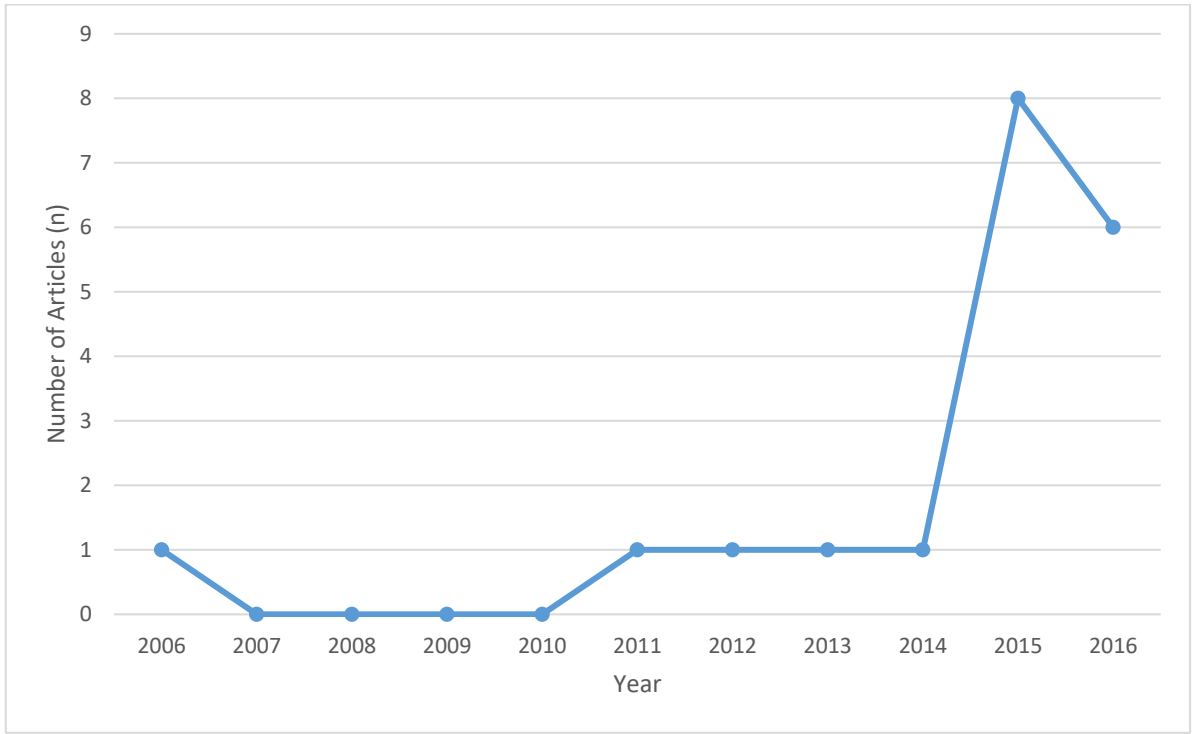


Figure 4. Number of IPE Articles from the Arabic Speaking Middle East (2006-2016)

Table 4: Articles from Arabic Speaking Middle East (2006-2016)

Year	Country	Title	Journal	Focus
1. 2016	Saudi Arabia	The perceptions and readiness toward interprofessional education among female undergraduate health-care students at King Saud University.	The Journal of Physical Therapy Science	Education, student perception
2. 2016	Qatar	Designing interprofessional simulation based faculty development in a new women and children's hospital in the Middle East: A pilot study (68)	Journal of Taibah University Medical Sciences	Education, Faculty development
3. 2016	Qatar	Changes in student perceptions after a semester-long interprofessional education activity in Qatar (69)	Journal of Taibah University Medical Sciences	Education, student perception
4. 2016	Saudi Arabia	Introducing inter-professional education in curricula of Saudi health science schools: An educational projection of Saudi Vision 2030 (70)	Journal of Taibah University Medical Sciences	Education, curriculum
5. 2016	Arabic speaking Middle East (published in Qatar)	Interprofessional education in the Arabic-speaking Middle East: Perspectives of pharmacy academics (56).	Journal of Interprofessional Care	Education, Faculty perception
6. 2016	Lebanon	Student perceptions towards interprofessional education: Findings from a longitudinal study based in a Middle Eastern university (71).	Journal of Interprofessional Care	Education, student perception
7. 2015	Qatar	Interprofessional education activity among undergraduate nursing and pharmacy students in the Middle East (59).	Nurse Educator	Education, student perception
8. 2015	Qatar	Interprofessional impressions among nursing and pharmacy students: A qualitative study to inform interprofessional education initiatives Curriculum development (72)	BMC Medical Education	Education, student perception
9. 2015	Qatar	Attitudes of pharmacy and nutrition students towards team-based care after first exposure to interprofessional education in Qatar (60).	Journal of Interprofessional Care	Education, student perception
10. 2015	Saudi Arabia	Interprofessional education as a need: the perception of medical, nursing students and graduates of medical college at King Abdulaziz University (73)	Creative Education	Education, student perception

11. 2015	Qatar	Core Interprofessional Education (IPE) health competencies: The process of adaptation and implementation for a local environment (43).	Journal of Local and Global Health Science	Education, curriculum
12. 2015	Qatar	Laying 'the groundwork' for a post-licensure interprofessional education initiative in Qatar (74)	Avicenna	Education, post licensure (editorial)
13. 2015	Saudi Arabia	Study investigating pharmacy students' interprofessional perceptions toward the pharmacy profession in Saudi Arabia	Currents in Pharmacy Teaching and Learning	Education, student perception
14. 2015	Kuwait	Investigation into health science students' awareness of occupational therapy: implications for interprofessional education.	Journal of Allied Health	Education, student perception
15. 2014	Qatar	Developing an Interprofessional Continuing Education Symposium for Health Care Educators in Qatar (75)	The Journal of Continuing Education in Nursing	Education, post licensure
16. 2013	Egypt	Integrating interprofessional education in community-based learning activities: case study.	Medical Teacher	Education, student perception/Curriculum
17. 2012	Oman	Interprofessional Education (IPE) Activity amongst Health Sciences Students at Sultan Qaboos University (66)	Sultan Qaboos University Medical Journal	Education, curriculum
18. 2011	Qatar	Qatar Interprofessional Health Council: IPE for Qatar (65)	Avicenna	Education, curriculum
19. 2006	United Arab Emirates	Are senior UAE medical and nursing students ready for interprofessional learning? Validating the RIPL scale in a middle eastern context (61).	Journal of Interprofessional Care	Education, student perception



### 1.3 Interprofessional education in Qatar

The State of Qatar, an oil and gas rich nation, is a sovereign Arab state situated in the Arabian Gulf Region of the Middle East and is one of the countries in the Gulf Cooperation Council. The country's population has grown significantly in the last twenty years, due to the large expatriate influx to the country, with a current estimated population of around 2.6 million, predominately expatriate (76, 77). Qatar's economy is claimed to be one of the highest in the world with a gross domestic product per capita of \$129,700 (78). There has been significant investment in the healthcare system in Qatar in the last 15 years. Similar to many gulf countries, a large number of patients, healthcare professionals, faculty, and students are expatriates. Most healthcare facilities are public, mainly run by expatriates' healthcare professionals who completed their education and training outside Qatar.

Qatar has established a National Health Strategy for the period between 2011 and 2016, which include initiatives and projects to achieve the Qatar National Vision 2030 and its four pillars, as shown in Figure 5. Developing IPE and promoting collaborative practice will help Qatar meet the goals of Pillar 1: promoting human development which focuses on a population that is healthy and an educated workforce that is capable and motivated in a comprehensive world class healthcare system (79). One proposed initiative for building a skilled national healthcare workforce is to optimise the skill mix by encouraging the establishment of interprofessional healthcare team working towards patient-centred care, recruiting healthcare professionals with expanded roles, and fostering collaborative practice environment (80).

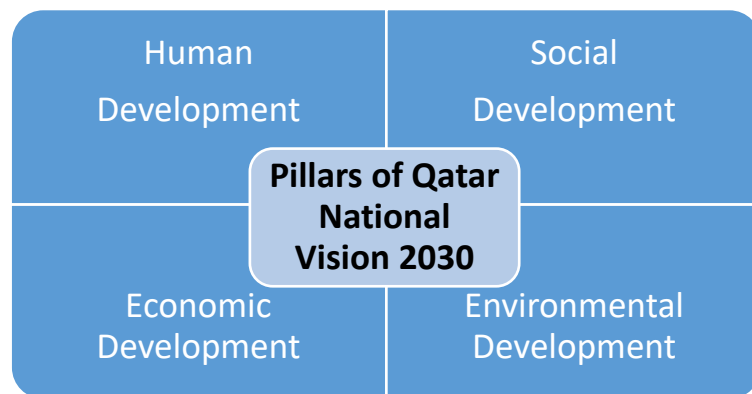


Figure 5. Qatar National Vision 2030 (79)

Furthermore, in an effort to establish the educational and research infrastructure and build a high quality health workforce with Qatari nationals who are domestically trained, Qatar currently accommodates branch campuses of some of the leading universities in North America. These include Weill Cornell Medical College (based in the United States), the University of Calgary School of Nursing (based in Canada), and the College of the North Atlantic (based in Canada). In 2007, the College of Pharmacy was established as the only national institution in the country: Qatar University. Qatar University College of Pharmacy is the first and only pharmacy degree

programme in the State of Qatar. It is accredited by the Canadian Council on Accreditation of Pharmacy Programs (CCAPP) and is the only country outside Canada to achieve this accreditation. Additionally, in June 2009, Qatar Interprofessional Health Council (QIHC) was formed to help address healthcare needs in Qatar. The council also wanted to drive IPE forward in Qatar and in the region. Members of the QIHC included deans of the above four healthcare educational institutions in Qatar as well as members from Sidra Medical and Research Centre and Hamad Medical Corporation (HMC)(81). The following are examples of IPE initiatives currently or recently undertaken in Qatar:

- A three-year National Priorities Research Program (NPRP) project from the Qatar National Research Fund entitled 'Implementing Inter-Professional Undergraduate Health Professional Programs Health Care Education in Qatar'. The project investigated the development of shared competencies to be used by faculty while integrating IPE into the undergraduate curriculum. This project is now completed.
- College of the North Atlantic- Qatar yearly skills competition focusing on interprofessional healthcare teams. This has been taking place yearly since 2010.
- A project by the Qatar Academic Health system to develop a training programme to integrate IPE in Hamad medical cooperation.
- A PhD project by a student in University of Calgary related to the readiness for IPE and interprofessional practice of healthcare practitioners at Hamad Medical Cooperation in Qatar. This project was completed in December 2015.

IPE is an important element in the accreditation standard for pharmacy for CCAPP. During the fourth annual visit of the CCAPP team in December 2011 to the college, the team considered the progress made by the college to be 'remarkable' and reported that the college had met 22 of the 24 accreditation standards. One of the two remaining standards considered to be 'partially met' were full realisation of interprofessional health education in Qatar. The college is continuing to make good progress on this standard and this research is part of this progress. The college received full accreditation in June 2012.

Most Western accreditation bodies call for incorporation of IPE into the curricula of healthcare programmes. Recognising the importance of incorporating IPE, CCAPP standards, effective from January 2013, have addressed the necessity to provide IPE experiences within the pharmacy curricula. Standards 3, 11, 26 and 32 explicitly focus on the necessity of incorporating IPE within the pharmacy curricula as shown in the following points (82):

- Standard 3 emphasises that the university integrates and endorses the concept of IPE and collaboration in practice.
- Standard 11 states that ‘Support for interprofessional education and interprofessional practice must be embedded in faculty documentation such as policies and strategic directions’.
- Standard 26 affirms that the pharmacy degree must include ‘a series of core courses, practice experiences and interprofessional educational experiences,’ and
- Standard 32 clearly affirms that ‘The program must provide elements within the required curriculum for interprofessional interaction with students and faculty from other health profession programs’ (82).

As such, it was the intention of the College of Pharmacy at Qatar University to incorporate IPE initiatives formally into the pharmacy curriculum with other healthcare students in Qatar aligned to accreditation standards and fulfil the recommendations set in the WHO framework. Prior to the data collection of this study, two IPE activities had taken place informally based on faculty interest. Additionally, at the start of this PhD, pharmacy students learned about IPE through a didactic lecture in their first professional year. In the second professional year, the IPE approach is integrated through simulated case scenarios in several courses, including professional skills courses, and through structured pharmacy practical experiences. Although these activities are not considered as IPE activities yet, it is just the beginning of commencing implementation of IPE into the pharmacy curricula. In addition, in an effort to increase the awareness of practising pharmacists in Qatar about the importance of IPE and professional team work, Qatar University College of Pharmacy CPPD (Continuing Professional Pharmacy Development) programme has delivered several continuous professional sessions to the practising pharmacists in Qatar about how to effectively collaborate with other healthcare professionals to optimise patient health outcomes. With that said, many negotiated efforts are still needed to drive the integration and implementation of IPE forward including patient and service users who are a key stakeholders and central to the development of IPE.

#### **1.4 The emerging role of the pharmacists in the healthcare team**

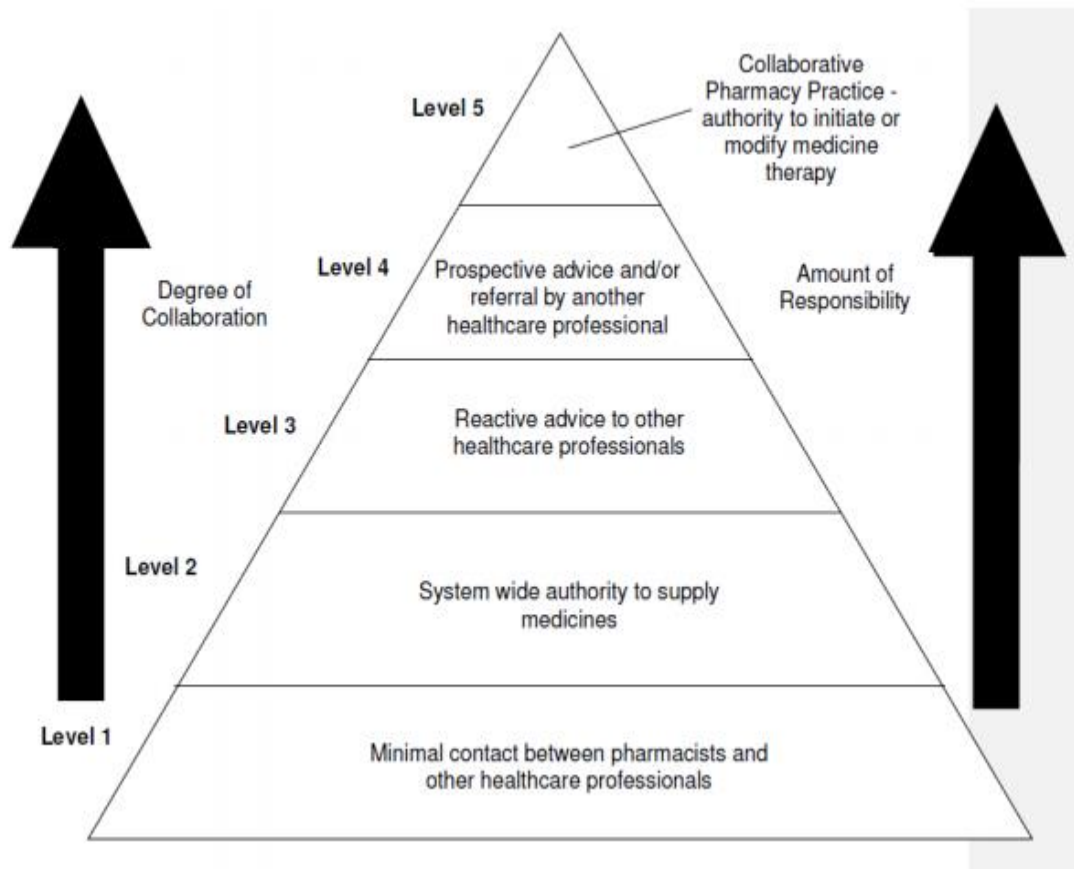
Healthcare is provided by a variety number of different healthcare professionals, including pharmacists who are integral members of the healthcare team, and all are expected to work collaboratively to provide quality care (83, 84). The role of the pharmacist has significantly evolved, beyond medication dispensing, since the introduction of the pharmaceutical care concept by Hepler and Strand in 1990. This evolution corresponds with the profession’s extensive training and expertise and the demand for medication management, which is increasingly complicated (3,

28, 83, 85, 86). A detrimental factor in successful implementation of pharmaceutical care is cooperation between pharmacists and other members of the healthcare team (87).

The WHO and FIP in a joint document called for increased interprofessional working and advocated that pharmacists need to assume new roles and responsibilities and function as collaborative members of the healthcare team (83). Pharmacists are now assuming patient-centred care responsibilities rather than being product-centred (3, 83, 88). These roles include medication management and review; chronic disease management; medication reconciliation; disease prevention; immunisation services; health promotion programmes; education; prescribing; and interprofessional clinical care based on shared decision making grounded on evidence based practice (84, 86).

It is important this role is recognised and understood by other healthcare providers and other healthcare students to be able to collaborate effectively and be part of the team. Collaboration with the healthcare team requires various skills and expertise and therefore pharmacists also need to possess the attitudes required to effectively integrate into the healthcare team such as being accessible, visible, competent, confident, committed, and responsible in their dealing with other healthcare professionals (83). There is also a need to recognise and understand other professionals' roles.

Previous studies have demonstrated the evidence of the benefits of pharmacists' collaboration with other healthcare professionals in improving patient care and in decreasing medical errors (3, 89-93). Collaborative practice is needed and highly relevant to the pharmacy profession. The FIP has defined five levels of collaborative practice that depend on the degree of collaboration between pharmacists and other health care professionals. These levels start from minimal contact to collaborative pharmacy practice as shown in Figure 6 (28). Although the position of the pharmacists in the interprofessional team is already recognised and represented in the interprofessional literature, their perspectives on interprofessional working is not explicit.



*Figure 6. Levels of Collaborative Practice between Pharmacists and Other Healthcare Professionals. Adapted from FIP Reference Paper on Collaborative Practice (28)*

Furthermore, it is worth noting that unlike developed countries, pharmacists in developing countries are still struggling to gain recognition for their role and are still underutilised and underestimated (87, 94, 95). Two main factors account for this: (1) lack of sufficient education and training with many pharmacy programmes being industry oriented and (2) lack of recognition and appreciation, to the pharmacist clinical role, by other healthcare professionals (87, 95-99). This needs to be considered as it could potentially be a major obstacle for achieving a collaborative environment in the healthcare system. A few examples of expanded pharmacist roles have emerged recently including a pharmacist-managed anticoagulation clinics in Saudi Arabia and in Qatar achieved better INR management than physician led clinics (100-102) and studies investigating pharmacist delivered discharges with a tailored follow-up in patients with acute coronary syndrome (103), and a pharmacist delivered smoking cessation programme in Qatar (104).

## 1.5 Pharmacy practice in Qatar

Pharmacy practice in Qatar has evolved in the last 10 years. The establishment of the first and only College of Pharmacy in Qatar with full Canadian accreditation and the recent advancements in the role of the pharmacists especially in the hospital sector have contributed significantly. Allied to this is the increasing number of qualified clinical pharmacists and the implementation of integrated automated dispensing unit (pharmacy robots) (105). The College of Pharmacy in Qatar University is the first and only pharmacy school in the state of Qatar to offer five year Bachelor of Science in Pharmacy (BSc Pharm) and two postgraduate programs: Doctor of Pharmacy (PharmD) and Master of Sciences (MSc Pharm). These programs are delivered in English. The Doctor of Pharmacy program supports an advanced clinical pharmacy practice which includes 32 weeks of experiential training where pharmacy students are trained to be integral members of the healthcare team assuming direct patient care responsibilities and ensuring safe and effective use of medications (106, 107). The BSc program is currently offered only to female students while the postgraduate programs are offered to both genders. There are plans to offer the BSc program to male students when the new College of pharmacy building is completed by 2018.

Currently, the number of practising pharmacists in Qatar is estimated to be around 1000 pharmacists working in 178 community pharmacies, 23 public primary health care, 10 public primary health care, 9 public hospitals and 6 private hospitals. Similar to healthcare professionals in Qatar, pharmacists practising in Qatar are a heterogeneous expatriate group from diverse backgrounds with most pharmacists graduating from Egypt, Jordan, India, Sudan and Pakistan (108). Pharmacy programmes in these countries heavily focus on pharmaceutical sciences and industry rather than on clinical pharmacy (63). The sociodemographic characteristics of the pharmacists practising in Qatar are changing with more pharmacy graduates from the College of Pharmacy in Qatar University entering the pharmacy workforce with a clinically oriented background aimed at providing optimal pharmaceutical care and advancing the field of pharmacy practice and healthcare in Qatar (63, 109). The first cohort graduated from the College in June 2011 with the vast majority of pharmacy graduates securing employment in hospital settings where pharmacy practice is well developed (109). A few examples of expanded pharmacist roles have emerged recently in Qatar including a pharmacist-managed anticoagulation clinic (100, 101, 110), pharmacist delivered discharges with a tailored follow-up in patients with acute coronary syndrome (103), clinical pharmacy services in palliative care, hospital emergency department and neonatal intensive care unit (111-113), and a pharmacist delivered smoking cessation programme in Qatar (104). Unfortunately, pharmacy services in primary care and community pharmacy settings are heavily dominated by drug dispensing and supply with pharmacists having lower salaries compared with pharmacists in other settings similar to other countries in the Middle East (63, 105, 107).

## **1.6 A theoretical framework of readiness for change**

Incorporating IPE into any curriculum is a challenge and requires thoughtful planning to make sure this incorporation is successful and any negative impacts and resistance are minimised. Therefore, it is important to assess readiness and address awareness and attitudinal issues before implementing the change in the area of IPE and IPC to optimize the chance of positive change in behaviour (114). Readiness implies 'a state of being both psychologically and behaviourally prepared to take action' (i.e., willing and able) (115) p 2. Armenakis and colleagues referred to readiness for change as 'organisational members' beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organisation's capacity to successfully make those changes' (116) p. 683. Armenakis et al. emphasized that readiness needs to be coupled with a sense of urgency, embedded in the context of the organisation, for successful implementation of change to occur (116). Building on this, Eby and colleagues added that perceptions towards organisation readiness for change may differ between the different individuals within the same context due to their own unique interpretation of that context, hence it is important that this is captured (117).

The most commonly used terms in the literature when discussing attitudes to change are either the positive term 'readiness for change' or the negative term 'resistance to change' (118). Other common terminologies include reactions to change, change commitment, change acceptance and agency capacity (119). Furthermore, there is a distinction between individual readiness for organisational change versus organisational readiness for change, which is not clearly differentiated in the literature (120, 121). Readiness to change, for both individual and organisations, is regarded a key precursor for the implementation of any successful change initiative taking into consideration the perspectives of change recipients (115, 120-125). It is also a practical and valid concept to explore the attitude of change recipients toward organisational change (120). When readiness is high, then individuals are motivated and committed to the change process and resilient when facing challenges. However, when readiness is low then individuals would resist the change and perceive the change as unneeded and undesirable (119, 122).

Change management theories and model were considered in this research to identify a model that can be utilized in assessing readiness prior to implementation of IPE. Four authors have been selected to underpin the development of the theoretical framework on readiness for change: Lewin; Michie; Kotter, and Holt. They have allowed the principal researcher to explore and analyse the notion of organisational, curriculum, and practitioner readiness for change towards effective implementation of IPE. The definitions for individual readiness for organisational change vary but most revolve around changing recipients' perception about organisation capability in implementing

a successful change, appropriateness of the change, need for change, benefits to organisation, and its employee and support from the organisation (116, 117, 120, 123, 126).

One theory of change is Kurt Lewin's prominent theory of change model, which is based on three stages: unfreezing, moving, and then refreezing. The initial stage of 'unfreezing' is quite important as it allows for understanding the perception of individuals regarding the current situation, and then identifying the driving (enablers) and restraining forces (barriers) for a change (127). This will be followed by increasing readiness to change by strengthening the enablers and reducing the barriers to reduce challenges and resistance to change and altering the change recipients' attitudes and beliefs for change so they perceive it as needed and likely to be beneficial and successful (117, 119, 120, 127, 128). Another model that explains behavioural change is Michie's COM-B model (Capability, Opportunity, or Motivation) (129) (Figure 7). Interventions aimed at changing behaviour could be aligned with components of Michie's COM-B model. As highlighted in this model, behaviour is the product of these three components and any changes in any of these components will have an influence on the participants' behaviour and attitude (in this case IPE and collaborative practice). The components have been defined as follows (129) p 4:

- Capability is defined as 'the individual's psychological and physical capacity to engage in the activity concerned. It includes having the necessary knowledge and skills'.
- Motivation is defined as 'all those brain processes that energise and direct behaviour, not just goals and conscious decision-making. It includes habitual processes, emotional responding, as well as analytical decision-making'.
- Opportunity is defined as 'all the factors that lie outside the individual that make the behaviour possible or prompt it'.

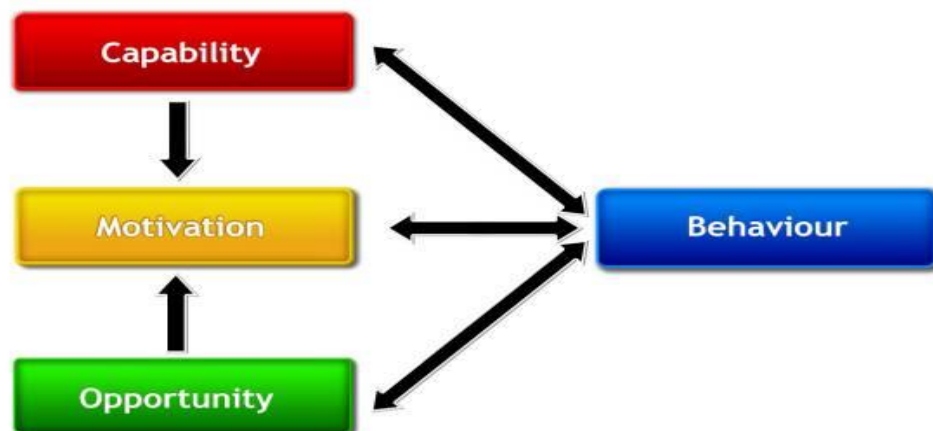


Figure 7. The COM-B system - A Framework for Understanding Behaviour Adapted from Michie et al. [(129) p 4].



To ensure successful implementation of behavioural change, the components of Lewin model need to be further divided into manageable stages. Building on this model, a well-known scholar in leadership and change, John Kotter, developed an eight-stage structured framework for leading planned change successfully in organisations. These are (125):

1. Establish a sense of urgency;
2. Form a powerful guiding coalition;
3. Create a vision;
4. Communicate the vision;
5. Empower others to act on the vision;
6. Plan and create short term wins;
7. Consolidate improvement and produce more change;
8. Institutionalise new approaches.

The central challenge in the eight stages is changing people's behaviour (130). Kotter first stage in creating a successful change is by creating a sense of urgency by relevant people and stakeholders. He emphasised the significance of this initial stage in starting the transformation in a programme started and cautioned that over 50% of institutions fail to transform due to issues and problems in this first stage (125). This is attributed to many factors that can hinder progress significantly, which include underestimating the challenges of initiating a change away from individual comfort zone, overestimating the success in increasing the sense of urgency, lack of patience, the failure to establish the readiness level by many of the concerned individuals or key stakeholders (125), and underestimating the role individuals play in the change process (120, 126).

Although Kotter's model has been used to guide the implementation of IPE (128, 131) and facilitate collaborative practice innovation (132), it does not go in detail on how to facilitate and measure this sense of urgency and readiness by the different individuals. Examining the reality and assessing the challenges and gaps objectively is crucial for successfully implementing an initiative in an institution (125, 133). This assessment will identify the enablers and inhibitors to inform the next steps in the implementation process (133). Inability to do this and lack of preparation for change will lead to a number of predictable undesired outcomes including a false initial start that may or may not recover, growing resistance leading to a pause in the change process, or the whole implementation for change fails (119). Building a strong knowledge base about the readiness for change and assessing this through validated instrument is of crucial importance and can strengthen efforts to implement successful changes (119, 123).

In addition to Lewin, Michie, and Kotter's underpinning of the theoretical framework for behavioural change, Holt et al. distilled this further by providing a comprehensive overview of multifaceted instruments for change. Holt and his colleagues expanded this and proposed a multifaceted comprehensive theoretical framework of readiness for change based on a review of 32 instruments, where they defined readiness for change as a comprehensive attitude that is influenced simultaneously by the content (i.e., what is being changed), the process (i.e., how the change is being implemented), the context (i.e., circumstances under which the change is occurring), and the individuals (i.e., characteristics of those being asked to change). Furthermore, readiness collectively reflects 'the extent to which an individual or individuals are cognitively and emotionally inclined to accept, embrace, and adopt a particular plan to purposefully alter the status quo' (123) p 235.

They emphasised that readiness should be measured at the individual level because changes are often carried out by individuals within an organization setting (123). Understanding the challenges associated with individual and system changes, they advocated the importance of initial readiness, which focuses on 'the degree to which the organisation and those involved are individually and collectively primed, motivated and capable of executing change' and perceived it as a critical precursor leading to an effective integration of an organisation wide change (134). Figure 8 provides a conceptual framework to measure readiness at an individual level but from the different perspectives of: change process, change content, change context, and individual attributes (123).

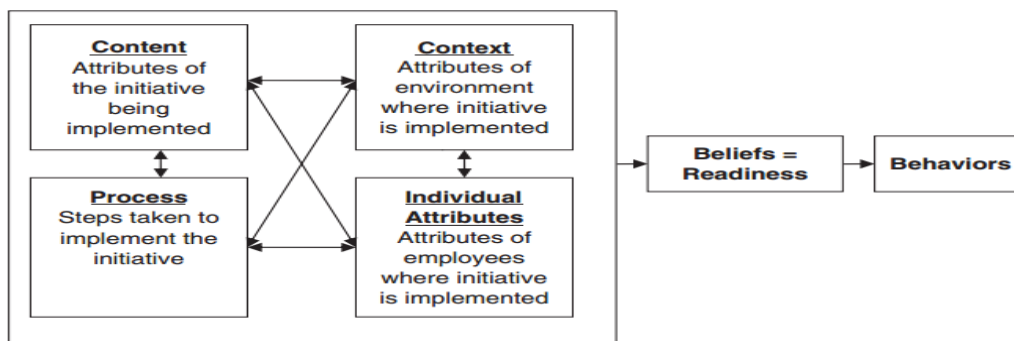


Figure 8. Model of the Relationship between Content, Process, Context and Individual Attributes with Readiness (Holt et al. 2007).

Holt et al. (2007) subsequently modified their theoretical framework to reflect their argument that readiness for change is multidimensional (Figure 9) subject to (123):

- Employees belief and confidence in implementing the planned change
- Appropriateness of the planned change for the organisation and that it is necessary
- Management support in that leaders are committed to the change
- Benefits of the planned change to the organisation members

All these will have a positive and influential impact on the readiness of the employees.

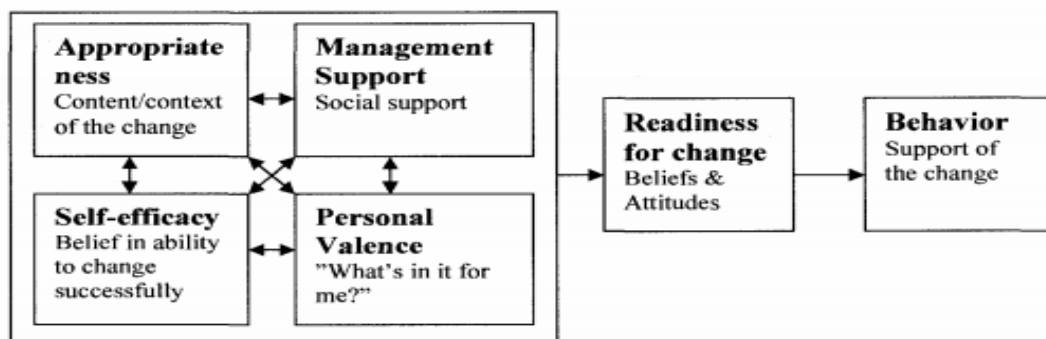


Figure 9. Revised Model of Holt et al.'s (2007) Readiness for Change Model

Holt's model does not focus on organisational readiness but concentrates on assessing the individual's readiness for organisational change before implementing organisational changes. Nevertheless, it should be noted that the above model was tested in only two organisations going through change and hence one needs to be careful about the generalisability of the results across different types of change. Additionally, it should be noted that not all changes should be considered the same even within the same organisation. There could be different types of change. For instance, a pharmacy college may be ready to incorporate IPE into their curriculum but on the other hand resistant to simulated learning.

In 2010, Holt and colleagues went further and presented a conceptual framework with key dimensions to be considered by health care professionals in their practice settings for comprehensively assessing readiness for change. These include psychological and structural factors of readiness at individual and organisational levels (Table 5)(109). Psychological factors have been defined as 'factors that reflect the extent to which the members of the organisation are cognitively and emotionally inclined to accept, embrace, and implement a particular change', whereas structural factors refer to 'factors that reflect the extent to which the circumstances under which the change is occurring enhance or inhibit the acceptance and implementation of change' (109) pS52. Figure 9 above fits with the psychological individual level shown in Table 5.

*Table 5: Summary of the Psychological and Structural Factors of Readiness at the Individual and Organisational Level and Key Dimensions Within Each Cited from Holt et al. (123)*

Readiness for change factors		
Level of analysis	Psychological factors	Structural factors
	Factors that reflect the extent to which the members of the organization are cognitively and emotionally inclined to accept, embrace, and implement a particular change	Factors that reflect the extent to which the circumstances under which the change is occurring enhance or inhibit the acceptance and implementation of change
Individual	<p><i>Appropriateness</i>—belief that a specific change is correct for the situation that is being addressed</p> <p><i>Principal support</i>—belief that formal and informal leaders are committed to the success of the change and that it is not going to be another passing fad</p> <p><i>Change efficacy</i>—belief that the individual can successfully</p> <p><i>Valence</i>—belief that the change is beneficial to the individual</p>	<p><i>Knowledge, skills, and ability alignment</i>—extent to which the organizational members' knowledge, skills, and abilities align with the change</p>
Organizational	<p><i>Collective commitment</i>—shared belief and resolve to pursue courses of action that will lead to successful change implementation</p> <p><i>Collective efficacy</i>—shared belief in their conjoint capabilities to organize and execute the courses of action required to implement change successfully</p>	<p><i>Discrepancy</i>—an understood difference between the current state or practice and a more desirable state (without a particular change to address this issue in mind)</p> <p><i>Support climate</i>—sufficient tangible (e.g., funding, reward and incentive systems) and an encouraging intangible environment (i.e., culture and climate) to support implementation</p> <p><i>Facilitation strategies</i>—a set of clearly articulated goals and objectives that are supported by a detailed implementation plan defining roles and system to measure progress</p>

Although this model has not been adopted in an educational context, the same conceptual framework can still apply for measuring readiness for IPE development. The focus of this PhD study will be on assessing readiness at the individuals' level considering both structural and psychological factors to develop an understanding of the readiness for organisational change. This will be taken further to measure readiness at multiple readiness levels for a more holistic approach to IPE implementation. Assessing readiness to change through multi-level perspective is crucial to understanding the implication of change readiness on the different individuals (change recipients) and organisations (135). The attitude of individual healthcare professionals, healthcare faculty and students can have an effect on the way they perceive and work with other healthcare professions and therefore it is of crucial importance to identify the attitudes of these professionals and students, and their expectations, prior to the incorporation of IPE into the curriculum (48, 136, 137). Therefore, in terms of IPE it would be important to ascertain whether the individuals:

- felt the change was appropriate in terms of content and context;
- believed they have management support on board;
- equipped and confident to integrate IPE into the curriculum successfully;
- believed that integrating IPE will be beneficial to them.

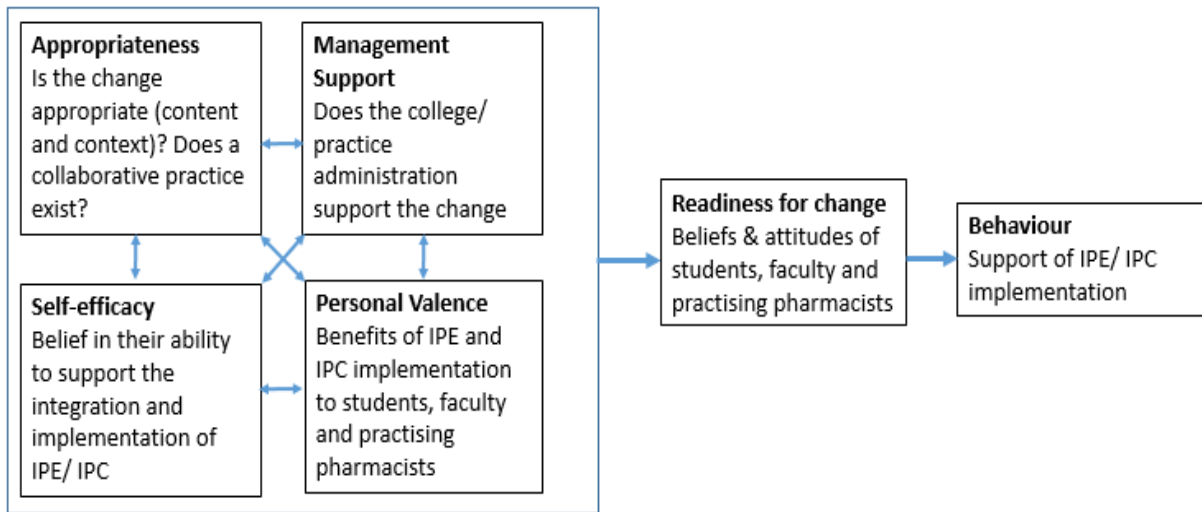


Figure 10: Readiness for Change Model for IPE based on Holt et al.

This would influence their attitude and behaviours towards the change (Figure 10). Integrating students and faculty into the planning process is crucial to design a programme taking their perspectives and insights into consideration. Therefore, it is imperative to explore the perspectives of key stakeholders regarding the change and measure their readiness before initiating the process to understand the impact attitudes can have on learning and behaviour. In the case of students, they need to be ready to learn and engage in IPE initiatives with other healthcare professional students. For example, a student who is not ready to engage in an IPE activity may consider the experience as meaningless interaction and lack motivation to collaborate and interact with other students (138). For academic faculty, they need to be ready, willing, and prepared to deliver such initiatives. Furthermore, it is crucial to know the current situation of pharmacy practice in Qatar and whether it is ready for this change. If students are 'collaborative practice ready', will they find collaborative practice role models when they start working? Will there be collaborative practice ready settings? Assessment of their readiness is critical and is an important step prior to developing an IPE programme that is sustainable, relevant, and takes into consideration the needs of the key stakeholders. The WHO has also emphasised that while striving to maintain the highest standards of care, an effective model of interprofessional collaboration must be established that is regionally distinct taking into consideration the unique needs of the region served (8). Needs based assessment is essential to determine the best approach to introduce new developments in interprofessional practice. The assessment can yield crucial data to identify what gaps exist and what actions have to be taken to reach the desired state (121). If gaps are not addressed then resistance to change would be anticipated and efforts towards implementation will be threatened (139, 140).

Readiness can be assessed using both qualitative and quantitative methodologies (116, 121, 123, 141). Assessment of readiness prior to introducing a change has been advocated with a number

of instruments developed for this purpose (123). Instruments to assess readiness towards IPE are available and will be discussed in detail in the methodology chapter. Following a comprehensive exploration of IPE and collaborative practice in terms of definition and implications, the link between IPE and collaborative practice, the evidence base for IPE, the situation of IPE in the Middle East and Qatar, the emerging role of the pharmacists in the healthcare team, and a comprehensive explanation of theoretical framework of readiness for change, the research aims and objectives for this PhD study were developed.

## 1.7 PhD research aims

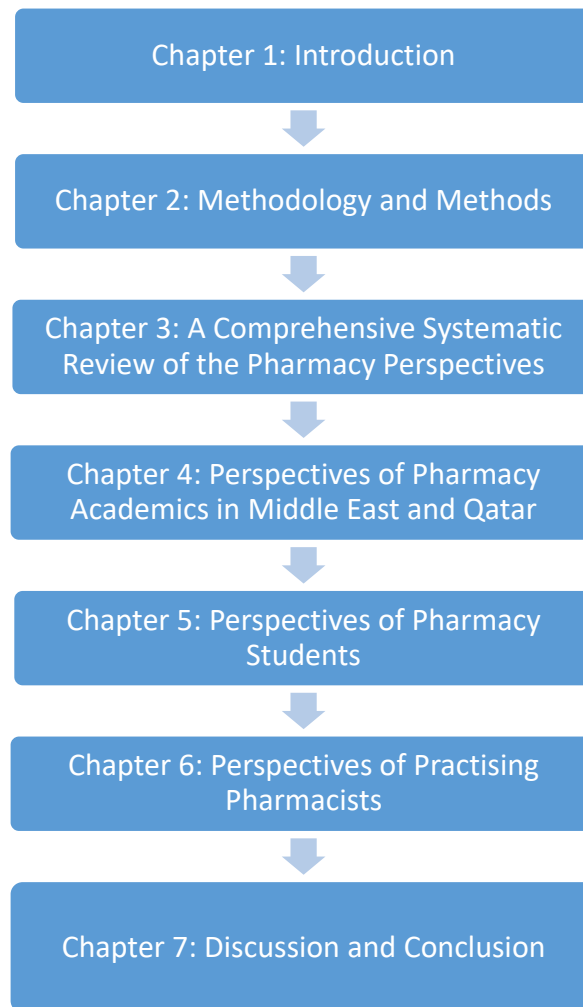
The overall aim of this research was to explore the pharmacy perspectives of IPE and collaborative practice from a Middle Eastern context using mixed method methodology. This PhD thesis is the first to utilise mixed methods to explore the perspectives of faculty, students, and practising pharmacists from both the Middle Eastern context and pharmacy perspectives. It seeks to understand whether students, faculty, and practising pharmacists are ready for the change. The research was conducted in four phases with the specific aims shown in Table 6.

*Table 6: PhD Phases and Aims*

Phase	Objectives
ONE: A comprehensive systematic review of pharmacists' perspectives of IPE and collaborative practice.	<ul style="list-style-type: none"> <li>Conduct a comprehensive systematic review of the literature focusing on the perspectives of pharmacy students, pharmacy faculty and practising pharmacists on IPE and collaborative practice.</li> </ul>
TWO: Faculty perspectives of IPE and collaborative practice in Middle East and Qatar.	<ul style="list-style-type: none"> <li>Explore the awareness, views, attitudes, and perceptions of pharmacy faculty in Arabic Speaking Middle Eastern countries towards IPE and collaborative practice.</li> <li>Identify enablers and barriers perceived by pharmacy faculty in Qatar resulting from integrating IPE into the pharmacy curriculum.</li> <li>Identify resources needed to implement IPE within the pharmacy curriculum in Qatar.</li> </ul>
THREE: Student perspectives of IPE and collaborative practice Qatar.	<ul style="list-style-type: none"> <li>Explore the awareness, views, attitudes, and perceptions of pharmacy students in Qatar towards IPE and collaborative practice.</li> <li>Identify enablers and barriers perceived by pharmacy students resulting from integrating IPE into the pharmacy curriculum.</li> <li>Identify resources needed to implement IPE within the pharmacy curriculum.</li> </ul>
FOUR: Practising pharmacists' perspectives of IPE and collaborative practice Qatar.	<ul style="list-style-type: none"> <li>Explore the awareness, views, attitudes, and perceptions of practising pharmacists in Qatar towards IPE and collaborative practice.</li> <li>Identify enablers and barriers perceived by practising pharmacists resulting from an environment of collaborative practice.</li> </ul>

## 1.8 Thesis outline

The thesis is divided into seven chapters as illustrated below (Figure 11):



*Figure 11. Thesis Outline*

# Chapter 2: Methodology and Methods

## 2.1 Background

This chapter will review the philosophical basis for this PhD research; the methodology adopted, and a justification for the selection of methods applied. An outline for the adopted research design including the research approach, setting, sample size, tools used for data collection, and quality assurance will be justified and discussed. Specific details about the methods implemented will be discussed in each chapter.

## 2.2 Research methodology

Research methodology is often characterised either as quantitative, qualitative, or mixed method. Creswell argues that mixed method could be assigned to the level of methodology (142). Mixed methods research is becoming increasingly desired in the field of IPE due to the complex nature of IPE to provide a detailed insight into the perceptions and impact of IPE into individuals, the population, and health system (136, 143, 144). The main reason for adopting this methodology is to ensure optimal design of IPE research to build a strong body of literature based on well-designed studies, to better understand the research problem that neither the approach alone can provide, improve the evidence base for IPE, and advance the knowledge in the field (5, 27, 137, 142, 145).

Several definitions exist for mixed methods. In the first issue of the *Journal of Mixed Methods Research*, it has been defined as: 'as research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a programme of inquiry'(146) (p.4). Creswell defined mixed methods as 'an approach to inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks. The core assumption of this form of inquiry is that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone' (147). However, the combination of both approaches is questioned as each has its own paradigm that differs in terms of its ontology, epistemology, research methodology, and logic as shown in Table 7 (148). There is no consistent definition of paradigm used by all researchers but, as illustrated by Morgan, there are four different versions of the paradigm concept. Although the four versions view paradigm as 'shared belief systems that influence the kinds of knowledge researchers seek and how they interpret the evidence they collect'(149) p 50, they differ in the definition of that belief system. The four versions of paradigms are depicted as epistemological stances, worldviews, model examples and shared



beliefs in a research field. The most extensively used version in social science methodology is the second one (149).

Table 7 Research Paradigms Comparison Table (142, 150, 151)

	Theoretical perspective 'the philosophical stance informing the methodology and providing context for the process'			
Research paradigm	Post-positivism	Constructivism	Transformative	Pragmatism
<b>Ontology</b> (What is reality?)	Single reality/Realism	Multiple reality (reality co constructed with participants) /Relativism	Diverse viewpoints regarding social realities i.e. reality is negotiated based on political context with an explanation that promote justice.	Diverse viewpoints regarding social realities i.e. reality is both singular and multiple with an explanation within personal value system.
<b>Epistemology</b> 'theory of knowledge (how we know what we know) embedded in the theoretical perspective' • Objectivism • Subjectivism	Objective point of view	Subjective point of view	Both objectivity and interaction with participants valued by researchers.	Both objective and subjective, depending on stage of research
<b>Research Methodology</b> (research approach) 'strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and the use of methods to the desired outcomes'	Quantitative	Qualitative	Mixed methods	Mixed methods
<b>Logic</b>	Deductive 'top down': Start with a theory and test it.	Inductive 'bottom up': Generate a theory.	Both inductive and deductive	Both inductive and deductive

\* Quotes are taken from Crotty (p.3/p.5)(151).

One solution to combining both quantitative and qualitative parts is to use both paradigms in the study separately and then attempt to understand and make a meaning from both results or to think of both paradigm in terms of continuation rather than a dualism (148). Furthermore, whatever approach is used, it is important from the onset to be aware of the different paradigms and spell out clearly the paradigm assumption and conduct the research accordingly (142, 148).

A pragmatic stance has been adopted, in this research, using mixed methodologies as discussed below. This has been embraced as the paradigm for mixed methods research (142, 152).

Pragmatism is defined as:

A deconstructive paradigm that debunks concepts such as ‘truth’ and ‘reality’ and focuses instead on ‘what works’ as the truth regarding the research questions under investigation. Pragmatism rejects the either/or choices associated with the paradigm wars, advocates for the use of mixed methods in research, and acknowledges that the values of the researcher play a large role in interpretation of results (152) p. 713.

Using this paradigm, the researcher began quantitatively with a post-positivist perspective to measure variables and assess the results. In the qualitative stage, the researcher moves to using the assumptions of constructivism that focus on multiple perspectives and detailed interpretation (142). Table 8 highlights the basic characteristics of these two worldviews when used in research.

*Table 8: Basic Characteristics of Post-Positivist and Constructivist Worldviews (142)*

Postpositivist Worldview	Constructivist Worldview
Determination	Understanding
Reductionism	Multiple participant meanings
Empirical observation and measurement	Social and historical construction
Theory verification	Theory generation

In this research, we are examining pharmacy perspectives of IPE. Beginning with a quantitative stage, the researcher is implicitly using a post-positivist worldview to inform the research at the beginning and to provide data that measures attitude and readiness and analysing this focusing on selected variables such as age, gender, experience and others as discussed later. In the second stage, the researcher moves to a qualitative stage which was designed to explore the relevance of the answers provided in the first stage and to follow up and explain the results. The worldview in the second stage shifts to more of a constructivist perspective where meaning is constructed through experiences or reflecting on the experiences. In other words, students for example come to the university or the IPE session with their own experiences and own assumptions. Through this approach, the meaning informed the perspective of the pharmacy

participants (pharmacy faculty, practising pharmacists and pharmacy students) which is shaped by their social interaction with others and from their own previous experiences (142). Employing focused qualitative methodologies following a quantitative study can make a valuable contribution for explaining surprising or unusual results with the aim of getting a more comprehensive picture of what actually is being investigated (153). In summary, the researcher has shifted from a post-positivist worldview in the first stage into a constructivist worldview in the second stage as shown in Figure 12.



*Figure 12. The Shift from Post-Positivist to Constructivist Worldview*

### 2.3 Choosing a mixed methods design

Following reflection on the philosophical and theoretical foundations of the study, the next step was to choose an appropriate mixed method design for the research aims and objectives (Chapter 1) in this thesis. Creswell outlined four basic mixed methods designs as shown in Table 9:

Table 9: Mixed Methods Design (142, 154)

	Mixed method design	Diagram design	Design purpose	Paradigm	Timing
Basic Designs	Convergent Parallel Design		<p>Allow viewing the problem from multiple angles and multiple perspectives.</p> <p>Allow complete understanding of a topic</p>	Pragmatism	Concurrent
	Explanatory Sequential Design		Allow the explanation of the quantitative results.	<p>Stage 1: Post-positivist</p> <p>Stage 2: constructivist</p>	Sequential, starting with quantitative
	Exploratory Sequential Design		Need to measure/test qualitative results	<p>Stage 1: constructivist</p> <p>Stage 2: Post-positivist</p>	Sequential, starting with qualitative

### 2.3.1 Rationale for selecting the design

An explanatory sequential design was employed in phase 2, 3 and 4 of this PhD research (Figure 13). This method was chosen for the following reasons:

- Several validated attitudes scales towards IPE exist making it more feasible to start with the quantitative aspect first;
- It is possible to select participants for the qualitative stage from those participating in the quantitative stage;
- There is time during the course of this PhD study to conduct mixed methods over two stages;
- Questions arising from the quantitative stage need to be clarified and explained through qualitative stage.

The design for this research consisted of two stages. The first phase of the PhD research was conducting a systematic review followed by mixed methods sequential explanatory design for each group of participants: pharmacy faculty, practising pharmacists and pharmacy students (142). The first stage is usually quantitative to obtain statistical results from the sample followed up by qualitative stage to explore the quantitative results in more depth (Figure 13). Although quantitative research could have given answers to the research questions, for example to measure their opinions and attitudes but it did not explore respondents' responses in detail and unpick any hidden results or unclear findings nor add any depth to the data. Fixed and emergent mixed methods designs were used where the principal researcher conducted the systematic review from the beginning followed by a quantitative stage and then qualitative stage for each participant group. One of the advantages of this methodology is that the stages do not need to be implemented at the same time, they have to be sequential (142, 146).

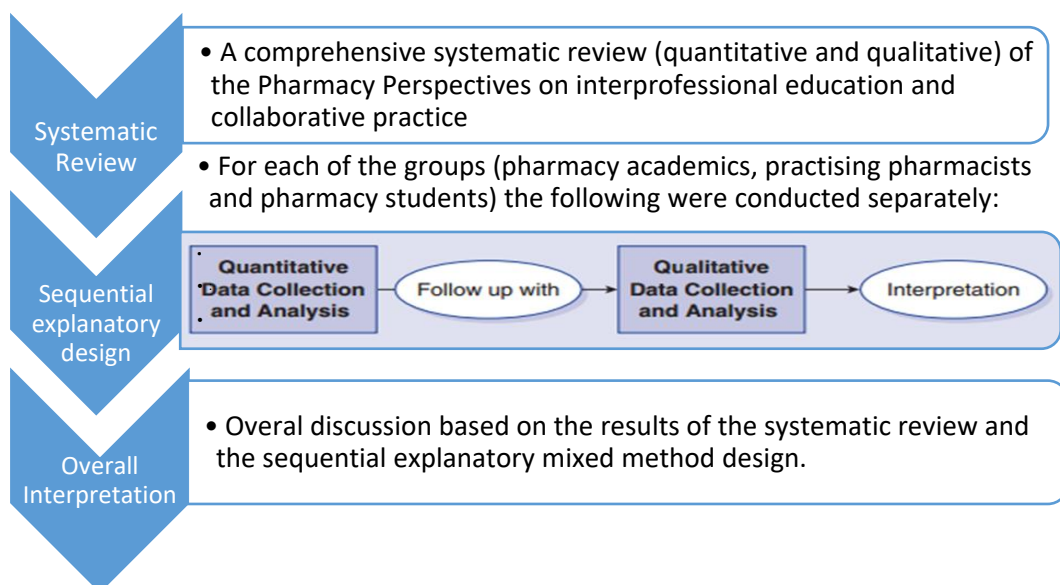


Figure 13. Sequential Explanatory Design (142)

### **2.3.2 Strengths of the design**

The explanatory design has many advantages, which includes the following (142):

- It is straightforward to conduct and implement. This design has two separate stages that are clearly laid out and follow on from each other.
- The result section does not need to be merged but can be clearly written as quantitative stage results followed by a section on qualitative stage results.
- The design of the second stage depend on the results of the first stage and can be designed accordingly.

### **2.3.3 Challenges of the design**

The explanatory design has a number of challenges, which includes the following (142):

- This design is time consuming and researchers need to be efficient with their stage one results to be able to move ahead with stage two.
- Researchers need to decide and have a plan on how to select results from the quantitative stage to explore further in the qualitative stage.

## **2.4 Methods used**

An appropriate mixed method design was chosen, the next step is to select the methods to be used. Method is defined as 'technique or procedure used to gather and analyse data related to some research question' (151).

### **2.4.1 Systematic review**

There is a need to ensure recommendations for health and education policy and practice is based on research evidence (155). Systematic reviews are one way to achieve this as they involve searching and analysing all the available evidence systematically (155). It has been defined as 'a review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review' (156). Although randomised controlled trials are considered the gold standards in generating evidence of effectiveness, other different types of evidence and approaches are being utilised in systematic reviews to generate answers on a given topic using one or all of the following: feasibility, appropriateness, meaningfulness and/or effectiveness (157). It should be borne in mind that systematic reviews are different from literature reviews as highlighted in Table 10.

Table 10: Key Differences Between Systematic Review and Literature Review Cited from Kysh (158)

	<b>Systematic Review</b>	<b>Literature Review</b>
<b>Definition</b>	High-level overview of primary research on a focused question that identifies, selects, synthesizes, and appraises all high quality research evidence relevant to that question.	Qualitatively summarizes evidence on a topic using informal or subjective methods to collect and interpret studies.
<b>Goals</b>	Answer a focused clinical question Eliminate bias	Provide summary or overview of topic
<b>Question</b>	Clearly defined and answerable clinical question Recommend using PICO as a guide	Can be a general topic or a specific question
<b>Components</b>	Pre-specified eligibility criteria Systematic search strategy Assessment of the validity of findings Interpretation and presentation of results Reference list	Introduction Methods Discussion Conclusion Reference list
<b>Number of Authors</b>	Three or more	One or more
<b>Timeline</b>	Months to years Average eighteen months	Weeks to months
<b>Requirements</b>	Thorough knowledge of topic Perform searches of all relevant databases Statistical analysis resources (for meta-analysis)	Understanding of topic Perform searches of one or more databases
<b>Value</b>	Connects practicing clinicians to high quality evidence Supports evidence-based practice	Provides summary of literature on a topic

A number of organisations exist to support, promote and publish systematic reviews in healthcare and these include: Cochrane database of systematic reviews; Joanne Briggs Library of systematic reviews; the Campbell Collaboration review and the Centre for Reviews and Dissemination (CRD reviews). Within the Robert Gordon University, the Scottish Centre for Evidence-based Multi-professional Practice (SEMP) is an affiliate centre of the Joanna Briggs Institute (JBI). As such, the principal researcher and the supervisory team have undergone JBI Comprehensive Systematic Review (CSR) training. The systematic review protocol has been developed and published according to JBI standards (159). The protocol explicitly highlighted all the key systematic review identified in Table 10. Different types of JBI reviews exist and these include:

1. systematic reviews of primary research studies (quantitative, qualitative, health economic evaluation);
2. comprehensive systematic reviews (a systematic review which considers two or more types of evidence, quantitative, qualitative, health economic evaluation, textual evidence);
3. systematic reviews of text and opinion data;
4. systematic reviews of systematic reviews or as known as umbrella reviews;
5. scoping reviews.

Comprehensive systematic reviews, which are also commonly known as mixed method systematic reviews, are still at its infancy and combines quantitative, qualitative or mixed methods research into one systematic review focused on the same topic and research questions (157). Comprehensive systematic reviews are being favoured to single method systematic reviews as with the latter it is common that they are either too narrow or do not yield

enough good quality evidence to answer the questions of the systematic review or develop actionable findings to inform policies and practice (160). Therefore, by including evidence from different types of research, mixed methods systematic reviews have the potential to enhance findings, maximise impact with more relevance to inform practice and policies (157, 160). Three designs of mixed method systematic reviews have been postulated. They include (161):

1. Segregated design: in this design the synthesis of quantitative and qualitative evidence is completed separately. The findings from both stages are then combined for a mixed method synthesis resulting in a conclusion or developing a theoretical framework.
2. Integrated design: in this design, the search, the appraisal and the conversion of data to the same format are completed for both quantitative and qualitative data simultaneously and are combined into a single synthesis (assimilation).
3. Contingent methodologies: in this design two or more synthesis are carried out sequentially i.e. one synthesis based on the result of the first.

Based on the systematic review question which was: what are the perspectives of pharmacy students, pharmacy faculty and practising pharmacists on IPE and collaborative practice, an integrated design was selected for the mixed methods systematic review as the findings from both the quantitative and qualitative research would be able to confirm or extend on the findings of each other. Additionally the findings from both studies would be assimilated in the mixed research synthesis (161). The Mixed Methods Appraisal Tool (MMAT) was used to critically appraise the included articles and to assess their quality. Please refer to Chapter 3 for further information on the systematic review.

#### **2.4.2 Explanatory sequential mixed method design**

This design involved two main stages: quantitative and qualitative.

##### **2.4.2.1 Quantitative stage**

The research aims to explore and measure perspectives and attitude of various groups and hence surveys are a good tool to assess evaluative components of the attitude and should be used as part of the evaluation strategy (136, 162). Surveys have commonly been used to provide attitudinal, behavioural and descriptive data and it is uncommon to have a survey focusing only on one of these categories as it is important for scientific research to investigate the relationship between these categories to fully understand the complexity of the sampled group (150, 163). This specific approach was used due to a number of factors (150, 162-164). This includes that a large amount of data can be collected in a fixed time frame with reduced cost in comparison to in person survey or interview. Another advantage is that the target respondent population is accessible and there are multiple methods available to distribute the survey i.e. online, mail, telephone or in person (163). In this research, an online survey was chosen for many reasons including low cost as there is no need to pay for sending emails,



completion at a convenient time for the respondent and ease of follow-up by sending email reminders with the goal of increasing the survey response rate. However, for those who were hard to reach or had an invalid email address (practising pharmacists), the principal researcher contacted them to obtain a personal contact email address or the survey was sent to their workplace to be filled and collected at a later agreed date. Furthermore, an appealing aspect of surveys is the availability of validated surveys in the literature that can be adapted to similar studies. Surveys can be self-completed and hence researcher effect can be eliminated. Additionally the data to be obtained are on a personal, self-reported nature which is required to explore the participant perspective. Surveys allow comparison between different groups and are able to provide a snapshot of the population with findings generalised from a small sub population to a larger population.

However, it should be noted that a poorly designed or implemented survey can affect the findings and conclusions deduced (162). Therefore, potential sources of error: sampling and non-sampling errors (measurement, processing and non-response errors) should be considered along with carefully thought strategies to overcome them (162). Additionally, with surveys there is no opportunity to prompt or probe the respondents if they have difficulty understanding the questions; there is a higher risk of missing some questions and data than in interviews and there is the risk of low response rate (164). As the survey is to be completed by the individual, there is a potential they may not understand all the questions. Therefore, contact information for the principal researcher was provided to allow the participant to contact the researcher for clarity and for further information. Additionally, some respondents may have excluded themselves from completing the survey as they may not be proficient in using the computer or do not speak English. However, from previous research, English surveys were used (107, 108, 165-167). For the first stage of the pharmacy perspectives, the follow eleven steps of the Survey Research process was used (Figure 14) (163):

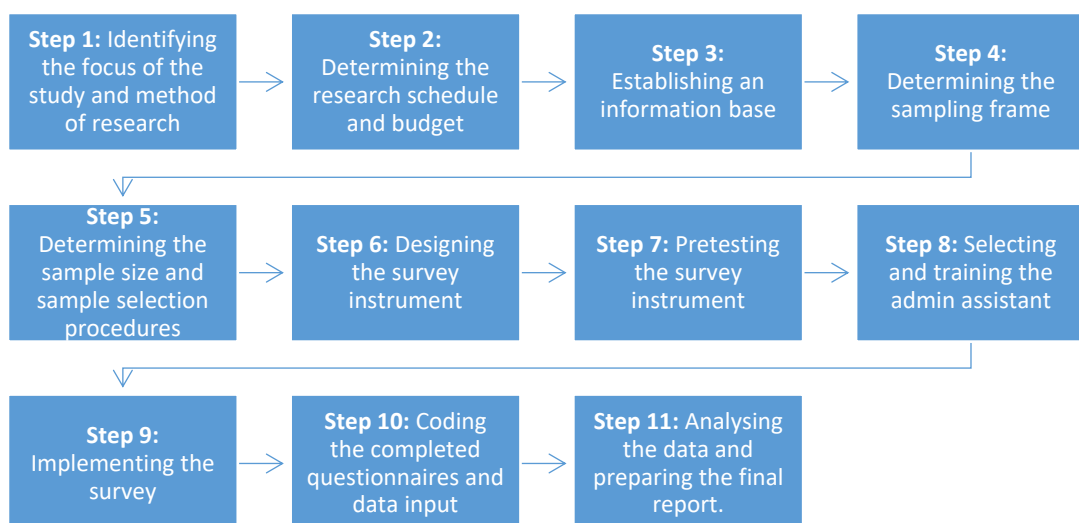


Figure 14. The Eleven Steps of the Survey Research process Used (163)

### *Step 1: Identifying the focus of the study and method of research*

Based on the above discussion and, in consultation with the supervisory team, survey design has been determined as the most appropriate method for data collection for stage one to explore the awareness, views, attitudes and perceptions towards IPE and collaborative practice of three groups:

- Pharmacy faculty in the Middle East;
- Pharmacy students in Qatar;
- Practising pharmacists in Qatar.

### *Step 2: Determining the research schedule and budget*

Two internal grants have been submitted and granted during the course of this PhD:

- Qatar University Internal Grant (Appendix 1):
  - An Exploration of Views, Attitudes and Perceptions of Pharmacists and Pharmacy students in Qatar to interprofessional education and multidisciplinary working. Approved (QR40000~10986.05USD) for the period between April 2013-April 2014.
- Qatar University Internal Grant (Appendix 2):
  - Interprofessional Education at Pharmacy Schools in Arabic-Speaking Middle Eastern Countries: An Investigative study. Approved (QR 88250~24238.48USD) for the period between April 2014-April 2015.

Data were collected according to an agreed schedule. The grant fund helped with hiring an administrative assistant who primarily assisted the principal researcher with the creation of the Middle East database and distributed the survey when online emails were not available. It also allowed a transcriber to be hired for the focus groups' audio recordings, providing catering for focus groups and purchasing gifts for the prize draw.

### *Step 3: Establishing an information base*

Within IPE, there is a lack of rigorous research designs and availability of well-validated measures to assess the impact IPE has on patient and professional practices and the inability to confirm the assumption that IPE will prepare students for collaborative practice (24, 168). A number of instruments are available to measure students' perspectives including the following profession specific instruments:

- Measuring Pharmacy and Medical Students' Attitudes Toward Physician-Pharmacist Collaboration (169);
- Student Perceptions of Physician-Pharmacist Interprofessional Clinical Education (SPICE) to measure changes in perception (170);
- Jefferson Scale of Attitudes Toward Physician-Pharmacist Collaboration in medical and pharmacy students (171, 172).

The above three were explored, however they were eliminated as the focus is on the physician-pharmacist interaction. However, the aim of this research is to look at pharmacy perspectives towards all healthcare professionals not just physicians. Large numbers of instruments for measuring attitudes toward IPE exist but unfortunately high quality instruments are not available (137, 173). One review identified and analysed twenty-three instruments used in the interprofessional literature (137). However, the majority of these instruments had limited satisfactory data on their psychometric properties and were found to have limited use. The principal researcher selected the two most widely adopted instruments that have also been psychometrically validated. These were: Readiness for Interprofessional Learning Scale (RIPLS), first published in 1998 with a focus on measuring readiness for IPE, and the Interdisciplinary Education Perception Scale (IEPS) which was first published in 1990 to explore attitudes relating to IPE experiences (137, 174). It has been argued that high scores on assessments of students' knowledge, skills and attitudes are an indicator of success for IPE programme and suggest a high level of readiness (175, 176).

The original RIPLS scale contains 19 statements and is categorised under the following headings: teamwork and collaboration; professional identity and roles and responsibilities. This tool is based on theories, practical applications and on the characteristics and conditions needed to achieve positive outcomes for IPE (50). Therefore, this tool was amongst the first set of baseline measures used before implementing IPE. It would be useful to have this type of measurement on entry to the programme and during it or if this was not feasible prior to any IPE intervention to see if there was as a change in attitudes which is crucial to ensure IPE has been effective (50). Additionally, the survey has been translated and adapted into different cultural context in countries around the world. This include: Australia (English (177, 178)); Brazil (Portuguese) (179), China (Chinese (180)), Denmark (Danish (181)), Canada (French (182)); Japan (Japanese (183)); Germany (German) (184), Indonesia (Indonesian (175, 185)); Iran (Persian (186)), Lebanon (English (71)), New Zealand (English (21)), Saudi Arabia (English (187)), United Arab Emirates (English (61), the United Kingdom (188, 189), Serbia (Serbian (14)), Singapore (English (190)), Sweden (Swedish (191, 192)), the United States (English (48, 193, 194)).

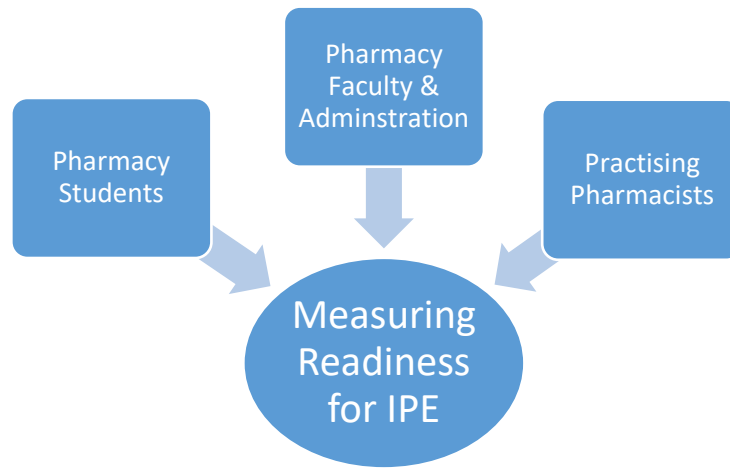
Although the use of RIPLS was favoured in this research, it is important to note that it has been recently criticised because of the lack of evidence for its validity (195, 196). The psychometric properties of the original scale, has been questioned, especially the roles and responsibility subscale with a Cronbach alpha of less than 0.43 (195). A number of modified instruments from the original RIPLS have been proposed to increase the psychometric properties of this important instrument (176, 196). Further work conducted by McFayden et al. found that the original instrument, which contained three sub-scales, had weak internal consistency for their sub-scales which is viewed as undesirable and unacceptable (196). Therefore, Mcfayden et al. proposed an additional subscale to improve reliability.

Additionally, the original RIPLS should be used with caution in that certain scales i.e. Roles and Responsibilities might not be suitable for junior inexperienced health care students as suggested by McFayden et al. (2005). Additionally, there has been uncertainty of what is actually measured in this instrument and that it lacks a strong theoretical framework (195). Furthermore, RIPLS has been designed to measure readiness to IPE but it is not sensitive to detect changes in attitudes (195). In this PhD thesis change in attitude is not desired at this stage as the focus is on the baseline attitude. A review of the advantages and disadvantages of using the RIPLS is highlighted in Table 11.

*Table 11: Advantages and Disadvantages of RIPLS (14, 50, 168, 175, 182, 184, 188, 195, 197-201)*

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Self-reported survey.</li> <li>• Useful in assessing readiness to IPE at baseline and before the incorporation of IPE initiatives.</li> <li>• Assess the impact various variables have on attitudes toward IPE.</li> <li>• Measure a change in attitudes and perception following pre, post-intervention and longitudinal.</li> <li>• Ease of you with 5 point Likert scale.</li> <li>• Divided into three subscales: teamwork and collaboration; professional identity and roles and responsibilities.</li> <li>• Variety of scales available that have been adapted to students, faculty and practising pharmacists.</li> <li>• Short time to complete (around 10 min).</li> <li>• Widely used in countries around the world and was found appropriate in different cultural contexts.</li> <li>• Widely reported in the IPE literature.</li> <li>• Translated and validated into a number of languages.</li> <li>• Based on a range of theories including: adult learning theory, social and psychological theories, group and team-functioning and professional expertise.</li> <li>• Demonstrated to be reliable and valid with good overall internal consistency.</li> </ul>	<ul style="list-style-type: none"> <li>• Favours positive responses.</li> <li>• Variation and the different translation of RIPLS make it difficult to compare findings.</li> <li>• Psychometric properties, stability, robustness and underlying factor structure of the instrument and subscales has been questioned.</li> <li>• Lack of sound theoretical framework behind the survey.</li> <li>• Different versions exist.</li> <li>• Its use measuring differences between groups and within the group is problematic</li> <li>• No clear instruction on reverse scoring of negatively worded items.</li> <li>• Not sensitive to detect meaningful change over time.</li> <li>• Difficulty to discriminate between those with highly positive vs less positive attitude.</li> <li>• Not sensitive to measure changes in attitudes for those with high level of readiness pre-intervention and those who had significant early exposure to IPE leading to ceiling effect.</li> <li>• Some revised versions resulted in four subscales.</li> </ul>

Since the focus of this research was on measuring readiness, RIPLS was favoured and selected to be used as it is the most often used validated tool measuring attitude to IPE. Similar versions of RIPLS have been validated for practising healthcare professionals (199) and healthcare faculty (46). Although the RIPLS scale has gained lots of popularity and criticism, the researcher believes that although in its modified versions it is a validated and reliable instrument, it is not a very comprehensive measurement of readiness to change according to the Holt's model discussed in chapter 1. Therefore, from an educational perspective to try to acquire a comprehensive picture about readiness of change, and in line with the discussion, the researcher is proposing measuring readiness in three different dimensions as shown in Figure 15, with the RIPLS as the base:



*Figure 15. Measuring Readiness for Interprofessional Education in Three Different Groups*

For students, the original scale has been modified and validated for the Middle Eastern context with good internal reliability (Chapter 5) (61). Furthermore, the Middle Eastern version is the most compatible with the Qatari context and an appropriate cultural comparator (71).

Although the original survey was developed to be used by healthcare students, it has been modified to be used for healthcare professionals and faculty. For example, a 19-item modified version of the RIPLS survey was validated using factor analysis to measure the readiness of postgraduate health care professionals. The study took place in Dundee/Scotland and respondents included physicians, pharmacists, nurses, and other health care professionals in a primary care organisation. From a total of 799 possible responders, 546 surveys were returned. The study demonstrated overall healthcare professionals in this study have positive attitudes towards interprofessional learning even though there were key differences between the different healthcare professionals (199). These differences should be noted when planning an interprofessional activity. This version was found to be reliable and valid in practising health care professionals and was used in this research for the practising pharmacists. Additional questions were adapted from the 33-item web-based survey developed by Baerg et al. (202) and added by the research team to meet all the study objectives.

The survey selected for faculty included three different validated scales, including the RIPLS, adapted for faculty members (See Chapter 4). To meet all the study's objectives, further questions based on published literature (32) and on the study team's previous IPE experiences were added to the survey to provide a broader perspective on IPE in the Middle East.

*Step 4: Determining the sampling frame*

A sampling frame has been defined as 'formal or informal lists of units or cases from which the sample is drawn' (203) p. 77. The sampling frame for the three groups was as follows:

- Pharmacy students in Qatar: all the university emails of pharmacy students studying at the College of Pharmacy in Qatar University.

- Practising pharmacists in Qatar: As mentioned in chapter 1, there is around 1000 pharmacists working in Qatar. Unfortunately, there were no formal lists or databases of practising pharmacists in Qatar. Therefore, the Qatar University College of Pharmacy database was used as it includes names and contact details of pharmacists in Qatar from various sectors. The database has been used in previous published research (204). This database contained around 557 pharmacists at the time of the study.
- Pharmacy faculty in the Middle East: a database of pharmacy schools in Arabic speaking Middle Eastern countries was created. In total, 89 pharmacy schools in 14 countries were listed in this database namely: Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Yemen, and United Arab Emirates and all were approached to take part in this study. It included individual available email address of deans, heads of departments, and faculty members in these universities.

*Step 5: Determining the sample size and sample selection procedures*

- Pharmacy students: The used technique was total population sampling where the survey was sent to all College of Pharmacy registered students registered in 2013 (n=132) (Chapter 5).
- Practising pharmacists: the sampling size was calculated using the Raosoft® online sample size calculator (205), to achieve a confidence level of 95% and a margin of error of 5% considering 50% response distribution. The sample size was increased by 25% to account for the non-response rate (Chapter 6).
- Pharmacy faculty: The technique used was total population sampling where the survey was sent to all pharmacy faculty on the list (Chapter 4).

Total population sampling was used for students and pharmacy faculty in Qatar as their total sample is not large and their list is easily accessible. Also, it maximised the response rate and did not limit the number of potential respondents. For pharmacy faculty outside Qatar, universal purposive sampling was used with no set sample size.

*Step 6: Designing the overall survey instrument*

Once the information base for the survey was established and after careful consideration and detailed discussion with the principal researcher and the supervisory team, RIPLS was used as the base for the three different surveys designed. Further questions were added to meet the research objectives and explore the perspectives further as shown in Table 12. These were based on discussion with the supervisory team and extensive review of the published literature on attitudes towards IPE and the enablers and barriers to implementation (56). Three different surveys were developed and were created on Snap 10 Professional®, which is a software that produces online, paper-based or even mobile versions of the survey (206). The supervisory team reviewed the draft survey for confirmation of the discussion and plan.

*Table 12: Questions in the Survey Instrument for the Three Groups*

Group	Further questions added
Faculty (Appendix 3 & 4)	<ul style="list-style-type: none"> <li>• Questions 1-7: Participant characteristics</li> <li>• Questions 8-24: IPE definition, opinions, experiences, future plans, and recommendations for IPE</li> <li>• Question 25:               <ul style="list-style-type: none"> <li>○ Scale 1: Attitudes toward Interprofessional Health Care Teams Scale (13 statements).</li> <li>○ Scale 2: Attitudes towards interprofessional education (RIPLS) (15 statements).</li> <li>○ Scale 3: Attitudes toward interprofessional learning in the academic setting (13 statements).</li> </ul> </li> <li>• Question 26-28: Additional comments on positive, negative and any other comments on IPE.</li> </ul>
Students (Appendix 5)	<ul style="list-style-type: none"> <li>• Questions 1-5: Participant characteristics</li> <li>• Questions 6-8: Experiences with IPE</li> <li>• Question 9: Readiness to Interprofessional Education Scale (20 statements).</li> <li>• Question 10-13: Comments on future plans and recommendations for IPE</li> <li>• Question 14: Additional comments on interprofessional Education.</li> </ul>
Practising pharmacists (Appendix 6)	<ul style="list-style-type: none"> <li>• Questions 1-8: Participant characteristics</li> <li>• Questions 9-21: IPE definition, opinions, experiences about IPE, and collaborative practice; self-assessment of IPC knowledge and skills; interest in IPC training; barriers to IPC training</li> <li>• Question 22: RIPLS.</li> </ul>

*Step 7: Pretesting the survey instrument*

The instruments were initially pretested for face and content validity by faculty members in Robert Gordon University and Qatar University as this was important to ensure the surveys read well and that the overall quality was refined (163). Piloting was on a random sample of students, practising pharmacists and pharmacy faculty who checked the survey for completion time, clarity, comprehensiveness, usability, and acceptability. The participants in the piloting stage were excluded from inclusion in the full study (See Chapters 4, 5, and 6). Minor changes were made to the wording and format of the survey to enhance readability and clarity. This was an important stage before the distribution of the survey.

*Step 8: Selecting and training the administrative assistant*

As part of the internal grant received, an administrative assistant was employed to support the project by assisting in creating the databases and distributing the survey. The assistant was oriented on the project's objectives and the target sites. In some cases, it was difficult to contact the site through phone to obtain email addresses so the administrative assistant travelled to these sites in person. Similarly, for pharmacy faculty in the Middle East, the administrative assistant had to contact several universities to obtain the email addresses of pharmacy faculty if these were not available on the university website or incorrect.

*Step 9: Implementing the survey*

As planned, the agreed survey was distributed ensuring it adhered to the ethical standards stipulated in the approved ethics applications. All surveys were sent by email as per the schedule. For those the principal researcher was not able to reach by email, a paper copy was

sent to them (applicable to practising pharmacists). The principal researcher implemented various methods to maximise response rate. Further information regarding the study was sent alongside a welcoming message at the beginning of the survey. This included the study background, the purpose of the study, the reason they have been selected, need for participation, possible benefits of participating, assuring confidentiality, the plan for disseminating results, the organiser and funder for this research, and that the study has been ethically approved (appendix 7). Informed consent was implied when the participant proceeded with the survey and submitted their completed responses.

Two email reminders were sent during the course of the survey implementation, a fortnight apart (See Chapters 4, 5, and 6). There was the opportunity to enter into a prize draw in each of the groups and this has been used before in Qatar to increase response rate (207). Evidence suggests that offering incentives resulted in significantly higher response rate (208-210). However, a number of ethical issues that need to be considered have been addressed in this research. These included distributing the incentives promised promptly, ensuring a fair mechanism is in place when selecting the winner, terms regarding the incentives were clear, and the selection of the incentive were appropriate (208). Furthermore, participation in the prize draw was voluntarily and participants had the choice to fill the survey but not participate in the prize draw.

#### *Step 10: Coding the completed surveys and data input*

Online submissions of the survey generated anonymised emails sent to the principal researcher. These were then compiled and sent to an eLearning technologist at Robert Gordon University who directly exported these surveys to the Statistical Package for Social Sciences, version 22 (IBM SPSS® Statistics for Windows; IBM Corp, Armonk, New York, USA) for analysis. Some surveys were submitted as paper copies and these were entered manually by the administrative assistant. A reliability check was randomly undertaken for 10% of paper submissions with 100% accuracy rate.

#### *Step 11: Analysing the data and preparing the final report.*

The principal researcher initially reviewed the exported SPSS file and cleansed the data by identifying blank entries, removing duplicates, identifying missing values and checking the exported codes. Data were analysed as follows:

- Descriptive statistics presented as frequencies and percentages were used to summarise results generated from the survey to fully describe respondents' views, attitudes, experiences, etc. For the purpose of analysing the Likert scale questions, the following scores were attributed: a score of 1= strongly disagree, 2 = disagree, 3 = undecided, 4 = agree and 5 = strongly agree (211). Overall, mean ratings for the three attitudinal scales were calculated and expressed as means and standard deviations



taking into consideration that a reverse coding technique was used for negatively worded statements.

- Inferential statistics to explore the influence of the respondent’s demographics and professional characteristics on their IPE attitudes and perspectives. Independent variables for each group were identified and then a series of independent *t*-tests were conducted or a one-way, between-groups analysis of variance (ANOVA ) and *post hoc* comparisons using the Tukey test were conducted as necessary (Please refer to Chapters 4, 5, and 6). T- test was used to compare means between two groups, whereas the one-way ANOVA was used to compare means between more than two groups (212). P values at  $\leq 0.05$  were considered significant.
- Reliability analysis was performed on each of the attitudinal scales by obtaining a value for Cronbach’s coefficient alpha.
- Open comments were analysed thematically with illustrative quotes used to describe keys themes.

Specific details regarding the analysis conducted for the different group is provided in Chapters 4, 5, and 6.

#### 2.4.2.2 Qualitative stage

Three common methods that can be used in qualitative research are participant observation and ethnography, interviews, and focus groups (147, 164). Table 13 provided a comparison between these three qualitative methods.

Table 13: Comparison between the Three Common Qualitative Research Methods (147, 164, 213)

Method	Ethnography and Participant observation	Interviews	Focus group
<b>Purpose</b>	<ul style="list-style-type: none"> <li>• The researcher gathers first hand data on a particular setting, process, or programme.</li> <li>• Can be used during formative or summative stages of evaluations.</li> <li>• The researcher immerses in a group for an extended period of time to observe behaviour, listen, ask questions, collects documents/field notes and writing notes.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide an insight into the individual participant perspective.</li> <li>• Three types exist: unstructured, semi structured, and structured interviewing.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide an insight into the perspective of a group of participants (usually between 4-12) who share similar characteristics on a specific topic.</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Insights into a natural setting that is unstructured and flexible.</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible as it seeks to understand the worldview of the participant and can</li> </ul>	<ul style="list-style-type: none"> <li>• Ability to discuss topics related to a similar group.</li> <li>• Explores opinions and views of the</li> </ul>

	<ul style="list-style-type: none"> <li>• Data is recorded as they occur.</li> <li>• Ability to identify unanticipated results or unusual observations.</li> <li>• Ability to gather information that may not be easily explored in interviews.</li> </ul>	<ul style="list-style-type: none"> <li>• explore or confirm data.</li> <li>• Can take different forms: in person or over the phone.</li> <li>• Ability to explore topics in depth.</li> </ul>	<ul style="list-style-type: none"> <li>• group in an unstructured format.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Challenging</li> <li>• Data collection and analysis can be time consuming</li> <li>• Expensive</li> <li>• Gaining access to the researched setting.</li> <li>• Need for a well trained observer.</li> <li>• Observer bias can affect the data collected.</li> <li>• High amount of data, including irrelevant data, can be generated.</li> <li>• Can be disruptive to the life of the researcher and those observed.</li> <li>• Researcher can be viewed as being intrusive.</li> </ul>	<ul style="list-style-type: none"> <li>• Data collection, transcribing and analysis can be time consuming and costly.</li> <li>• Elements of social desirability by participants may exist.</li> <li>• Participants may not be able to recall key information and may provide incorrect data.</li> <li>• Flexibility can pose an issue of inconsistency among all the interviews.</li> <li>• Large amounts of data can be collected.</li> <li>• Interviewer need to be well trained otherwise they may distort the data collected.</li> </ul>	<ul style="list-style-type: none"> <li>• Participants may agree to participate but do not turn up to the focus group 'no shows'.</li> <li>• Moderator needs to be well trained on how to facilitate focus groups effectively.</li> </ul>

This research does not relate to ethnography so this approach was excluded. Focus groups were selected, over interviews, as the most appropriate method for the qualitative stage following the quantitative stage. It is an invaluable tool and the most common mixed method combination, using sequential or parallel designs, to explore perceptions further after administering and analysing the survey (150, 214). Focus groups can be very helpful in understanding the perspectives of different groups, assessing their needs and identifying enablers, concerns, challenges, or even making recommendations for improvements and future plans (214). It is an opportunity for participants to reflect and listen to other views and experiences and compare them to their own (214). Although it is argued that in a focus group method researchers are not able to generate such a depth of information as one can with one-on-one interviews, it can still generate rich data with the potential for comparison between the different groups (153). Within a focus group, the researcher is able to generate a number of ideas and thoughts that can be developed by the other participants. This may allow some quieter participants to elaborate and defend their views in the company of their peers (153).

Additionally, the focus was on how individuals within the group discussed and explored IPE collectively rather than focusing on individual views which makes the focus groups the method of choice to study group perspectives, norms and meaning (153, 164). It is important to ensure the composition of the group is thoughtfully formed with the appropriate dynamic that allows flow of content, stimulates the conversation, and increases the speed of information generation. Focus groups can encourage participants to address a topic together. This topic could be something that they as individuals did not dedicate much thought or attention to before (153). The focus group allows participants to discuss issues together and probe each other to further explain certain perspectives. This can generate some useful data that would not have been identified during interviews (164). Below are the steps of the focus group's process used with a detailed description for each (163):

1. Planning the focus group;
2. Recruiting the participants;
3. Implementing the discussion sessions;
4. Analysing the results.

*Step 1: Planning the focus group*

The purpose of the focus group is to collect the views and perceptions of a group of interested participants to clarify and elaborate on the quantitative results from the first stage. The quantitative data and the literature review provided a general understanding of the research question. The qualitative data explored in more depth these attitudes, perceptions and experiences. It explored reasons behind what has been observed in the survey. During the focus groups, the researcher clarified meanings or observations noted from the survey. As such, several discussions and meetings with the supervisory team took place to analyse the quantitative results, reflect on the study's aims and objectives, and relate it to the literature. The following actions were agreed on:

- Seven focus groups were scheduled and convened. Participants were grouped on the basis of shared attributes, interaction, and experiences to put them at ease when discussing topics. Their perspectives was investigated further to see if differences existed between the different subgroups. Homogenous groups with similar characteristics tend to exchange their perspectives more freely than heterogeneous groups do; they are able to relate to one another (150, 163, 215). The groups were divided into the following groups for the reasons below:
  - Three focus groups for practising pharmacists based on their practice settings: community, hospital, and primary care. These practice settings vary significantly;

- Two focus groups for the students based on their practical experiences: junior (with no practical experiences) and senior (with practical experiences);
  - Two focus groups for the pharmacy faculty from the College of Pharmacy, Qatar University: teaching faculty (including faculty in clinical practice positions) and academic administrators.
- The focus groups were held in a meeting room in the College of Pharmacy campus, which was believed to be an appropriate facility to conduct the focus group in. It is a convenient place for students and faculty. Practising pharmacists work in different sites and settings and therefore the College of Pharmacy was considered an appropriate option for all. There was ease of access and accessible parking.
  - From the funding available through the internal grant, a light buffet lunch was provided to students and practising pharmacists to encourage participation. This is a way of providing incentives to enhance attendance (215).
  - The focus groups were scheduled during working hours for students and faculty and in the evening for the practising pharmacists to encourage and optimise participation.

#### *Step 2: Recruiting the participants*

Only respondents from the survey who indicated they were willing to participate in a focus group were invited. This provided a sampling pool for the focus groups and allowed the principal researcher to purposively select a sample that included an equal of distribution of representatives. The principal researcher sent the invitations with an information leaflet about the study (appendix 8) as an email invite, one month in advance, until a minimum of 10 had accepted the invitation, with the proviso that not all may attend. A reminder was sent again a week before the focus group scheduled date. Over-recruiting of participants has been recommended as a strategy in way to control for absences (164, 215). In this research focus groups ranged from 4 to 15 per group which was acceptable (214).

#### *Step 3: Implementing the discussion sessions*

A moderator guide (Appendix 9) to structure the discussion was developed in addition to questions to be asked (Appendix 10), based on the generated results from the quantitative survey stage and on good practice for conducting focus groups. The draft was discussed and agreed by the supervisory team. However, groups were free to discuss any additional topics they considered relevant. The guide was developed with a focus on the importance of IPE, implementation and opportunities, implementation and barriers, resources, and the practice. Although these are very specific, the questions generated were designed so that the focus groups were conducted in the same format to allow for comparison between groups during the analysis. The focus groups were moderated by the principal researcher and ample opportunities were given to explore further certain points raised by participants. An

independent observer, the researcher's principal supervisor, was present during the focus groups and took detailed notes, observing the group dynamics.

At the beginning of each focus group, the principal researcher highlighted the moderator guide, which explained the study, included housekeeping and ground rules, stated the CAIPE IPE definition (13) and assured of the confidentiality of their participation. All participants signed a consent form at the start of the focus group and were given the chance to ask questions (Appendix 11). They had the opportunity to introduce themselves and how long they have been at their job or university. The same discussion guide was used for the students, practising pharmacists, and faculty. Discussions lasted around two hours per group and were digitally audio recorded, with permission. The principal supervisor attended all focus groups, took notes during the focus group, and sought clarification on any points. At the end, the moderator sat with the observer and conducted a debriefing session on the focus group.

#### *Step 4: Analysing the results*

An independent experienced transcriber transcribed the audio files verbatim. Thematic analysis was undertaken on the transcripts as shown in Table 14. This is a process that involves reading through the transcripts to identify, analyse, and report themes (216). The six phases to the analysis are outlined below and adhered to in this research (216).

*Table 14: Thematic Analysis Phases Used in this Research (216).*

Phase	Description	How this was achieved in this research
<b>Becoming familiar with the data</b>	This is the basis of the analysis and should not be skipped. The researcher needs to be immersed in the collected data through transcribing (i.e. transcribing is completed by someone else, the researcher needs to check the transcribing against the audio recording for accuracy and for familiarisation) and re reading the data several times.	The principal researcher listened to the recordings and checked the transcripts for accuracy and reliability. The principal researcher then reviewed the transcripts several times for familiarization with the data, to immerse further with the content of the full transcription to ensure thorough understanding of the content.
<b>Generating initial codes</b>	Codes are used to identify relevant and interesting data. Coding is used to analyse the content of the entire data systematically or identify certain features of the data.	The principal researcher reviewed all the transcripts several times, and then coded the data manually.
<b>Searching for themes</b>	Once all the codes have been identified, the analysis is at a broader level that sort all the codes into themes and subthemes. During this phase of the analysis the researcher will be identifying emergent themes.	This step comprised identifying potential main themes and then the principal researcher sorted initial codes under the key emerging themes and subthemes. A second member of the supervisory team (LD/SJ) reviewed the transcripts to validate the main emerging themes, assuring reliability and validity.

<b>Reviewing themes</b>	Focuses on reviewing and refining the themes at two levels: level of the coded extracts and at the level of the entire data set. This phases ends with the generation of a thematic map.	Themes and subthemes were reviewed by the principal researcher and a thematic table was developed for this purpose.
<b>Defining and naming themes</b>	Defining and further refining of the themes occurs taking into consideration the themes, its scope and how they relate to each other.	All reserachers (AE/LD/SJ) met thereafter to discuss the coding and discuss similarities and differences until a consensus was reached on the key overarching themes and the subthemes under them. If no consensus was reached, the plan was to refer to the third supervisor (MH) for comments.
<b>Producing the report</b>	This is the writing up phase of the thematic analysis, showcasing the data in an analytical narrative with evidence from the data to highlight specific themes.	The principal researcher then wrote the report based on the validated theme with illustrative quotes.

## 2.5 Validation in mixed method research

Validity is concerned with ‘the meaningfulness of research components. When researchers measure behaviours, they are concerned with whether they are measuring what they intended to measure’ (217) p. 114. Reliability is ‘the extent to which measurements are repeatable – when different persons perform the measurements, on different occasions, under different conditions, with supposedly alternative instruments which measure the same thing’ (217) p. 106. For mixed methods research, discussion about validity has been argued it is still at the infancy stage (148). Creswell suggested if a mixed method research involving both quantitative and qualitative data, then there is a need to address the specific validity of each type of data. There are different ways, for quantitative data, to determine internal validity: face, content, criterion, and construct validity (Table 15).

*Table 15: Types of Survey Validation (218).*

Type of validity	Purpose	Strategy	How this was achieved in this research
<b>Face</b>	<ul style="list-style-type: none"> <li>Assess the appearance of the instrument by topic expert and/or potential respondents.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure the survey is easy to use, clear and reads well.</li> </ul>	The instruments were initially pretested for face and content validity by faculty members in Robert Gordon university and Qatar university. Piloting was then conducted with minor changes made as discussed above.
<b>Content</b>	<ul style="list-style-type: none"> <li>Assess whether the survey actually measures what it is intended to measure. This is usually determined by sending the survey to topic expert.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure credibility, accuracy, relevance, and content coverage of the survey.</li> </ul>	
<b>Criterion</b>	<ul style="list-style-type: none"> <li>Assess the ability of the survey to correlate with another survey that is deemed to be gold standard.</li> </ul>	<ul style="list-style-type: none"> <li>Compare it with a well-known survey.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable.</li> </ul>

<b>Construct</b>	<ul style="list-style-type: none"> <li>Assess the ability of the survey to relate to other variables or how it follows a pattern predicted by theory. This is a sophisticated type of validity that requires statistical analysis.</li> <li>Ensures the survey is able to evaluate the construct it was developed to measure.</li> </ul>	<ul style="list-style-type: none"> <li>It can be evaluated through different statistical forms, i.e. factor analysis.</li> </ul>	<ul style="list-style-type: none"> <li>The survey used was validated and there was no need to conduct a factor analysis.</li> </ul>
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For the quantitative stage, the principal researcher applied several strategies to ensure validity and reliability including using validated scales, piloting the survey and applying content and face validity to the survey used. This is in addition to measuring internal consistency for the Likert scale statements. A number of reliability tests are available (Table 16) with the test for internal consistency employed.

Table 16: Types of Reliability Tests (217, 219)

Types of reliability test	Purpose	How this was achieved in this research
<b>Test-retest reliability</b>	The correlation between scores on the same test given at different periods of time to the same cohort. This can be measured using Spearman's correlation.	Not applicable for this research.
<b>Internal consistency</b>	Measure consistency within the survey by evaluating how respondents' responds to individual statements.	This was measured using Cronbach's alpha which measures how consistently respondents responded to attitude scales for the different surveys.
<b>Inter-Rater Reliability</b>	Measure the degree of agreement among raters/observers. This is usually calculated using Pearson correlation as an example.	Not applicable for this research.

Lincoln and Guba proposed the following criteria for judging the quality of quantitative research and offered alternative matching criteria for qualitative research with several strategies adopted to ensure validity and reliability in the qualitative phase (Table 17). This included: triangulation of focus groups method findings with survey results and peer debriefing.

Table 17: Methods for Validity and Reliability in Qualitative Research (164, 219-221).

Qualitative	Quantitative match	Description	Strategies used in this research
<b>Credibility</b>	Validity: internal	This refers to the results of the research being credible and believable.	<ul style="list-style-type: none"> <li>• Respondent validation where participants read the transcripts to ensure it accurately represent the discussion could have been employed in this research. However, as participants were assured that focus groups sessions are to be kept confidential, it was decided not to share focus groups with the group so others do not have a written access to what others discussed.</li> <li>• Triangulation by using mixed methods was employed to confirm and complete collected data to allow for a comprehensive picture of the topic of IPE.</li> <li>• Peer debriefing where members of the supervisory team (LD/SD) validated the codes and generated themes.</li> </ul>
<b>Dependability</b>	Reliability	This refers to whether the study can be replicated and whether findings are consistent over time.	<ul style="list-style-type: none"> <li>• This is achieved by ensuring a complete record is kept and documented for all phases of research.</li> <li>• Reflexivity was considered by providing background information about the principal researcher, under the bias section, to provide the reader with factors that may have influenced the researcher.</li> </ul>
<b>Confirmability</b>	Objectivity	This refers to the researcher being neutral and not based on the researcher assumptions and biases.	<ul style="list-style-type: none"> <li>• A complete record is kept for all phases of research.</li> <li>• Reflexivity by ensuring personal experiences of the principal researcher is provided to the reader.</li> </ul>
<b>Transferability</b>	Validity: external	This refers to the degree the findings from the research can be generalised or applicable to other settings.	<ul style="list-style-type: none"> <li>• Thick description where there is emphasis on the context and settings was provided in the introduction and discussion so others can decide if it can be transferred into their context to acquire generalisability.</li> </ul>

Furthermore, Creswell defines validity in mixed method research as ‘employing strategies that address potential issues in data collection, data analysis and the interpretations that might compromise the merging or connecting of the quantitative and qualitative strands of the study and the conclusions drawn from the combination’ (142) p 239 (Table 18).



Table 18: Potential Validity Threats from Connecting Data and Strategies Employed.

Potential validity threats for connecting data proposed by Creswell (142)	Strategies used to minimise the threat in this research
<b>Data collection issues</b>	
Selecting inappropriate individuals for the quantitative and qualitative data collection	Individuals for the focus group were selected from those who have completed the survey for the quantitative phase.
Using inappropriate sample sizes for the quantitative and qualitative data collection	A large sample was used for the quantitative phase and a smaller size was used for the qualitative phase.
Choosing inadequate participants for the follow-up who cannot help explain significant results	As above, participants for the focus group were chosen from those who had completed the survey for the quantitative phase first.
Not designing an instrument with a sound psychometric properties	The base of the survey used for the three groups was a validated instrument.
<b>Data analysis issues</b>	
Choosing weak quantitative results to follow up on qualitatively	The findings from the systematic review and quantitative results were discussed in detail with the supervisory team before deciding on the key issues to follow up during the focus group.
Including qualitative data in an intervention trial without a clear intent of its use	The purpose of using focus group had been outlined and how it will complement the quantitative data has been discussed.
<b>Interpretation issues</b>	
Comparing the two data sets when they are intended to build rather than merge	The results of the quantitative phase were used to build the questions that needed to be explored in the qualitative phase. The analysis of both was based on the interpretation of the mixed method research question.
Interpreting the two databases in reverse sequence	The interpretation of the results was based on the design of the mixed method study i.e. quantitative followed by qualitative.
Irreconcilable differences among different researchers on a team	The researcher and the supervisory team agreed on the overall research project objectives and plan.

## 2.6 Bias

Bias in research can occur at different stages of the research process, including the study design, data collection, data analysis, or during the publication stage. Such potential for bias can lead to misinterpretation of data and is a major threat to the reliability and validity of the research (222, 223). Researchers should try to minimise this whenever possible and to try to outline bias sources to allow for better evaluation of the findings, and more accurate conclusions (224). Most important of all is to be aware that there is a bias at all. Table 19 shows the different types of bias and the strategies implemented in this research to minimise it and improve validity and reliability.

Table 19 Types of Biases Including Strategies Adopted in this Research (223).

Type of bias	Description	Strategies implemented in this PhD research to minimize bias
<b>Acquiescence response set 'yes-saying'</b>	Participants tend to respond with an agreement to statements rather than disagreeing with them.	Clear statements about the purpose of the research was sent with the survey/focus group and reemphasised at the beginning of focus groups.
<b>Assumption bias</b>	Wrong assumptions by the researcher leading to	The study proposal and surveys were thoroughly discussed with the supervisory

	inaccurate interpretations and conclusions.	team, reviewed by an expert in the field and then piloted.
<b>Design bias</b>	Inappropriate designs, methods, sampling, or analysis leading to inaccurate findings not reflecting true findings.	Clearly articulating the rationale and reason behind choosing sequential explanatory mixed method research design to meet the study aims and ensuring the steps for the design was followed.
<b>Evaluation apprehension</b>	Participants may feel anxious under assessment and hence provide responses they believe are expected by the researcher rather than their true responses.	All the surveys were filled at a time that suited them, eliminating apprehension bias. During the focus group, an opportunity for informal conversation at the beginning and introductions again to eliminate apprehension bias.
<b>Interviewer bias</b>	The interviewer intentionally or unintentionally uses leading questions and hence moves the discussion in a certain direction.	This was minimised by ensuring the moderator followed a topic guide for all the focus groups.
<b>Mood bias</b>	Participants' mood may affect the way they respond.	Not very relevant to this research, but a light buffet was provided with refreshments.
<b>Non response bias</b>	The difference in characteristics between responders and non responders and can significantly affect having an effective sample size.	The researcher tried several methods to maximise response rate with sending further information about study and reminders. There was also the opportunity to enter a prize draw.
<b>Observer bias</b>	The observer perception affects the way they interpret the situation.	This was minimised by ensuring the moderator followed a topic guide for all the focus groups and to effectively facilitate rather than being part of the discussion.
<b>Publication bias</b>	Results with statistical significance, positive results and over emphasising differences are only the ones that tend to result in publications.	All results have been reported.
<b>Recall bias</b>	This is when the participant is being selective in recalling information from their past experiences.	This was minimised by not asking participants about long ago events.
<b>Reporting bias</b>	This is when the participants do not report all the information requested.	Clear statement that anonymity is granted.
<b>Response style bias</b>	This when participants provide similar responses for all the statements without reading each statement carefully.	Clear statement of purpose of research and time required to complete was provided.
<b>Sampling bias</b>	Inappropriate sampling procedure resulting in inadequate representation of the population of interest leading to a selection bias.	Random sampling was used for practising pharmacists and a population sample for students and faculty.
<b>Social desirability</b>	This occurs when the participants provide favourable responses so they are viewed by others at their best.	Clear statement of purpose of research was provided.

## **2.7 Reflexivity**

Another important bias to clarify is author bias or better known as reflexivity which demonstrates an awareness on how the researcher's own bias, belief, value, experience and personal background may affect the data collection, interpretation or even the direction of the research (147). In this study, the principal researcher is an experienced clinical pharmacist with over nine years of experience practising pharmacy in Scotland in different sectors including community, hospital and primary care. She proactively supported and advised patients to obtain maximum benefit from their treatment and worked with different members of the multidisciplinary team founded on research-based evidence, successfully complying with professional standards and adhering to clinical governance principles. She has worked with different prescribers at diverse settings to implement prescribing strategies and undertook projects to promote quality and cost-effective prescribing. Currently, she is an active member of the academic team at the College of Pharmacy in Qatar. Although the principal researcher was not involved in the initial IPE experiences discussed in this thesis, the researcher is a clinical lecturer and has taught participating students and worked with the participating faculty which may have affected the response. However, this may be perceived positively as it may have created a sense of trust. Additionally, it did not deter participants from comprehensively expressing their views at the focus group. The principal researcher was always identified as a student researcher outlining the purpose of the research, using the same standard introduction in the focus group (see appendix 9), and assuring participants that no negative consequences would be incurred in the case of none participation or withdrawal from the study. Additionally, steps were taken as outlined in tables 15 and 17 to ensure validity and reliability of the survey and focus groups approach.

The College of Pharmacy is continuously striving to achieve excellence and innovation in pharmacy education and research and is very supportive of implementing IPE within its curriculum. Therefore, the principal researcher came to this research with positive attitudes regarding the importance of IPE and collaborative practice based on previous work experience. The researcher supervisory team held similar attitudes with their expertise in the topic. To minimise such bias, regular meetings were held with the supervisory team to discuss progress, findings and plans. Furthermore, it is worth noting that prior and during the data collection (survey and focus group), the principal researcher did not hold any IPE related position nor was tasked with any IPE related activities. The researcher was able to successfully establish an IPE Committee in May 2014 following completion the survey and focus group stage (57). Additionally, the principal researcher had formal opportunities to present the findings in conferences and through publication of some parts of this thesis (see outputs at the beginning of this thesis) and was able to answer questions, participate in discussions, and justify the research approach.

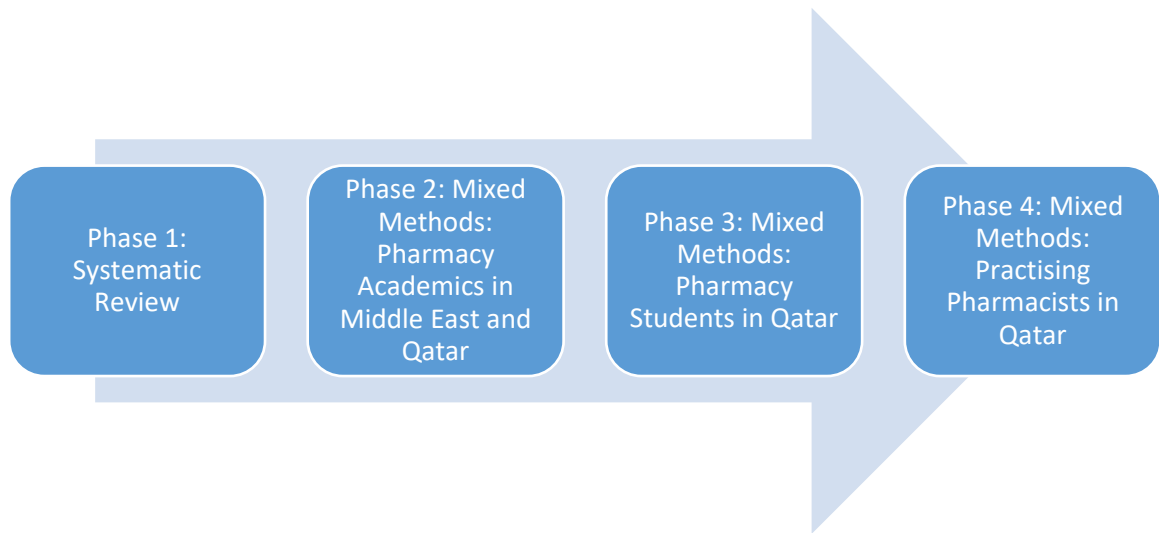
## **2.8 Ethical considerations**

Ethics approval is crucial in ensuring that research methodology and design are suitable to address the research issue and provide valuable guidance when planning robust and ethically sound research projects (224). This research does not involve any medical intervention or invasive procedures. Participation in this study was voluntary and informed consent was implied when the participant submitted their completed responses for the survey and the signed consent form for participating in the focus group. A cover letter and participant information sheet were attached to the invitation to take part and to inform them of why they were being contacted; how information about them will be obtained; and what will happen to that information if they decide not to participate. Participants also had opportunities to ask questions before signing the consent form and were given the reassurance that non-participation carried no negative consequences. They were informed that they could withdraw from the study at any time.

All related study documentation forms generated from this research are retained in a locked cabinet at Qatar University College of Pharmacy. No identifiable data are on the forms. All electronic files are anonymised and coded and held in a password protected laptop. Audio recordings have their audio component transcribed and anonymised and are stored in electronic files accessed from a password-protected laptop. All files (electronic and paper based) will be stored securely for a minimum of five years following the publication of reports or articles resulting from this research and then securely destroyed or shredded.

A detailed proposal was prepared and reviewed by the research team and submitted for approval to the Robert Gordon University (RGU) School of Pharmacy and Life Sciences Ethics Review Boards. The proposal was approved (Appendix 12 & 13). Thereafter, an ethics application was submitted to Qatar University ethics and approved (Appendix 14 & 15). All ethical approvals were in place before the onset of data collection.

## 2.8 Schematic summary of the research approaches



*Figure 16. Phases for the PhD research*

# Chapter 3: A Comprehensive Systematic Review of Pharmacy Perspectives on Interprofessional Education and Collaborative Practice

## 3.1 Background

Although pharmacists are integral members of the healthcare team, their perspectives towards IPE and collaborative practice is largely unknown. Systematic reviews on IPE date back to 1999 and all found no rigorous quantitative research evidence on the effects of IPE (37). Table 20 summarises the main systematic reviews to date focusing on IPE. In the 'Best Evidence Systematic Review of IPE' published in 2007, most of the studies evaluated IPE delivered to healthcare students during their undergraduate studies. Most participants were from medicine, nursing, and physiotherapy, with lack of involvement of pharmacy students (22). This finding was echoed in other reviews; medicine and nursing were the most represented professions, with less representations by other health care fields, including pharmacy (23, 225). The pharmacy profession was represented in the primary literature reviewed but its perspective and inclusion was not explicitly researched or highlighted. Hence, there is a need to conduct a systematic review to investigate literature specifically exploring the pharmacy perspective on IPE. Furthermore, after searching the Cochrane collaboration's database, JBI Database of Systematic Reviews, and implementation reports, and general literature, the researcher believes that no systematic review with a uniprofessional healthcare perspective on IPE has been undertaken. Therefore, this review is unique in that it will be the first to investigate a single healthcare profession's perspectives about IPE and collaborative practice and the first to highlight specific pharmacy perspectives. It is crucial to identify mechanisms needed to develop innovative teaching strategies for meaningful IPE opportunities for students and practitioners alike and also to explore how pharmacy as a profession can contribute to an interprofessional culture in healthcare settings.

Table 20: Existing Systematic Reviews on IPE

Date	Authors	Title	Objectives	Databases used	Number of articles	Authors' conclusion
1999	Zwarenstein M, Atkins J, Barr H, Hammick M, Koppel I, and Reeves S (37)	A systematic review of interprofessional education	To assess the effects of IPE interventions on collaborative working between different professionals, and on the quality and outcomes of care provided to patients/clients.	Medline (from 1966) and CINAHL (from 1082).	The search strategy identified 510 from Medline and 552 articles from CINAHL. Of these, 39 articles from Medline and 44 from CINAHL were selected.	No rigorous quantitative evidence exists on the effects of IPE. No published evidence that IPE promotes IPC or improves patient outcomes.
2001	Zwarenstein M, Reeves S, Barr H, Hammick M, Koppel I, and Atkins J (226).	Interprofessional education: effects on profession practice and health care outcomes	To assess the usefulness of IPE interventions compared to education in which the same professions were learning separately from one another.	Cochrane register, MEDLINE (1968 - 1998) and CINAHL (1982 - 1998). Journal of Interprofessional Care was hand searched (1992 - 1998), the Centre for the Advancement of Interprofessional Education Bulletin (1987 - 1998), conference proceedings, the 'grey literature', and reference lists of articles.	The search strategy initially identified 1042 articles, of which 89 were selected. These studies did not meet the inclusion criteria.	Lack of methodological rigor was noted in these studies. This is essential to establish an evidence base for the impact of IPE on professional practice and health care outcomes.
2001	Cooper, H, Carlisle, C, Gibbs, T, and	Developing an evidence base for interdisciplinary	To explore the feasibility of introducing interdisciplinary education within	Various online databases. Dates not mentioned.	The search strategy identified 141 articles but only 30 were included in the analysis because of lack of	Beneficial experience to students with improvement in in

	Watkins, C (227).	learning: a systematic review	undergraduate health professional programmes.		methodological rigor in the research and poorly developed outcome measures.	knowledge, skills, attitudes and beliefs. Impact of these experiences on professional practice in not apparent. Limited use of theories to guide development of IPE interventions.
<b>2007</b>	Clifton M, Dale C, and Bradshaw C (228).	The impact and effectiveness of inter-professional education in primary care: an RCN literature review	To describe the range and extent of IPE in primary care. To identify literature that reports on the impact and effectiveness of IPE in primary care. To evaluate the literature in terms of methodologies. To analyse the literature to identify common themes. To identify the best practice in primary care IPE. To identify gaps in the evidence Make recommendations about future developments in primary care IPE.	The review focused on Medline, CIHNAL and Social Care Online for the period 2000-2006	The search strategy identified 583 research articles, 67 were considered and 20 were included.	No high quality evidence on the effectiveness of IPE in primary care.



<b>2007</b>	Hammick M, Freeth D, Koppel I, Reeves S, and Barr H (22).	A best evidence systematic review of interprofessional education: BEME Guide no. 9	To identify and review the strongest evaluations of IPE. To classify the outcomes of IPE and note the influence of context on particular outcomes. To identify and discuss the mechanisms that underpin and inform positive and negative outcomes of IPE.	Medline 1966–2003, CINAHL 1982–2001, BEI 1964–2001, ASSIA 1990–2003	The search strategy identified 10,495 abstracts. 884 full articles were selected. 21 article were included.	Importance for governments calls for enhanced collaboration. Staff development is crucial. The need to ensure IPE activities are authentic and customised to ensure positive outcomes. IPE is well received leading to enhancement in the knowledge and skills needed for collaborative practice.
<b>2008</b>	Davidson M, Smith R A, Dodd K J, Smith J S, and O’Loughlan M J (225)	Interprofessional pre-qualification clinical education: a systematic review	To identify the requirements for a good prequalification interprofessional clinical education experience To identify enablers and barriers to implementing such a programme.	Medline, CINAHL and EMBASE from the earliest available year – 2006, PubMed 2000 – 2006, reference lists of included articles, and identified reviews and key text books.	The search strategy identified 420 abstracts. 51 full articles were selected. 25 were included.	Aims and activities of IPE programme varied with inconsistencies in outcome evaluation approach and tools. Diverse IPE models highlighted in the literature. Logistical barriers were the main challenges reported. Key elements needed for IPE success include: detailed planning, stakeholder enthusiasm and commitment. No conclusive evidence on best

						IPE model or approach.
<b>2008</b>	Reeves S, Zwarenstein M, Goldman J, Barr H, Freeth D, Hammick M, and Koppel I (24).	Interprofessional education: effects on professional practice and health care outcomes	To assess the effectiveness of IPE interventions as compared to education interventions in which the same health and social care professionals learn separately from one another. To assess the effectiveness of IPE interventions as compared to no education intervention.	Cochrane register, MEDLINE and CINAHL (1999 – 2006). Hand searched the journal of interprofessional care (1999-2006), relevant conferences, textbooks and IPE organisations websites.	The search strategy retrieved 1801 abstracts, 56 identified, and then six studies (four randomized controlled trials and two controlled before and after studies) were included.	Limited studies to make decisive conclusions about key factors required for IPE effectiveness that is generalizable. More rigorous IPE studies are essential to provide conclusive evidence about the impact of IPE on professional practice and healthcare outcomes.
<b>2013</b>	Lapkin S, Levett-Jones T, and Gilligan C (1).	A systematic review of the effectiveness of interprofessional education in health professional programs	Identify the best available evidence for the effectiveness of university-based IPE for health students.	1. AMED 2. CINAHL 3. Cochrane Central Register of Controlled Trials (CENTRAL) 4. Dissertation and Theses 5. EMBASE 6. ERIC 7. Journals@Ovid 8. MEDLINE 9. ProQuest 10. PsycINFO (2000–2011) Also, hand searched:	The search strategy identified 4217 articles, of which 75 articles were deemed potentially relevant to this review, based on the assessment of title and abstracts. Nine published studies were included in the review: three randomised controlled trials, five controlled before and after studies and one controlled longitudinal study.	IPE can enhance student's perspectives towards IPC and clinical decision making. However, further research is needed as the evidence justifying the use of IPE to teach communication skills and clinical skills is lacking. Limited evidence is available of the impact of IPE long term and whether the gains of IPE can be sustained over time.

				<p>1. Journal of Interprofessional Care</p> <p>2. Conference Proceedings</p> <p>3. Directory of open access journals</p> <p>4. Mednar</p>		
<b>2013</b>	Reeves, S., Perrier, L., Goldman, J., Freeth, D., and Zwarenstein, M (2).	Interprofessional education: effects on professional practice and healthcare outcomes (update) (Review)	<p>To assess the effectiveness of IPE interventions as compared to separate, profession-specific education interventions.</p> <p>To assess the effectiveness of IPE interventions as compared to no education intervention.</p>	<p>Cochrane register, MEDLINE and CINAHL (2006 - 2011). Hand searched the Journal of Interprofessional Care (2006 - 2011), reference lists of all included studies, the proceedings of leading IPE conferences, and websites of IPE organisations.</p>	<p>The search strategy identified 2733 abstracts. 28 studies were selected and 9 were included: 8 randomized controlled trials (RCTs), 5 controlled before and after (CBA) studies and 2 interrupted time series (ITS) studies. These were added to the previous 2008 updates which included six studies so a total of 15 studies.</p>	<p>Some positive outcomes reported. However, these are still based on a small number of studies and the heterogeneity of interventions and outcome measures. Therefore, still inconclusive evidence about key elements of IPE and their effectiveness.</p>
<b>2014</b>	Olson R, Bialocerkowski A (229).	Interprofessional education in allied health: a systematic review	<p>To describe the:</p> <ul style="list-style-type: none"> <li>Models of university-based allied health IPE in terms of, but not limited to, the mode of delivery and duration of IPE activities, class</li> </ul>	<p>Ten databases were searched: AMED, EMBASE, CINAHL, Cochrane, Medline, Pubmed, PEDro, Sportdiscus,</p>	<p>The search strategy identified 600 abstracts. 69 studies were selected and 17 were included: 9 mixed methods studies, 3 qualitative studies and 5 quantitative studies</p>	<p>Large gaps exist between IPE context theory and the method. Lack of studies looking at longitudinal outcomes in terms of behaviour and patient care.</p>

			<p>sizes, placement of IPE activities within the curriculum, participating health professions, institutional and student characteristics;</p> <ul style="list-style-type: none"> <li>• Outcomes associated with university-based allied health IPE in terms of, but not limited to, process outcomes, patient and client outcomes and their sustainability.</li> </ul>	Science Direct and Web of Knowledge. Reference lists of included articles		Need for studies that focus on understanding the processes behind IPE and how it can have a long term impact on outcomes.
<b>2014</b>	Sunguya BF, Hinthong W, Jimba M and Yasuoka J (58)	Interprofessional Education for Whom? — Challenges and Lessons Learned from Its Implementation in Developed Countries and Their Application to Developing Countries: A Systematic Review	To examine: Challenges of implementing IPE to suggest possible pathways to overcome the anticipated challenges in developing countries.	Four databases were searched: PubMedMEDLINE, CINAHL, PsycINFO, and ERIC	The search strategy identified 2146 abstracts. 102 studies were selected and 40 were included.	Ten challenges to implementing IPE have been identified. These were: curriculum, leadership, resources, stereotypes, students' diversity, IPE concept, teaching, enthusiasm, professional jargons, and accreditation. These barriers need to be taken into consideration when integrating IPE in curricula.

## **3.2 Aims**

To conduct a comprehensive systematic review of the literature focusing on the perspectives of pharmacy students, pharmacy faculty and practising pharmacists on IPE and collaborative practice.

## **3.3 Methods**

A review protocol was developed for this systematic review based on the Joanna Briggs manual which has been approved and published in the JBI Database of Systematic Reviews and Implementation Reports following a peer review process at RGU and within JBI (159).

### **3.3.1 Inclusion and exclusion criteria**

#### 3.3.1.1 Types of participants

The quantitative and qualitative components of this comprehensive systematic review considered studies including as participants pharmacy students (undergraduate and postgraduate), practising pharmacists (community, hospital, and primary healthcare) and pharmacy faculty (teaching in academic institutions).

#### 3.3.1.2 Types of Intervention(s)/Phenomena of interest

The quantitative component of the review considered studies investigating IPE and collaborative practice. More specifically, studies investigating the perspectives of pharmacy students, pharmacy faculty, and practising pharmacists towards IPE and collaborative practice were considered. The qualitative component of this review considered studies investigating the phenomena of interest in the perspectives, attitudes, views, and experiences of pharmacy students, pharmacy faculty, and practising pharmacists toward IPE and collaborative practice.

Any quantitative or qualitative methods of capturing the perspectives, experiences, attitudes, and views of pharmacy students, pharmacy faculty, and practising pharmacists towards IPE and collaborative practice.

#### 3.3.1.3 Types of outcomes

This review considered studies that included the following outcomes: quantitative and qualitative outcomes that included participant perspectives including experiences, attitudes, or views on IPE as captured by surveys or any other instruments capturing quantitative data.

#### 3.3.1.4 Context

The context was university academic settings and pharmacy practice settings such as community, hospital, and primary healthcare worldwide.

### 3.3.1.5 Types of studies

Studies were included if they involved either quantitative or qualitative analysis capturing perspectives, attitudes, views, and experiences of pharmacy students, pharmacy faculty, and practising pharmacists towards IPE and collaborative practice. They had to be published in English between 2000 and 2015. We excluded studies outside these dates, language, and context.

### 3.3.2 Search strategy

The search strategy aimed to find both quantitative and qualitative published studies. A three-step search strategy was used in this review as follows:

1. An initial limited search of MEDLINE and CINAHL was carried followed by an analysis of the text words contained in the title and abstract, and of the index terms used to describe articles to ensure comprehensiveness of search terms to be used in the next step.
2. A search using all identified keywords and index terms was undertaken across all included databases.
  - a) Interprofession\* or Inter-profession\* or Multidisciplin\* or Multi-disciplin\* or Multiprofession\* or Multi-profession or \*Shared learning or Team\* or interdisciplin\* or inter-disciplin\* or Collaborative practice,  
and
  - b) Pharma\*  
and
  - c) Perspectives or Attitudes or Experiences or Views or Opinion or Belief or Intention or Understanding or Knowledge
3. All the reference lists of identified articles were searched for any additional relevant studies.

Medline and Embase are the most commonly used databases used to identify studies related to health care interventions (156) with Medline and CINAHL featuring the largest number of healthcare articles (155). However, not all pharmacy related literature is covered in these databases and hence Scopus was also included to broaden the coverage. In addition, this study used the Cochrane Database of systematic review and JBI Database of systematic review to broaden the IPE literature covered. Searching these databases were deemed sufficient, as there was significant overlap between the databases and these were commonly used in the IPE systematic review (Table 21). All databases were searched from 2000 to 2015 and searches were completed by February 2016. The reason for focusing only on this period is to capture the most recent trends in IPE. Only studies published in English and were peer reviewed were considered for inclusion in this review. Abstracts, conference proceedings, and reviews were excluded.

Table 21: Databases Used

Database	Description
<b>Medline</b>	Medline is published by the US National Library of Medicine. A comprehensive life sciences research database with titles dating back to 1946 with a focus on medicine and health sciences. It has more than 23 million records from over 5600 journals in over 40-60 languages. It is the online equivalent to MEDLARS® (MEDICAL Literature Analysis and Retrieval System) (230).
<b>CINHAL</b>	It is the Cumulative Index to Nursing and Allied Health literature. It has more than 3.6 million record in over 3100 journals with a focus on nursing, biomedicine, health sciences, complementary medicine and seventeen allied health field. Many of which is not covered by MEDLINE or Scopus (231). In addition to journals it include textbook, dissertation and conference proceedings (232). It dates back to 1981 (231).
<b>Embase</b>	A comprehensive biomedical research database with titles dating back to1947 with special focus on pharmacology, pharmaceutical science and clinical research. It has more than 32 million records including MEDLINE titles from over 8500 journals from more than 95 countries around the world. It covers over than 60 topic areas. Thirty percent of the articles are not covered by MEDLINE. It is useful to be used for pharmacovigilance, systematic reviews and biomedical research (233). It is published in the Netherlands and is considered as European MEDLINE (231).
<b>Scopus</b>	Scopus was established is 2004 and is considered a comprehensive database containing abstract and citation from peer reviewed literature. It has more than 21500 titles from over 5000 publishers dating back 1966. Fields covered are classified under 4 subject areas: life sciences, physical sciences, health sciences and social sciences & humanities (234). It is considered also as a database on interdisciplinary research published in Amsterdam (231).

### 3.3.3 Screening

A total of 8512 hits were obtained from the four databases. Initial screening by the principal researcher (AE) against the inclusion/exclusion criteria of the protocol resulted in 91 articles selected. For these articles, titles and abstracts were examined for relevance based on the research objectives and protocol inclusion/exclusion criteria by two independent reviewers (AE/LD). Any discrepancies arising were discussed with a third reviewer familiar with this research (SJ/MH). This assessment resulted in 61 articles deemed eligible for full-text assessment. These were independently checked by AE/LD or AE/SJ to ensure consistency and reliability of the process. Twenty-nine articles were identified as meeting the inclusion/exclusion criteria from the first initial search of 8512 articles. This is highlighted in the below PRISMA chart (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Figure 17), which highlights the process of the systematic review and the various steps involved (235).

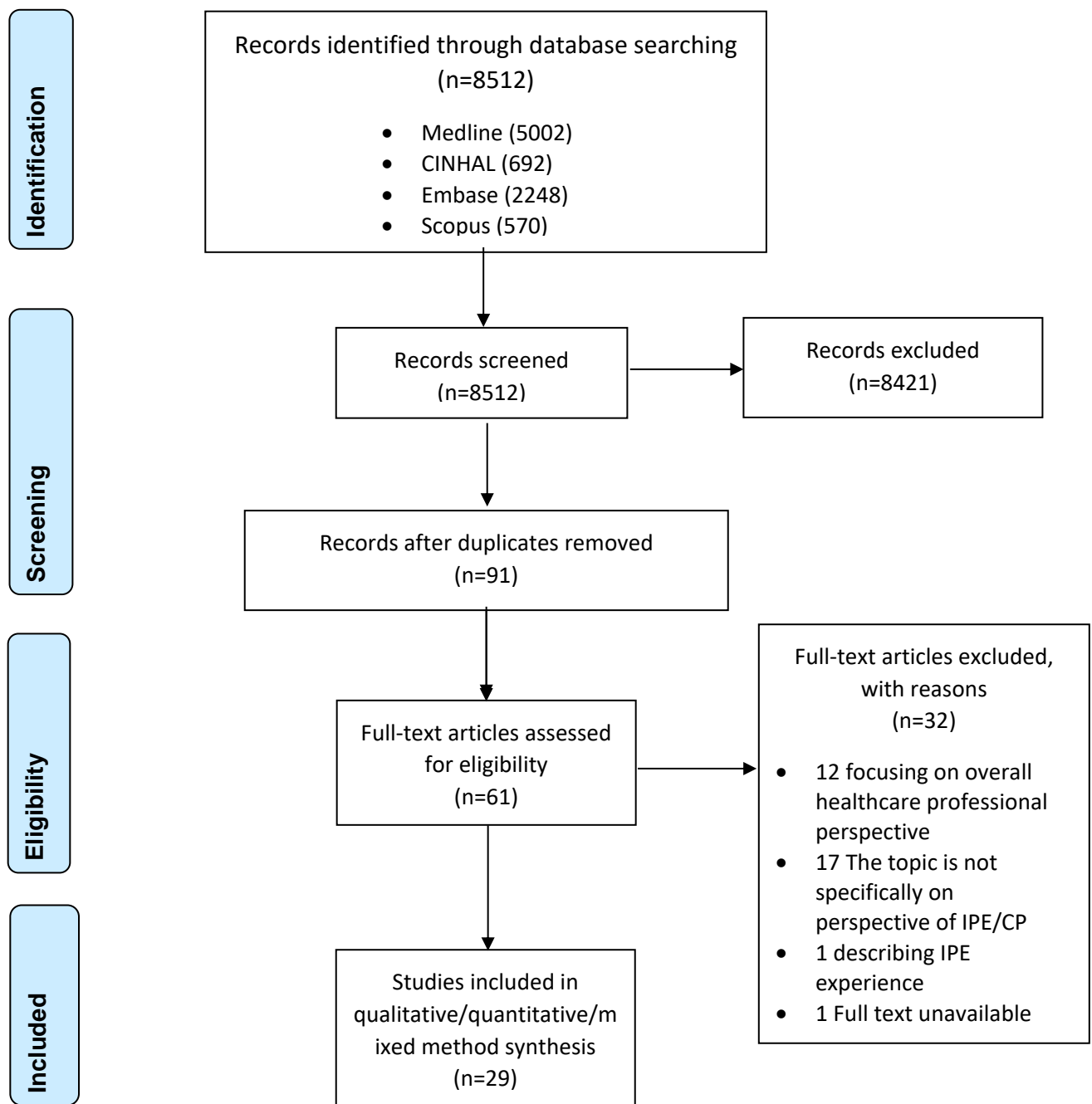


Figure 17: PRISMA Chart for Paper Selection Process

### 3.3.4 Data Extraction:

A data extraction form was developed by the principal researcher (AE) and reviewed by the research team (LD, MH and SJ). Two researcher pairs (23 articles AE and LD; 16 articles AE and SJ; 16 articles AE and MH) independently extracted data on year, country, pharmacy author lead, authors, title, main objectives, study setting, methods of data collection, duration of IPE activity where applicable, key findings regarding pharmacy perspectives, and limitations (Table 22, Table 23, Table 24). Any disagreements arising between the reviewers was resolved through discussion to reach consensus, or with a third reviewer.



Table 22: Data Extraction for Study Focusing on Students

Year, Country Pharmacy Authors	Authors Title	Main objectives	Participants, Study Setting	Methods of Data Collection (name of tool used) Duration of IPE Activity	Key findings regarding Pharmacy Perspectives
2001 New Zealand 0/3 N	Horsburgh et al. Multiprofessional learning: the attitudes of medical, nursing and pharmacy students to shared learning	To quantify: <ul style="list-style-type: none"> <li>the attitudes of first-year medical, nursing and pharmacy students' towards interprofessional learning, at course commencement.</li> </ul>	1st year: <ul style="list-style-type: none"> <li>Medicine (n=79)</li> <li>Nursing (n=49)</li> <li>Pharmacy (n=52)</li> </ul>	Survey RIPLS Within 4 weeks of the commencement of their studies	Perceived Benefits of IPE: <ul style="list-style-type: none"> <li>Positive attitudes towards shared learning.</li> <li>Better patient care</li> <li>Improve professional working relationships.</li> <li>More effective team working.</li> <li>Enhance relationships with other professionals.</li> </ul> Differences: <ul style="list-style-type: none"> <li>No important differences between the attitudes of the three groups.</li> <li>More certain about what their professional role would be than were the medical students.</li> </ul> Limitations: <ul style="list-style-type: none"> <li>The term interprofessional and shared learning have been mixed.</li> <li>No prep post intervention.</li> <li>Students at the beginning of their careers and did not yet have a professional identity</li> </ul>
2008, Canada 0/4 N	Curran et al. Attitudes of health sciences students towards	To examine: <ul style="list-style-type: none"> <li>the attitudes of health sciences students towards interprofessional teams and IPE.</li> </ul> To identify:	Medicine (n = 195) Nursing (n=762) Pharmacy (n=113) Social Work (n = 109)	Survey A 14-item Likert scale adapted from Heinemann, Schmitt & Farrell	Perceived Benefits of IPE: <ul style="list-style-type: none"> <li>Positive attitude toward the concept of interprofessional healthcare teamwork.</li> </ul> Differences:

	interprofessional teamwork and education	<ul style="list-style-type: none"> <li>specific attributes of students which might influence these attitudes.</li> </ul>		A 15-item Likert scale RIPLS	<ul style="list-style-type: none"> <li>Significant differences in attitude between different professions exist. Significantly more positive attitude was noted in pharmacy and social work students in comparison to Medicine and nursing students.</li> </ul> <p>Attributes significantly affecting positive attitudes:</p> <ul style="list-style-type: none"> <li>Profession, gender (female), prior IPE experience and year of study (senior).</li> </ul>
<b>2012 0/1 N UK</b>	Layzell et al. Evaluation of the learning experiences afforded through multipractice learning in primary care: a project in the development of a multiprofessional learning organisation	<p>To evaluate:</p> <ul style="list-style-type: none"> <li>a multiprofessional learning environment in which undergraduate pharmacy students were attached to general practices to learn alongside general practice specialist trainees.</li> </ul>	<p>Survey: Pharmacy, 3rd (n=27) 2 x Focus group:  <ul style="list-style-type: none"> <li>(n=14) &amp; (n=13)</li> </ul> </p>	<p>Mixed methods study, using a sequential explanatory approach'. (surveys followed by focus groups.) 2 parts: learners view and Interdisciplinary Education Perception Scale</p>	<p>Benefits of IPE:</p> <ul style="list-style-type: none"> <li>Unique learning experiences.</li> <li>Opportunities to practise professional roles.</li> <li>Interrogation of professional boundaries.</li> <li>Better understanding of the organisation of primary care.</li> <li>Pharmacist perceived by physicians as an expert resource regarding medicines.</li> <li>Increase in understanding the values of others (not statistical significant).</li> </ul> <p>Challenges to IPE:</p> <ul style="list-style-type: none"> <li>Pharmacists' perceived low status, undervalued and disenfranchised.</li> <li>Interactions of power play between doctors and other team members.</li> <li>Perceived differences in professional standing.</li> </ul>

					<ul style="list-style-type: none"> <li>Physicians were trained diagnosticians, naturally leading the multiprofessional team.</li> <li>Older doctors unwilling to accept Pharmacist opinions.</li> <li>Primary care doctors difficult to access.</li> <li>Deprofessionalisation: lowering academic standards at entrance to university, Poor public image (shopkeeper) and not accepted by the general public as important members of the healthcare team, erosion of pharmacist role by successive government policies.</li> <li>Need to increase the breadth of their professional roles, promote their profession and closer interprofessional working.</li> <li>Potential conflict of interest</li> <li>Make-up of the interprofessional team</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>One cohort.</li> <li>Social desirability.</li> </ul>
<b>2012, USA 2/8 N</b>	Wamsley et al. The impact of an interprofessional standardized patient exercise on attitudes toward working in	To describe and evaluate: <ul style="list-style-type: none"> <li>an interprofessional standardized patient exercise (ISPE) and its impact on students' attitudes toward working in interprofessional teams.</li> </ul>	Case: <ul style="list-style-type: none"> <li>Dentistry (n=23)</li> <li>Medicine (n=26)</li> <li>Nursing (n=21)</li> <li>Pharmacy (n=24)</li> </ul>	quasi-experimental design pre- and post-ISPE & Satisfaction survey, focus group  20 items survey on attitudes toward	Benefits of IPE: <ul style="list-style-type: none"> <li>Significant improvement on the team value and team efficiency but not physician's shared role on teams.</li> <li>High satisfaction with the activity from faculty and students.</li> </ul>

	interprofessional teams		<ul style="list-style-type: none"> <li>Physical therapy (n=7)</li> </ul> <p>Control:</p> <ul style="list-style-type: none"> <li>Dentistry (n=19)</li> <li>Medicine (n=47)</li> <li>Nursing (n=27)</li> <li>Pharmacy (n=50)</li> <li>Physical therapy (n=9)</li> </ul> <p>Focus group:</p> <ul style="list-style-type: none"> <li>Pharmacy (n=6)</li> <li>Medicine (n=5)</li> <li>Nursing (n=4)</li> <li>Dentistry (n=2)</li> <li>Physical therapy (n=6)</li> </ul> <p>Clinical Skills Centre</p>	health care teams (ATHCT) survey, a validated survey containing representing  4-hour simulation exercise	<ul style="list-style-type: none"> <li>Learnt more about their own roles and about the roles of other healthcare professionals in an interprofessional team.</li> <li>Foster collaboration in interprofessional teams.</li> <li>Greater appreciation of other professions.</li> <li>Increased their confidence in interacting with other healthcare professionals.</li> </ul> <p>Challenges to IPE:</p> <ul style="list-style-type: none"> <li>Limited clinical experience of the pharmacy students</li> </ul> <p>Differences:</p> <ul style="list-style-type: none"> <li>Significant differences in attitudes toward team based care by profession.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>Voluntary nature of participation could bias results.</li> <li>Unclear whether the improvement in their attitudes persisted over time.</li> </ul>
<b>2013 USA 7/7 Y</b>	Bottenberg et al. Assessment of interprofessional perceptions and attitudes of health professional students in a simulation laboratory setting	<p>To describe:</p> <ul style="list-style-type: none"> <li>the interprofessional experience of medical, pharmacy, and nursing students involved in a private medical school's simulation laboratory.</li> </ul> <p>To evaluate:</p> <ul style="list-style-type: none"> <li>descriptive data gathered from Perceptions and Attitudes survey entitled.</li> </ul>	<ol style="list-style-type: none"> <li>Medicine (n=118)</li> <li>Pharmacy (n=45)</li> </ol>	<p>Post assessment survey</p> <p>A 24-item survey based on the Index of Interdisciplinary Collaboration, ATHCT Scale, the RIPLS tool, and the Inter-disciplinary Education Perception Scale</p>	<p>Benefits of the IPE:</p> <ul style="list-style-type: none"> <li>Beneficial experience</li> <li>Positive attitude toward the IPE simulation experience.</li> <li>Positive perception toward each other and multidisciplinary training.</li> <li>High level of respect and willingness to participate in multidisciplinary patient care exercises.</li> </ul>

				<p>simulation laboratory, located in a medical school</p> <p>20-30 min simulation activity</p> <p>30-60 min discussion session</p>	<ul style="list-style-type: none"> <li>Teams worked well together and improved the quality of patient care.</li> </ul> <p>Challenges to IPE:</p> <ul style="list-style-type: none"> <li>Less favourable to the idea that the participants worked well together (Pharmacy students not used to simulation as medical students).</li> </ul> <p>Differences:</p> <ul style="list-style-type: none"> <li>Statistically significant differences noted with medicine being more positive than pharmacy.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>No pre–post survey data.</li> <li>Not all the professions were assessed.</li> <li>No equal representation of healthcare students.</li> </ul>
<p><b>2013</b></p> <p><b>USA</b></p> <p><b>6/7 Y</b></p>	<p>Maldonado et al.</p> <p>Impact of Participation on a Solid Organ Transplant Team on Student Pharmacists' Perceptions of Interprofessional Roles</p>	<p>To examine:</p> <ul style="list-style-type: none"> <li>student pharmacists' perceptions of interprofessional roles before and after completing an advanced pharmacy practice experience.</li> <li>the impact of IPE during experiential learning.</li> </ul> <p>To explore:</p> <ul style="list-style-type: none"> <li>possible factors which may have contributed to student pharmacists' opinions regarding interprofessional collaboration.</li> </ul>	<ul style="list-style-type: none"> <li>Pharmacy (n=37)</li> </ul> <p>Other professions involved: Nursing, Medicine, Dentistry, Allied Health and others</p> <p>Solid organ transplant programme</p>	<p>Online pre- and post-APPE survey instrument based on:</p> <ul style="list-style-type: none"> <li>items used by Dobson and colleagues in their study on quality improvement to promote IPC among students</li> <li>Clark's Interdisciplinary Team Weekly Inventory</li> </ul> <p>Solid organ transplant internship</p>	<p>Benefits of IPE:</p> <ul style="list-style-type: none"> <li>Positive changes in interprofessional perceptions in the areas of roles and responsibilities, interprofessional communication, teams and teamwork.</li> <li>Positive impact of the experience.</li> <li>Experiential learning impacted on the improved positive perspective</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>Low response rate.</li> <li>Perception of pharmacy students only.</li> </ul>

<p><b>2013</b> <b>USA</b> <b>3/4 Y</b></p>	<p>Shrader et al. An Interprofessional Geriatric Medication Activity within A Senior Mentor Program</p>	<p>To evaluate:</p> <ul style="list-style-type: none"> <li>the impact of participation in the geriatric medication activity on pharmacy and medical students' attitudes toward interprofessional collaboration.</li> </ul> <p>To determine:</p> <ul style="list-style-type: none"> <li>student satisfaction with the experience.</li> </ul>	<ul style="list-style-type: none"> <li>pharmacy students (n=55)</li> <li>medical students (n=101)</li> </ul> <p>university</p>	<p>pre- and post-activity survey design &amp; collaborative team essay, satisfaction survey. The Scale of Attitudes Toward Physician-Pharmacist Collaboration IPE activity over a semester in a senior mentor programme</p>	<p>Benefits of IPE:</p> <ul style="list-style-type: none"> <li>Positive attitudes regarding interprofessional relationships maintained or significantly improved.</li> <li>Enhanced their geriatric training and increased their understanding of an interprofessional team.</li> <li>value of IPC and interprofessional teams.</li> <li>Satisfaction with the interprofessional learning experience.</li> </ul> <p>Challenges to IPE:</p> <ul style="list-style-type: none"> <li>Scheduling conflicts.</li> <li>Integrating pharmacy students into the senior mentor programme earlier so that more interprofessional activities would be possible.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>Low response rate due to matching of pre- and post-activity survey responses.</li> <li>Focused on one cohort.</li> <li>Changes noted were limited to a smaller standard deviation or an improvement of only 1 point on the Likert scale.</li> </ul>
<p><b>2013</b> <b>Singapore</b> <b>2/5 N</b></p>	<p>Ahmad et al. Are first-year healthcare undergraduates at an Asian university</p>	<p>To examine:</p> <ul style="list-style-type: none"> <li>the readiness of first-year medical, nursing, pharmacy and dentistry students' toward IPE prior to undertaking IPE</li> </ul>	<p>freshmen orientation week:</p> <ul style="list-style-type: none"> <li>dentistry (n=41)</li> <li>medicine (n=226)</li> <li>nursing (n=75)</li> </ul>	<p>A quantitative comparative descriptive design 29-item modified version of the Readiness for</p>	<p>Perceived benefits to IPE</p> <ul style="list-style-type: none"> <li>High readiness to IPE on entry.</li> </ul> <p>Attributes:</p> <ul style="list-style-type: none"> <li>No significant differences noted when the overall RIPLS scores were</li> </ul>

	ready for interprofessional education?	activities and at course commencement.	<ul style="list-style-type: none"> <li>pharmacy (n=118)</li> </ul>	<p>Interprofessional Learning Scale (RIPLS)</p> <p>freshmen orientation week</p>	<p>compared with different demographic variables, which include gender, age, ethnicity, prior experiences interacting with other health professional and family members who are health professionals.</p> <p>Differences:</p> <ul style="list-style-type: none"> <li>Highly significant differences among the different professions for overall attitudes.</li> <li>Significantly less readiness was reported by pharmacy and dentistry students when compared to medical students.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>Participants were of the same age and ethnic group.</li> <li>Focus on a single outcome measure: student's readiness.</li> </ul>
<p><b>2014, USA</b></p> <p><b>3/4 Y</b></p>	<p>Wilhelm et al.</p> <p>Interprofessional ethics learning between schools of pharmacy and dental medicine</p>	<p>To examine:</p> <ul style="list-style-type: none"> <li>student perceptions and knowledge of interprofessional ethical decision-making processes.</li> </ul>	<p>1. Pharmacy (n=82)</p> <p>Dental students (n=51)</p> <p>University</p>	<p>pre–post intervention quasi-experimental research design</p> <p>RIPLS, pre-/post-individual ethics knowledge quiz, pre-team ethics knowledge quiz and post-student perception survey</p> <p>A case based IPE ethics activity (two 2hrs sessions that</p>	<p>Benefits of IPE:</p> <ul style="list-style-type: none"> <li>Favourable attitude with high readiness prior to session.</li> <li>Enjoyed the experience and desired to have more IPE.</li> <li>Case discussions, teamwork and getting to know the other professional students.</li> <li>Enhancement of knowledge gained.</li> </ul> <p>Challenges to IPE:</p> <ul style="list-style-type: none"> <li>IPE cases (need to be more varied and apply for all participating profession).</li> </ul>

				are three weeks apart)	<ul style="list-style-type: none"> <li>Scheduling.</li> <li>Not same knowledge base for students.</li> </ul> Differences: <ul style="list-style-type: none"> <li>No statistically significant differences between dental and pharmacy students at baseline and post sessions.</li> </ul> Limitations: <ul style="list-style-type: none"> <li>Only two sessions with a short 3-week timeframe between the two sessions.</li> <li>RIPLS scale not sensitive enough to detect changes.</li> </ul>
<b>2014 USA 2/2 Y</b>	Shrader et al. Multiple Interprofessional Education Delivered Longitudinally Within a Required Clinical Assessment Course	To determine: <ul style="list-style-type: none"> <li>if the incorporation of multiple IPE activities delivered as a longitudinal curriculum within a required clinical assessment course changed pharmacy students' perceptions regarding interprofessional collaboration.</li> </ul>	Pharmacy, 3rd year (n=71) Other profession	Pre- and post-survey 18-item validated survey instrument, Interdisciplinary Education Perception Scale (IEPS) Clinical Assessment (3-credit-hour applications-based course): Nine separate IPE activities over the semester (20min-3hrs).	Benefits of IPE: <ul style="list-style-type: none"> <li>Students had positive perceptions prior to session.</li> <li>Significant improvement in pharmacy students' perceptions regarding IPC following longitudinal IPE activities with most positive changes noted in competence and autonomy.</li> </ul> Limitations: <ul style="list-style-type: none"> <li>Long term impact of the significant improvement noted maybe questioned.</li> <li>Single method used.</li> <li>Only one cohort studied.</li> </ul>
<b>2015, USA 2/5 N</b>	Liu et al. Design and evaluation of interprofessional cross cultural communication sessions	To evaluate: <ul style="list-style-type: none"> <li>the perceived effectiveness of IPE sessions designed to improve culturally competent communication among</li> </ul>	Pharmacy students (n=80) Nursing students (n=80)  University	Pre-test–post-test survey Clinical Cultural Competency Questionnaire (CCCQ), a knowledge quiz and a	Benefits of the IPE: <ul style="list-style-type: none"> <li>Positive impact on their attitude, knowledge and ability related to working with other healthcare professionals and serving diverse patients.</li> </ul> Differences:



		pharmacy and nursing students.		perception survey at the end. 2 IPE sessions with one month apart.	<ul style="list-style-type: none"> <li>No differences were observed between the two professions in their perceptions</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>Only two sessions were conducted, which may be insufficient to achieve meaningful data.</li> <li>No control group</li> </ul>
<b>2015, USA 3/5 Y</b>	Rotz et al. Exploring first-year pharmacy and medical students' experiences during a longitudinal interprofessional education program	<p>To explore:</p> <ul style="list-style-type: none"> <li>student-reported experiences relating to IPE core competencies within our combined IPE courses.</li> </ul> <p>To identify:</p> <ul style="list-style-type: none"> <li>key emergent themes related to the overall student experience.</li> </ul>	Pharmacy students (n=9) Medical students (n=9)	Focus group x 3  Student run clinic 24 week ambulatory clerkship	<p>Benefits of IPE:</p> <ul style="list-style-type: none"> <li>Positive and beneficial experience.</li> <li>Positive attitude.</li> <li>Respect, trust and appreciation of other healthcare professions.</li> <li>Cooperation in interprofessional settings.</li> <li>Share goal for patient centred care.</li> <li>Learnt more about their advanced pharmacists' role.</li> </ul> <p>Challenges to IPE:</p> <ul style="list-style-type: none"> <li>Lack of consistency in preceptors' understanding of IPE.</li> <li>Lack of communication due to patient scheduling and physical space in patient rooms during internships.</li> <li>Disconnect between student expectations and actual experiences.</li> <li>Not prepared for the experience and uncomfortable with the</li> </ul>

					<p>limitations in their knowledge and skills.</p> <p>Limitations:</p> <ul style="list-style-type: none"> <li>• The experience does not apply to IPE courses with different professions.</li> <li>• Lack of faculty development affected students' experiences in some sites.</li> <li>• The focus group participants' experiences may not reflect those who did not to participate.</li> <li>• Small sample size.</li> <li>• Focus group coders were pharmacists, which may affect the interpretation of the results.</li> </ul>
<p><b>2015, USA 0/6 N</b></p>	<p>Judge et al. Evaluation of students' receptiveness and response to an interprofessional learning activity across health care disciplines: An approach toward team development in healthcare</p>	<p>To explore:</p> <ul style="list-style-type: none"> <li>• if an interdisciplinary educational activity improves student readiness for interprofessional learning.</li> </ul>	<ol style="list-style-type: none"> <li>1. Dental (n=42)</li> <li>2. Medicine (n=79)</li> <li>3. Physical therapy (n=62)</li> <li>4. Nursing (n=77)</li> <li>5. Pharmacy (n=27)</li> <li>6. Dietetics (n=18)</li> </ol>	<p>A pre-test post-test design Readiness for Interprofessional Learning Scale (RIPLS): 19-item Likert scale survey 4h interdisciplinary educational programme</p>	<p>Benefits of the IPE:</p> <ul style="list-style-type: none"> <li>• Positive Attitude but not significant improvement in RIPLS score post IPE activity for the entire cohort including pharmacy.</li> </ul> <p>Differences:</p> <ul style="list-style-type: none"> <li>• Pharmacists had the highest mean RIPLS score pre-test and post-test score in comparison to other profession involved. This could be due to IPE activity topic relevant to pharmacy students.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>• Short duration of IPE activity, requirement to travel to a different campus, and grouping with undergraduate</li> </ul>

					and graduate level disciplines may have contributed to reduced readiness.
<b>2015, USA 0/9 N</b>	Lehrer et al. Peer-led problem-based learning in interprofessional education of health professions students	To determine: <ul style="list-style-type: none"> <li>if peer-teacher-led problem-based seminars can influence medical and pharmacy students' perceptions of IPE.</li> </ul>	Case: <ol style="list-style-type: none"> <li>Medicine (n=19)</li> <li>Pharmacy (n=10)</li> </ol> Control: <ol style="list-style-type: none"> <li>Medicine (n=43)</li> <li>Pharmacy (n=29)</li> </ol> University	Case control study design Interdisciplinary Education Perception Scale (IEPS): 18-item likert scale survey & Barrier survey  one-hour problem-based learning  seminars held over the course of 16 weeks	Benefits of IPE: <ul style="list-style-type: none"> <li>Higher perception of professional cooperation.</li> </ul> Challenges to IPE: <ul style="list-style-type: none"> <li>Lack of awareness of IPE programme.</li> <li>Lack of time to participate.</li> </ul> Differences: <ul style="list-style-type: none"> <li>Pharmacy students perceived a significantly higher need for professional cooperation and interdependence than medical students.</li> </ul> Limitations: <ul style="list-style-type: none"> <li>Limited to two professions.</li> <li>Voluntary nature of participation.</li> </ul>
<b>2015, Saudi Arabia 4/4 Y</b>	Khan et al. Study investigating pharmacy students' interprofessional perceptions toward the pharmacy profession in Saudi Arabia	To assess: <ul style="list-style-type: none"> <li>Doctor of Pharmacy (PharmD) students' interprofessional perceptions about the pharmacy profession in Saudi Arabia.</li> </ul>	Pharmacy (n=218)  University	Survey 26 item survey (Interdisciplinary Education Perception Scale (IEPS)  No IPE activity	Perceived benefits of IPE: <ul style="list-style-type: none"> <li>Improve pharmacists' cooperation with other healthcare professionals.</li> </ul> Perceived challenges to IPE: <ul style="list-style-type: none"> <li>Pharmacists' work is not well acknowledged by other health care professionals.</li> <li>Pharmacists have a lower status than other health care professionals.</li> </ul> Attributes affecting attitudes: <ul style="list-style-type: none"> <li>Gender (male).</li> <li>Age group (senior students).</li> <li>Previous job experience.</li> <li>Attendance at a workshop.</li> </ul>

					<ul style="list-style-type: none"> <li>Hospital/community pharmacy training in the last six months.</li> </ul>
<p><b>2015, USA 1/9 N</b></p>	<p>Arenson et al.</p> <p>The health mentors program: three years experience with longitudinal, patient-centred interprofessional education</p>	<p>To describe</p> <ul style="list-style-type: none"> <li>the implementation of a required longitudinal IPE programme relying on lay persons as educators.</li> </ul> <p>To identify:</p> <ul style="list-style-type: none"> <li>short-term process outcomes for continuous curriculum improvement.</li> </ul> <p>To evaluate:</p> <ul style="list-style-type: none"> <li>mid-range longitudinal evaluation of impact on student attitudes toward chronic illness care and IPE, understanding of the roles of professional team members and patient-centred care.</li> </ul>	<ul style="list-style-type: none"> <li>Medicine</li> <li>Nursing</li> <li>OT</li> <li>Pharmacy</li> <li>PT</li> <li>CFT (couple and family therapy)</li> </ul>	<p>Sequential mixed-methods design</p> <ul style="list-style-type: none"> <li>student focus groups</li> <li>Quantitative survey: ATHCT &amp; IEPS scale</li> <li>student reflection papers</li> <li>2 years' experience</li> </ul>	<p>Benefits of IPE:</p> <ul style="list-style-type: none"> <li>Benefit for future practice</li> <li>Significant improvements in attitudes from baseline to the end of year two in each programme (including pharmacy)</li> <li>Mean IEPS scores at baseline were high/positive on the scale and were maintained by programme end.</li> <li>Skills of teamwork</li> <li>Understanding roles of other health professionals</li> <li>Enhanced overall university experience.</li> </ul> <p>Challenges to IPE:</p> <ul style="list-style-type: none"> <li>Logistical challenges of the programme (schedules, time management, travel time).</li> <li>Uncertain about own role.</li> <li>Curriculum goals need to be clear and relevant to each profession.</li> <li>Difficult to teach others.</li> </ul> <p>Differences:</p> <ul style="list-style-type: none"> <li>For IEPS, there was no significant differences by profession from baseline to the end of the programme.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>Experience of only one cohort of students.</li> </ul>

<p><b>2015</b> <b>Qatar</b> <b>1/2 Y</b></p>	<p>Wilbur et al. Interprofessional impressions among nursing and pharmacy students: a qualitative study to inform interprofessional education initiatives</p>	<p>To explore:</p> <ul style="list-style-type: none"> <li>undergraduate pharmacy and nursing student attitudes and perceptions of each other's roles in advance of the country's first multidisciplinary learning activity.</li> </ul>	<ul style="list-style-type: none"> <li>Pharmacy (n=10)</li> <li>Nursing (n=9)</li> </ul> <p>include junior (first or second professional year) and senior (third or final professional year) students</p>	<p>A qualitative descriptive study design using semi structured focus group 4 focus group No intervention</p>	<p>Perceived benefits of IPE:</p> <ul style="list-style-type: none"> <li>Supportive attitude.</li> <li>Developing greater mutual understanding in patient care roles.</li> <li>Learn from one another.</li> <li>Positive impact on patient care</li> <li>Close interprofessional communication with the nurses.</li> </ul> <p>Perceived challenges to IPE:</p> <ul style="list-style-type: none"> <li>Pharmacists' and nurses' perception as one another's intermediaries with physicians.</li> <li>Basic understanding of one another's role.</li> <li>Tend to follow traditional roles and responsibilities.</li> <li>Pharmacists new expanded role overlap with some of the nurses' roles and responsibilities with nurses.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>Small scale qualitative work.</li> <li>Participants are from a single geographical area</li> </ul>
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Table 23: Data Extraction for Studies Focusing on Practising Pharmacists

Year, Country Pharmacy Authors	Authors Title	Main objectives	Participants, Study Setting	Methods of Data Collection Duration	Key findings regarding Pharmacy Perspectives Limitations
2003, Northern Ireland 1/2 Y	Hughes et al. Perceived interprofessional barriers between community pharmacists and general practitioners: a qualitative assessment	To identify and explore: <ul style="list-style-type: none"> <li>perceived (or otherwise) barriers between general practitioners (GPs) and community pharmacists in relation to interprofessional working and the extension of prescribing rights to pharmacists.</li> </ul>	GP (n=22) Community pharmacists (n=31)  GP and Community Pharmacies	Qualitative study  Uniprofessional focus groups	Challenges: <ul style="list-style-type: none"> <li>The 'shopkeeper' image of community pharmacy with the following subthemes (focusing on barriers): access, hierarchy, and lack of awareness.</li> </ul> Facilitators to teamwork: <ul style="list-style-type: none"> <li>Joint interprofessional training between healthcare professions.</li> </ul> Limitations: <ul style="list-style-type: none"> <li>Facilitator was a pharmacist</li> <li>Uniprofessional focus groups</li> </ul>
2005, USA 3/3 Y	Doucette et al. Factors affecting collaborative care between pharmacists and physicians	To identify: <ul style="list-style-type: none"> <li>significant influences on collaborative care between pharmacists and physicians, from the perspective of pharmacists.</li> </ul>	Pharmacists (n=166) Pharmacists in different settings	A cross-sectional mail survey design Professional interaction scale, personality assessment, 14 item Physician/Pharmacist Collaboration Instrument.	Predictors of collaborations: <ul style="list-style-type: none"> <li>Three variables from the collaborative working relationships model were significantly associated with collaborative care: trustworthiness, role specification, and professional interaction</li> <li>Relationship initiation was not a significant predictor of collaboration.</li> </ul> Limitations: <ul style="list-style-type: none"> <li>Only focused on a specific group pharmacist: innovative practitioners.</li> <li>Cross sectional data only.</li> </ul>
2009, Canada 2/6 Y	Makowsky et al. Collaboration between pharmacists, physicians and nurse practitioners: A qualitative investigation of	To explore: <ul style="list-style-type: none"> <li>the integration process of a clinical pharmacist within a health care team.</li> <li>pharmacist, physician, and nurse practitioner</li> </ul>	Pharmacists (n=2) Physicians (n=13) Nurse (n=2) Tertiary care teaching hospitals	Phenomenological approach Mixed methods including reflective journaling and key informant interviews.	Benefits of collaborative practice: <ul style="list-style-type: none"> <li>Team processes: role clarity and relationships development built on mutual respect and trust facilitated teamwork.</li> <li>Making positive contributions to patient care and patient safety.</li> </ul>

	working relationships in the inpatient medical setting	experiences around working as a team.			<ul style="list-style-type: none"> <li>• Improving team decision making.</li> <li>• Continuity of care.</li> <li>• Increased awareness of healthcare professionals' roles.</li> <li>• Regular professional interaction facilitated teamwork.</li> <li>• Better job satisfaction.</li> </ul> <p>Challenges to collaborative practice:</p> <ul style="list-style-type: none"> <li>• Lack of awareness of pharmacist clinical role by primary care healthcare professionals: GP and nurses (mainly they deal with community pharmacists)</li> <li>• Not well defined roles.</li> <li>• Makeup of the interprofessional team.</li> <li>• Health care professionals placing a greater value on pharmacists dispensing function.</li> <li>• Organisational and practice structure: heavy workload and inflexible work schedule by pharmacy department</li> </ul> <p>Facilitators to teamwork:</p> <ul style="list-style-type: none"> <li>• Processes are in place at team and organisational level.</li> <li>• Ongoing professional development, support, mentorship and learning about how teams function.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>• Perception from only 2 pharmacists</li> </ul>
<b>2011, Australia 2/3 Y</b>	Dey et al. Collaboration in chronic care: unpacking the relationship	To gain: <ul style="list-style-type: none"> <li>• deeper understanding of the expectations, experiences and perceptions of Australian general medication</li> </ul>	Pharmacists (n=18) GPs (n=7) GP and Community Pharmacies	A qualitative research approach Semi-structured interview	Benefits of collaborative practice: <ul style="list-style-type: none"> <li>• Benefits to healthcare professionals and patients.</li> <li>• Favourable attitude towards one another.</li> <li>• Existence of good working relationship.</li> </ul>

	of pharmacists and general medical practitioners in primary care	practitioners (GPs) and pharmacists around collaboration in chronic illness (asthma) management in the primary care setting.			<p>Challenges to collaborative practice:</p> <ul style="list-style-type: none"> <li>• Limited to basic minimal relationship.</li> <li>• Lack of role understanding.</li> <li>• Lack of confidence in interacting with physicians.</li> <li>• Time and poor/lack of communication, GP attitudes, inaccessibility, lack of familiarity, motivation to interact, GP feeling threatened by pharmacist involvement and the patient.</li> </ul> <p>Facilitators to teamwork:</p> <ul style="list-style-type: none"> <li>• Professional needs: accessibility, style and nature of communication.</li> <li>• Face-to-face communication.</li> <li>• Financial remuneration.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>• Focus only on one type of relationship i.e. with GP and only one disease setting (Asthma)</li> </ul>
<b>2012, Spain 1/6 N</b>	Rubio-Valera et al. Factors affecting collaboration between general practitioners and community pharmacists: a qualitative study	<p>To identify and analyse:</p> <ul style="list-style-type: none"> <li>• barriers and facilitators in collaboration between GPs and CPs in Spain.</li> </ul> <p>To explore:</p> <ul style="list-style-type: none"> <li>• whether differences exist between GPs and CPs based on the geographical region where they work and previous experience of collaboration.</li> </ul>	<p>GP (n=18) Community pharmacists (n=19)</p> <p>GP and Community Pharmacies</p>	<p>Phenomenological approach A descriptive-exploratory qualitative study using face-to face, semi-structured interviews</p>	<p>Predictors of collaborations:</p> <ul style="list-style-type: none"> <li>• Prior to collaboration: perception of usefulness, managers interest, attitude, and geography and legislation.</li> <li>• During collaboration: achievement of common objectives, management stability.</li> <li>• Factors related to economic issues, management and practitioners' attitudes and perceptions might be crucial for triggering collaboration.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>• Those who participated may have an interest in this topic.</li> <li>• Small number of participants.</li> </ul>



<p><b>2013, Germany</b> 3/4 Y</p>	<p>Wüstmann et al. Cooperation between community pharmacists and general practitioners in eastern Germany: attitudes and needs</p>	<p>To determine:</p> <ul style="list-style-type: none"> <li>attitudes of general practitioners and community pharmacists towards collaboration with each other.</li> </ul>	<p>GP (n=145) Community pharmacists (n=84) GP and Community Pharmacies</p>	<p>Cross-sectional survey</p>	<p>Predictors of collaborations:</p> <ul style="list-style-type: none"> <li>Trustworthiness, role specification and relationship initiation as meaningful predictors of collaboration.</li> </ul> <p>Challenges to collaborative practice:</p> <ul style="list-style-type: none"> <li>Cooperation is insufficient.</li> <li>Facilitators to teamwork</li> <li>More frequent interactions.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>Low response rate</li> <li>Used four surveys that are not validated for Germany.</li> </ul>
<p><b>2013 Canada</b> 5/6 Y</p>	<p>Kelly et al. Pharmacist and physician views on collaborative practice: Findings from the community pharmaceutical care project</p>	<p>To capture:</p> <ul style="list-style-type: none"> <li>the opinions of family physicians and community pharmacists in Newfoundland and Labrador (NL) regarding collaborative practice.</li> </ul>	<p>Community pharmacists (n=407) GP (n=33) GP and Community Pharmacies</p>	<p>Survey  Developed based on literature and interest of research team.</p>	<p>Benefits of collaborative practice:</p> <ul style="list-style-type: none"> <li>Improved health outcomes for patients.</li> </ul> <p>Challenges to collaborative practice:</p> <ul style="list-style-type: none"> <li>Not a routine part of their practice.</li> <li>Limited experience working collaboratively.</li> <li>Limited direct communication with physicians.</li> <li>Pharmacists' perception of areas for further collaboration differ significantly from a physician's perception.</li> <li>Lack of compensation.</li> <li>Required to collaborate with multiple physicians/pharmacists to provide care for patients.</li> <li>Involvement of multiple healthcare providers resulting in fragmentation of care.</li> <li>Time consuming.</li> </ul> <p>Facilitators to teamwork</p> <ul style="list-style-type: none"> <li>More collaboration to improve patient adherence.</li> </ul>

					<ul style="list-style-type: none"> <li>Pharmacists want to collaborate more in areas related to their clinical roles.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>Conducted before introduction of expanded role of pharmacists.</li> <li>Different methods of administering survey between pharmacists and physicians.</li> </ul>
<b>2014, Spain</b> <b>1/6 N</b>	<p>Jove et al. Perceptions of collaboration between general practitioners and community pharmacists: findings from a qualitative study based in Spain</p>	<p>To assess:</p> <ul style="list-style-type: none"> <li>the perceptions of GP-CP collaboration from these professionals' perspectives.</li> </ul>	<p>Community pharmacists (n=19)  GP (n=18)</p>	<p>Qualitative research methodology  Semi-structured interviews</p>	<p>Benefits of collaborative practice:</p> <ul style="list-style-type: none"> <li>The health system: provision of integrated care and increased efficiency of the system, share patients' clinical information and results, facilitated the provision of integrated care, increased the number of services offered and the efficiency of the health system, reduced the number of problems related to medication and promoted the rational use of medications.</li> <li>The physician and pharmacist: increase in their job satisfaction, professional image and patient loyalty.</li> <li>The patients: improved outcomes and safety and reduction in number of hospital visits.</li> </ul> <p>Challenges to collaborative practice:</p> <ul style="list-style-type: none"> <li>Conflict generation.</li> <li>Negative perception from those with no IPC experience.</li> <li>GPs did not perceive the usefulness of collaboration and therefore pharmacists had no interest in collaborating.</li> </ul> <p>Facilitators to teamwork:</p>

					<ul style="list-style-type: none"> <li>• Need for prior education and collaboration.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>• Secondary analysis.</li> <li>• Social desirability.</li> <li>• Interviews conducted by different researchers could result in bias.</li> </ul>
<p><b>2014 Australia 0/3 N</b></p>	<p>Gilligan et al. Recommendations from recent graduates in medicine, nursing and pharmacy on improving interprofessional education in university programs: a qualitative study</p>	<p>To explore:</p> <ul style="list-style-type: none"> <li>• the reflections of graduates on the IPE experiences they had during their undergraduate education and training.</li> </ul>	<p>nursing graduates (n=28) medical graduates (n=17) pharmacy graduates (n=23) Recent graduates working in health services settings including hospitals</p>	<p>Interpretive research design</p> <p>Focus groups</p>	<p>New graduates reflection on their IPE experiences:</p> <ul style="list-style-type: none"> <li>• Experiences of IPE at University: valued the IPE experience in their programme, positive IPE experiences but valued interactive and authentic activities, mainly didactic experiences, no interaction and very few structured IPE experiences and missed opportunities on clinical placements.</li> <li>• University rarely included attempts to break down the professional silos and limited social interaction.</li> <li>• Dissonance between theory and practice.</li> </ul> <p>Facilitators to teamwork</p> <ul style="list-style-type: none"> <li>• Graduates' recommendations to improve IPE: more opportunities for interaction, incorporate IPE into programme rather than standalone activities, deep understanding of other healthcare professionals' role, more innovative approaches for IPE, increased practical IPE experiences and more focus in interprofessional communication.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>• Convenience sampling.</li> <li>• Participation bias.</li> </ul>

<p><b>2014</b> <b>Australia</b> <b>0/3 N</b></p>	<p>Ebert et al. 'They have no idea of what we do or what we know': Australian graduates' perceptions of working in a health care team</p>	<p>To explore:</p> <ul style="list-style-type: none"> <li>the experiences of newly graduated health professionals and their understandings of 'knowing about' and 'working with' other health care professionals, as well as their preparedness for working as part of an interprofessional health care team.</li> </ul>	<p>nursing graduates (n=28) medical graduates (n=17) pharmacy graduates (n=23)</p>	<p>Interpretive research design  Focus groups</p>	<p>Challenges to collaborative practice:</p> <ul style="list-style-type: none"> <li>Limited understanding of the roles of other health professionals.</li> <li>Professional isolation, competition, professional tribalism and lack of mutual respect which varied depending on profession.</li> <li>Not guaranteed benefits of IPE.</li> <li>IPE experiences being intermittent, largely optional, non-assessable, and of little value in relation to their roles, responsibilities, and practice as graduate health professionals</li> </ul> <p>Facilitators to teamwork</p> <ul style="list-style-type: none"> <li>IPE need to be integrated into undergraduate health programmes.</li> </ul>
<p><b>2015</b> <b>2/2</b> <b>Y</b></p>	<p>Luetsch et al. Interprofessional communication training: benefits to practising pharmacists</p>	<p>To explore:</p> <ul style="list-style-type: none"> <li>pharmacists' experiences and reflections after completing a learning and practice module which introduced them to a framework for successful interprofessional communication.</li> </ul>	<p>Pharmacists (n=55)</p>	<p>Inductive approach on written reflections.</p>	<p>Benefits of collaborative practice:</p> <ul style="list-style-type: none"> <li>Enhanced their interprofessional communication skills.</li> <li>Enhanced their professional identity, credibility and their ability to work collaboratively with other healthcare professionals.</li> <li>Better satisfaction.</li> </ul> <p>Challenges to collaborative practice:</p> <ul style="list-style-type: none"> <li>Lack of pharmacists confidence and capability.</li> <li>Fear of losing credibility.</li> </ul> <p>Facilitators to teamwork:</p> <ul style="list-style-type: none"> <li>Training.</li> </ul> <p>Limitations:</p> <ul style="list-style-type: none"> <li>Reflection is part of overall course assessment.</li> <li>Voluntary participation leading to reporting of positive experiences.</li> <li>Lack of follow up.</li> <li>No objective measure to validate participant perception.</li> </ul>

Table 24: Data Extraction for Study Focusing on Faculty

Year, Country Pharmacy Authors	Authors Title	Main objectives	Participants, Study Setting	Methods of Data Collection (name of tool used) Duration of IPE Activity	Key findings regarding Pharmacy Perspectives Limitations
2014, USA 6/6 Y	Lash et al. Perceived Benefits and Challenges of Interprofessional Education Based on a Multidisciplinary Faculty Member Survey	To identify: <ul style="list-style-type: none"> <li>differences among faculty members in various health professional training programmes in perceived benefits and challenges of implementing IPE.</li> </ul>	<ul style="list-style-type: none"> <li>Osteopathic Medicine (n=21)</li> <li>Pharmacy (n=34)</li> <li>Physician Assistant (n=7)</li> <li>Multi-college university</li> </ul>	Survey A 19-item survey created.	Perceived benefits: <ul style="list-style-type: none"> <li>Positive attitude.</li> <li>Benefits on patient outcomes</li> <li>Implementation of IPE was feasible.</li> <li>Improves care efficiency and promotes team-based learning.</li> </ul>

### 3.3.5 Quality assessment

Initially, as this study is investigating both quantitative and qualitative research, the study's quality was appraised using the following two tools:

- Critical Appraisal Skills Program (CASP): Qualitative Research. This is a methodological checklist which provides key criteria relevant to qualitative research studies (236).
- Critical appraisal survey checklist developed by the Centre for Evidence-based Management for surveys. Adapted from Crombie, *The Pocket Guide to Critical Appraisal*; the critical appraisal approach used by the Oxford Centre for Evidence Medicine, checklists of the Dutch Cochrane Centre, BMJ editor's checklists, and the checklists of the EPPI Centre (237).

The four researchers piloted the use of the above tools on five articles to ensure inter-rater reliability and enhance consistency in the use of these tools. Researcher pairs (AE and LD; AE and SJ; AE and MH) independently extracted data from the remaining 55 full-text articles assessed for eligibility and assessed these studies using the above tools. However, one of the disadvantages of using the above two tools after these articles are reviewed is it did not quantify the methodological quality of the studies included to allow for comparison between the two methodological approaches. Additionally, it was challenging to adapt these tools for mixed method articles. Therefore, for the 29 included articles, the Mixed Methods Appraisal Tool (MMAT) (Appendix 16), which is based on constructionist theory, was selected as it is the only available tool allowing for the appraisal of studies with qualitative, quantitative and mixed methods studies (238).

The MMAT tool has been content validated (239). Reliability has been tested on the pilot version of the MMAT with inter-rater reliability scores ranging from moderately reproducible to perfect agreement (240). The latest version of MMAT- v2011 had been tested for reliability and efficiency with a larger sample and it was confirmed to be an efficient tool, but reliability needs to be improved further for two items (241). The tools have been used in various studies (242-248). The tool is divided into three categories with different criteria used depending on the method used: qualitative, quantitative (categorised into: randomized controlled, nonrandomized, and descriptive), and mixed methods. Every item is rated as 'yes', 'no', or 'cannot tell' for every applicable item.

AE and LD assessed these 29 studies using the MMAT tool following approval from the authors of the tool. Some of the items had more than one criterion to be met, making it difficult to use the Y, N or CT options. Therefore, it was agreed to add 'partial' to the analysis, which in weighting counted as 'no', but highlight in the results. The authors of the tool were contacted and informed about this and were supportive. The results lead to an overall score on methodological quality with

the score varying from 0%, 25%, 50%, 75%, and 100%. All studies included were considered to allow for comparison between low quality vs high quality in the studies included and highlight how these contributed to study findings.

### 3.4 Results

#### 3.4.1 Characteristics of eligible studies

Twenty nine studies were included in the review (Figure 17). Table 25 summarises the characteristics of the included studies from 10 different countries. The majority were conducted in the United States (n=13), followed by Australia (n=4), Canada (n=3), the United Kingdom and Northern Ireland (n=2), Spain (n=2), and one article from each of the following countries: Germany, New Zealand, Saudi Arabia, Singapore, and Qatar. Most had been published in the last five years (83%, n=24) and employed quantitative methods (52%, n=15). Nearly a quarter of the studies included are published in the Journal of Interprofessional Care (23%, [n=7]) followed by the American Journal of Pharmaceutical Education (13%, n=4). More than 50% (n=17) of the corresponding authors had a pharmacy background.

Table 25: Characteristics of the Journals Selected

Journal		Date of Publication	
Journal of Interprofessional Care	7	2000-2005	3
American Journal of Pharmaceutical Education	4	2006-2010	2
Currents in Pharmacy Teaching and Learning	3	2011-2015	24
International Journal of Clinical Pharmacy	2		
BMC Medical Education	2	Methodology	
Research in Social and Administrative Pharmacy	1	Quantitative only	15
British Journal of General Practice	1	Qualitative only	9
Canadian Pharmacists Journal	1	Mixed	5
Education in Primary Care	1		
Medical Education Online	1		
Nurse Education Practice	1		
International Journal of Nursing Sciences	1		
International Journal of Pharmacy Practice	1		
BMC Health Services Research	1		
Learning in Health and Social Care	1		
Medical Education	1		

Fourteen of the 29 articles were rated as low quality (MMAT 25%), eight were rated with 50% MMAT quality, four were rated with 75% MMAT quality and three were rated with 0 MMAT quality. None were rated with 100% MMAT quality (Table 26, Table 27).

Table 26: Included Studies Focusing on Student/ Faculty – Quality Assessment

Types of study	Methodological quality criteria	Studies focusing on students									
		Liu	Judge	Bottenberg	Khan	Maldonado	Wilhelm	Shrader	Horsburgh	Curran	Ahmad
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?	Y	Y	P	Y	Y	CT	Y	N	CT	CT
	4.2. Is the sample representative of the population understudy?	Y	P	P	P	P	N	P	N	N	N
	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?	P	P	N	Y	P	P	Y	Y	P	Y
	4.4. Is there an acceptable response rate (60% or above)?	Y	Y	Y	Y	N	CT	Y	Y	Y	Y
<b>Quality of Evidence</b>		75%	50%	25%	75%	25%	0%	75%	50%	25%	50%

Table 26: Included Studies Focusing on Student – Quality Assessment (Continued)

Types of study	Methodological quality criteria	Studies focusing on students							Faculty
		Rotz	Wilbur	Lehrer	Wamsley	Arenson	Shrader	Layzell	Lash
1. Qualitative	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?	P	P		P	P	P	P	
	1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?	Y	Y		Y	P	P	Y	
	1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected?	N	Y		N	N	N	N	
	1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants?	P	N		N	N	N	N	



<b>3. Quantitative nonrandomized</b>	3.1. Are participants (organisations) recruited in a way that minimizes selection bias?			Y	P				
	3.2. Are measurements appropriate (clear origin, or validity known, or standard instrument; and absence of contamination between groups when appropriate) regarding the exposure/intervention and outcomes?			P	P				
	3.3. In the groups being compared (exposed vs. non-exposed; with intervention vs. without; cases vs. controls), are the participants comparable, or do researchers take into account (control for) the difference between these groups?			N	P				
	3.4. Are there complete outcome data (80% or above), and, when applicable, an acceptable response rate (60% or above), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?			N	CT				
<b>4. Quantitative descriptive</b>	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?					Y	CT	P	P
	4.2. Is the sample representative of the population under study?					P	N	Y	N
	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?					Y	P	P	N
	4.4. Is there an acceptable response rate (60% or above)?					CT	Y	Y	Y
<b>5. Mixed methods</b>	5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?				N	N	P	Y	
	5.2. Is the integration of qualitative and quantitative data (or results*) relevant to address the research question (objective)?				P	N	N	Y	
	5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results*) in a triangulation design?				N	N	N	N	
<b>Quality of Evidence</b>		25%	50%	25%	0%	0%	25%	25%	25%

Table 27: Included Studies Focusing on Practising Pharmacists – Quality Assessment

Types of study	Methodological quality criteria	Studies focusing on Practising Pharmacists										
		Makowsky	Dey	Rubio-Valera	Luetsch	Hughes	Jove	Gilligan	Ebert	Wüstmann	Doucette	Kelly
<b>1. Qualitative</b>	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?	N	Y	P	P	P	Y	P	P			
	1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?	Y	Y	Y	Y	Y	Y	Y	Y			
	1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected?	N	N	Y	P	P	Y	Y	N			
	1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants?	N	N	N	N	N	N	N	N			
<b>4. Quantitative descriptive</b>	4.1. Is the sampling strategy relevant to address the quantitative research question?									Y	P	Y
	4.2. Is the sample representative of the population understudy?									Y	P	Y
	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?									CT	Y	P
	4.4. Is there an acceptable response rate (60% or above)?									N	N	N
<b>Quality of Evidence</b>		25%	25%	50%	25%	25%	75%	50%	25%	50%	25%	50%

### 3.4.2 Studies focusing on pharmacy student perception

#### 3.4.2.1 Studies with no intervention

Five related studies were published measuring pharmacists' perceptions toward IPE: Horsburgh et al. (2001), New Zealand (18); Curran et al. (2008), Canada (249); Ahmad et al. (2013), Singapore (190), Khan et al. (2015), Saudi Arabia (250), and Wilbur et al. (2015), Qatar (72). Four of these studies used quantitative survey study design except for Wilbur et al. who used qualitative descriptive study design with a semi-structured focus group.

The four quantitative included studies reported positive pharmacist attitudes toward IPE (18, 72, 190, 249). The early study by Horsburgh et al. (2001) used the term 'shared learning' instead of IPE, which is understandable as this is before CAIPE published its 2002 definition. In this study pharmacy students believed strongly one of the benefits of learning together is the development of more effective practices that can potentially enhance patient care and improve interprofessional working relationships. Pharmacy and nursing students in this study were more certain about what their professional role would be compared to the medical students (18). Differences in attitudes between pharmacy and other healthcare students were mixed in the different reported studies. As an example, a study using RIPLS showed no important differences between the attitudes of the different professions (18). However, another study using RIPLS in Singapore highlighted highly significant differences among the various professions for overall attitudes. Significantly less readiness was reported by pharmacy and dentistry students compared to medical students. This could be attributed to preconceived ideas on the independent roles of pharmacists and dentists and prior exposure to community pharmacists and dental clinics (190).

Mixed results were again reported with the attributes affecting positive attitudes. In a study conducted in Singapore, no significant differences were found when the overall RIPLS scores were compared with different demographic variables, which included gender, age, ethnicity, prior experiences interacting with other health professional, and family members who are health professionals (190). This is in contrast to an earlier study in Canada, which showed profession, gender (female), prior IPE experience, and year of study (senior) positively affected attitudes (249). In this study, significant differences in attitudes from different professions exist. Pharmacy and social work students had significantly more positive attitudes towards interprofessional healthcare teams compared to medical and nursing students. This aligns with a similar investigation in Saudi Arabia that showed male students had higher interprofessional perception scores than female students. Final-year students had better interprofessional perceptions than junior students. In addition, motivation to enter the pharmacy profession, participation in recent scientific conferences, and previous practice exposure were found to significantly affect the interprofessional perceptions of students (250). The perception of pharmacy students in Qatar who took part in a focus group were generally supportive of IPE.

They highlighted a number of perceived benefits and challenges toward collaborative practice (72).

### 3.4.2.2 Studies with IPE intervention

Between 2012 and 2015, twelve studies were published highlighting pharmacy students' perceptions toward IPE and collaborative practice based on an IPE intervention. For the included articles focusing on students, the IPE sessions varied in their duration from *ad hoc* sessions (lasting between one and four hours) in the form of simulation or interactive case based discussion; or 2 IPE case based sessions over a month, to IPE activities spread over the semester or in one study over two years (Table 28). Another study was based on an IPE experiential learning experience. The number of professions involved in these initiatives varied from two to six professions with the majority (more than 80%) having medical students in the IPE activity. For measuring perceptions, the two commonly used surveys were: different versions of the RIPLS (35%, n=6), IEPS scale (35%, n=6), and the ATHCT (24%, n=4).

Table 28: Reported IPE Activities

IPE Duration	Type of IPE activity	Topic focus
50-90 min	Simulation	Acute emergency situations
4 hours session	Simulation	Cardiovascular
4 hours session	Case Studies	Patient safety
two 2hrs sessions (3 weeks apart)	Case Studies	Ethics
2 IPE sessions with one month apart	Case Studies	Cultural competent care
1hr over the course of 16 weeks	Peer Led Problem Based Learning seminars	Patient cases
24 week ambulatory clerkship	Student run clinic	Internship related tasks
9 IPE activities over the semester (20min-3hrs).	Mixed	Clinical Assessment Course
IPE activity over a semester (4hrs total)	Mixed	Health Mentor Programme: Geriatric
An internship (actual duration not documented)	Experiential learning	Solid organ transplant internship
Four modules over 2 years	Mixed	Health Mentor Programme

The results suggest pharmacy students had positive attitudes in relation to willingness and readiness to participate in IPE. Several factors influencing this positive attitude were reported in most of the included studies and can be categorized into the following themes: overall experience; improved interprofessional working relationship; roles and responsibilities; and belief of its impact on patient care.

Perceptions regarding the students' overall IPE experience were positive and well received. The different IPE initiatives, have been regarded as unique (251), beneficial for their future practice (252-254), enhanced overall university experience (254), had an impact on their

attitudes, knowledge and ability to work with other professionals (255), and high student satisfaction with the experience (256, 257).

Perceived benefits of IPE include enhanced understanding of professional role identity (251, 254, 257), exploration of professional boundaries (251), excellent teamwork (201, 252, 254), improvement in the quality of patient care (252), willingness to participate in more IPE activities (201, 252), enhancement of learning and knowledge gained (201, 255), respect (252, 253), trust (253), appreciation of other healthcare professions (253), and a shared goal for patient-centred care (253). Another perceived benefit of IPE is valuing IPC and interprofessional teams (253, 257, 258). In a case control study investigating if peer teacher-led problem based seminars can have an effect on pharmacy and medical students' perceptions toward IPE reported that pharmacy and medical students participating in these seminars reported a significantly higher need for cooperation in comparison to those who did not participate (258). Furthermore, in this study, pharmacy students perceived a significantly higher need for professional cooperation and interdependence when compared to medical students (258). Following an interprofessional standardized patient exercise, there was consensus among pharmacy students that they have learned more about their role in an interprofessional team and the activity increased their comfort level and confidence in dealing with other healthcare students in an interprofessional environment (256).

Longitudinal IPE activities showed significant improvement in attitudes towards interprofessionalism. Pharmacy students in the United States undertaking an advanced pharmacy practice experience (APPE) focusing on solid organ transplant showed significant increased interprofessionalism in 17 out of 22 items from a pre- and post-APPE survey (259). A similar result was observed in another clinical assessment course where nine IPE activities were integrated in this course over a semester. Similarly, pharmacy students showed significant improvement in their perception of IPC on 16 of 18 pre- and post-IEPS surveys. The highest positive changes in perceptions were noted in competence and autonomy (260). Another study in the United States showed significant improvement in all programmes, including pharmacy, in attitudes from baseline to the end of year 2 health mentor longitudinal programme on a pre- and post-ATHCT scale. The other scale used in this study was the IEPS, but no significant difference was noted taking into consideration that student perception at the start of the activity was already high (254).

### 3.4.2.3 Challenges

Challenges to IPE as perceived by students varied between studies but revolved around logistical issues, professional status, confidence, and capability

#### 3.4.4.1 *Logistical issues*

Scheduling conflicts (201, 254, 257), available physical space (253), available time in a heavy curriculum, managing the time (254, 258), and travel time (254) were some of the logistical

challenges encountered by students. Lack of time to participate in IPE was identified as the main barrier by 52.3% (n=57) of students in a study in the United States focusing on peer-led problem-based learning in IPE (258). Similarly, evaluation of student focus group in another study in the United States investigating IPE in health mentors programmes over three years highlighted that scheduling and travel time were significant burdens on the students (254).

#### *3.4.4.2 Professional status, confidence, and capability*

Students' perceptions regarding pharmacists' status and professional identity were discussed in focus groups with third year pharmacy students during their primary care internship in a United Kingdom study (251). Students discussed how pharmacists feel 'undervalued and disenfranchised'. This was attributed to three main factors: entry-level requirements to study pharmacy has been lowered; the shopkeeper image of pharmacists resulting in poor public image, unacceptance of pharmacists as an important member of the healthcare team; and the undermining of their role by government policies.

Additionally, lack of confidence to deal with other healthcare students or being with students who are much more advanced than their level has been reported as a challenge by students. First year students described situations where they felt uncomfortable with their limitations in knowledge and skills and felt unprepared to be in such situations (253). Furthermore, students found it challenging to inform and teach others about their role when they were uncertain of what their own role entails (254). The same was reported in a study involving a simulation IPE activity. Pharmacy students had less experience with simulation compared to medical students who had been there several times before. As a result, pharmacy students were less favourable to the idea that the respondents worked well together (252) and this was reflected in the statistically significant result of pharmacy students' attitude median score of 4.27 in comparison to medical students' median of 4.68.

Another reason for this difference is that pharmacy students were not comfortable and ready to share their views with others. The lack of direct patient care experience by pharmacy students, in comparison to medical students, has been echoed as a challenge in another study following an interprofessional standardised patient exercise (256). This was in contrast to another study where the nature of topic was directly related to the pharmacist's role and as a result the pharmacy students had the highest mean RIPLS score pre-test ( $74.42 \pm 7.28$ ) and post-test ( $75.82 \pm 7.66$ ) in comparison to the other profession involved in this IPE activity focusing on higher reliability error prevention (261).

Pharmacy students discussed how full participation within an interprofessional team was limited due to the power play between doctors and pharmacists. They believed that the doctors are usually the perceived leaders of the interprofessional team and although the pharmacists' suggestions and advice were generally accepted, some more mature and experienced doctors

were unwilling to accept their recommendation. The pharmacists did not want to overstep their boundaries (251) or serve as intermediaries with doctors (72).

### **3.4.3 Studies focusing on practising pharmacists' perceptions**

Eleven related studies were published between 2003 and 2015. Countries of included studies include Australia (4 studies), Canada (2 studies), Germany (1 study), Northern Ireland (1 study), Spain (2 studies) and the United States (1 study). More than 50% (n=6) of these articles focused primarily on the relationship between community pharmacists and general practitioners. Only one article focused on an inpatient setting and the remaining four articles had pharmacists from different settings. The perspectives of practising pharmacists in the papers included in this review related to four main themes: benefits of collaborative practice; challenges to collaborative practice; facilitators to promoting collaborative practice; and predictors of collaborations.

#### **3.4.3.1 Benefits of collaborative practice**

Only one of the above articles focused on an inpatient medical setting (262). One was based on a postgraduate clinical pharmacy programme at university setting and the clinical pharmacy practice environments of 48 hospital and 7 community based pharmacists (263). The remaining 3 focused on the collaboration between community pharmacists and general practitioners (264-266). Pharmacists in 5 of the included studies identified positive outcomes for participating in collaborative practice in terms of:

- improved health system: continuity of care (262), provision of integrated care leading to increased efficiency of the system (266).
- interprofessional team process: increased awareness of healthcare professional roles (262, 266), developing trusting interprofessional relationships (262) leading to more collaboration (263).
- benefits to healthcare professionals: enhances confidence and capabilities (263), increased professional fulfilment (264), greater job satisfaction (262, 263, 266), improved professional image (263, 264, 266)
- enhanced quality of patient care and outcomes (262, 264-266).

In a qualitative analysis of pharmacist reflections completed following a module on interprofessional communication in Australia, pharmacists expressed how this learning experience enhanced their professional identity and strengthened their recognition and credibility as key players in the healthcare team. Additionally, it changed their perceptions of the importance and benefits of interprofessional communication (263). Another study, assessing pharmacists and general practitioners' perceptions about collaborative practice, showed 94.8% of pharmacists collaborating with general practitioners (GPs) to improve patient

outcome. The vast majority, 99.5%, of pharmacists believed collaboration between pharmacists and GPs improved patient outcomes and 99.8% of pharmacists agreed that collaboration with healthcare professionals improved patient outcomes (265). Pharmacists from Spain believed in coordinated working between community pharmacists and GPs. Moreover, giving consistent messages to patients could lead to a reduction in any potential conflicts and improving the patient journey in the healthcare system and eventually improving their safety (266).

#### 3.4.3.2 Challenges to collaborative practice

Numerous challenges to collaborative practice as perceived by practising pharmacists exist. These revolved around the followings themes:

- Professional image (262, 264, 265, 267);
- Pharmacists' confidence and capability (264);
- Limited collaboration (264, 265, 268);
- Organisation and practice structure (262).

Other challenges were lack of remuneration (264, 265), GP attitude (264), inaccessibility (264), patient (264), lack of time (264, 265, 269), and composition of the interprofessional team (262).

##### 3.4.3.2.1 *Professional image*

In an early qualitative study, in 2003, exploring perceived challenges between general practitioners and community pharmacists in Northern Ireland, the shopkeeper image of community pharmacists was the main emerging theme discussed in this study, with awareness, hierarchy, and access as subthemes (267). Pharmacists felt this image affected the GPs attitudes towards them in that they saw the commercial side of community pharmacists only. Pharmacists encountered access difficulties when communicating with the GPs due to the gatekeeper role of the GP practice receptionist. Pharmacists also believed that any professional advancement to their role would be perceived as 'encroachment of GP activity' and reported lack of awareness and misconceptions from GPs about the pharmacist's role. They felt undervalued by the GPs who did not consider them as member of the primary healthcare team (267).

The lack of awareness of the pharmacist's clinical role and the shopkeeper image was echoed in another study investigating collaboration between pharmacists, physicians, and nurses in an inpatient patient setting in Canada in 2009 (262). Pharmacists were concerned that even with the advancement in the clinical pharmacist's responsibilities, healthcare professionals still linked their roles to dispensing functions. This was more evident in GPs whose main interaction was with community pharmacists and were not aware of the clinical pharmacist's roles and responsibilities. Additionally, teamwork between healthcare professionals was affected when the roles and expectations of the pharmacist responsibilities were not clearly defined (262).



#### 3.4.3.2.2 *Pharmacists' confidence and capability*

Some pharmacists felt anxious and nervous about the thought of discussing and making recommendations to physicians, attributing this to a lack of confidence in their own professional competency, lack acceptance by physicians, and the fear of losing credibility (263). Others reflected how they felt conscious when dealing with GPs and struggled with GPs who did not view them as equal partners and were unwilling to accept their recommendation (264). They further emphasised the boundary encroachment perceived by the GPs and how GPs feel threatened by the advancement of the pharmacist role with an evident element of territorialism (264).

#### 3.4.3.2.3 *Limited collaboration*

Limited collaboration was reported in several studies. In an Australian study investigating collaboration between pharmacists and GPs in managing chronic illness in a primary care setting highlighted that although they have good working relationships with GPs, actual collaboration was limited. Again this was attributed due to the lack of understanding of each other's professional role (264). Another study highlighted one quarter of community pharmacists have never or rarely practised collaboratively and only 3% have reported always collaborating with doctors. The most perceived barrier reported by 68.1% of the pharmacists was having to deal with multiple healthcare professionals with 63% believing that the involvement of multiple healthcare providers can lead to fragmentation of care. Additionally, 61.2% of pharmacists reported the lack of face-to-face collaboration as a barrier and preferred to face-to-face and telephone communication to fax or paper communication. In this study, collaboration was defined as 'family doctors and community pharmacists sharing information and working together to improve healthcare delivery for a specific patient' (265). Furthermore, in another study conducted in Spain, pharmacists expressed no interest in collaborating with GPs as they believed it was GPs who did not perceive the usefulness of collaboration and hence did not want to pursue this further (266).

#### 3.4.3.2.4 *Organisation and practice structure*

One of the major factors contributing to this theme from pharmacists' perspective is their perception of their significant workload. Although they wanted to be systematic in their approach to patient care this was not possible in many instances (262). Moreover, the pharmacists hoped that pharmacy departments would allow for flexibility in their working schedule and provide them with support to function collaboratively with other healthcare professionals (262).

#### 3.4.3.3 Predictors of collaborations

Three of the included studies addressed predictors of collaboration as perceived by practising pharmacists (268, 270, 271). Two of these studies explored predictors of collaboration and identified these as trustworthiness and role specification in both studies (268, 270). In addition

to professional interactions (270), relationship initiation was identified in a study investigating cooperation between community pharmacists and GPs in Germany. They found that pharmacists' item mean for relationship initiation was  $15.3 \pm 3.7$  (72.9%) in comparison to GPs, who had a mean of  $12.9 \pm 4.4$  (61.6%). Wüstmann et al. attributed this to the pharmacists' inclination to view themselves as relationship initiators (268).

The third study addressing this was a descriptive exploratory qualitative study using semi-structured interviews with pharmacists who had previous experience in collaborations with other healthcare professionals. Factors affecting collaborations differed based on previous experiences of collaboration and whether it is prior to collaboration or during collaboration. Predictors of collaborations prior to starting it were generally positive. Participating pharmacists cited usefulness, interest from the primary care manager, positive attitudes towards other healthcare professionals, closer geographical proximity, and financial remuneration. During collaboration, predictors influencing continued collaboration changed and these include having mechanisms in place to ensure achievement of shared objectives and having supporting management team.

#### 3.4.3.4 Facilitators to teamwork

Joint training at undergraduate and postgraduate levels has been suggested as a way to overcome barriers and increase awareness about other healthcare professions (267). At an organisational level, focused attention is needed to ensure proper processes and supports are in place to facilitate teamwork and enable a successful implementation of collaborative practice (262). Pharmacists have hoped for more frequent interaction and collaborations (265, 268). Ongoing professional development including interprofessional working and communication has also been endorsed as needed to promote teamwork (262, 263, 266). In one study, community pharmacists from Australia articulated the importance of accessibility, style and nature of communication, particularly face-to-face communication as ways to facilitate collaboration with other healthcare professionals, specifically GPs (264). Financial remuneration as an incentive was mentioned (264).

### **3.4.4 Reflection from recent graduates on their experiences of IPE**

#### 3.4.4.1 Studies based on recent graduates' reflection

Two studies focused on the same cohort of pharmacy, medical, and nursing graduates from three different Australian states. The participants had been working in an interprofessional environment for at least 6 months and no longer than 24 months. In total, 68 graduates, of whom 23 were pharmacists, participated in focus groups to explore their IPE experiences during their undergraduate education. Many reflected on the value of the IPE experiences they had and the importance of these as part of undergraduate curriculum (272). The graduates were familiar and grasped the concepts of interprofessional meanings from a theoretical

perspective (272). Pharmacy graduates aligned their professional identity to doctors and believed they were equal partners with them (273).

Several perceived challenges were discussed. The literature highlighted that IPE learning activities were scarce, mainly didactic, focused more on shared learning experiences, and lacked training on interprofessional communication. Consequently, graduates felt they were unprepared to work as an effective member of the interprofessional team (272, 273). Graduates reflected on these experiences as being unstructured, time limited, not assessed and optional. Additionally, there were a number of missed opportunities during clinical placement that could have been easily structured as IPE initiatives. A silo mentality and minimal social interaction between the healthcare professions was another emerging challenge from the focus group. Graduates observed few attempts from the universities to break down these perceptions. Another challenge faced by graduates was the dissonance between the theory of interprofessional working and current working practices.

Pharmacist graduates voiced their concerns that limited collaboration between healthcare professionals exist in practice. Pharmacists expressed lack of professional respect and felt undervalued by other healthcare professionals with lack of awareness and understanding of their roles and responsibilities. They believed that a hierarchy exists in the health system with doctors being superior (273). Pharmacy graduates acknowledged that their level of respect toward doctors is more than their level of respect for nurses (273).

#### 3.4.4.2 Recommendations from recent graduates to improve IPE

Graduates made several recommendations and offered suggestions for enhancing the IPE experiences at undergraduate levels:

1. Developing structured IPE learning activities with specific objectives and learning outcomes;
2. Encouraging informal social interaction;
3. Establishing interactive IPE initiatives and use of innovative IPE initiatives such as simulation and case discussions;
4. Integrating IPE into the undergraduate healthcare curriculum rather than on *ad hoc* basis;
5. Learning about the roles of others and their own limitations;
6. Maximising IPE learning opportunities during clinical placements;
7. Increasing the emphasis on interprofessional communications;
8. Ensuring understanding and confidence in own role should be a prerequisite to understanding other's roles.

### **3.4.5 Studies focusing on pharmacy faculty perceptions**

Only one of the included studies focused on the pharmacy faculty perception of IPE and perceived challenges of implementing it in US University. Faculty from three different healthcare programs were part of this study including 34 faculty from the College of Pharmacy from a total of 62 faculty members. In this study, all faculty were less enthusiastic to serve as IPE preceptor but expressed the need for more IPE faculty development. The top five preferred IPE activities specified by faculty from the College of Pharmacy were students from different disciplines taking courses together (58.8%), clinical rotations (55.9%), student competitions (52.9%), case reviews together (52.9%), and faculty members from other disciplines teaching a course (52.9%). Overall, all faculty members from the different disciplines responded positively to the potential benefits of IPE and believed implementation of IPE was feasible. Faculty from the pharmacy and physician programmes responded more positively than medical faculty. They believed IPE advocate for team based learning and enhance patient care efficiency. Additionally, they significantly showed more enthusiasm in emphasising the importance of IPE to their students, the greater college community, and preference for more IPE opportunities in their colleges.

### **3.5 Discussion**

The present review provides an insight into the perspectives, attitudes, views, and experiences of pharmacy students, pharmacy faculty, and practising pharmacists towards IPE and collaborative practice. Overall, the findings suggest that pharmacy students, practising pharmacists, and faculty valued IPE and collaborative practice. These groups had positive attitudes towards IPE, and there was a significant increase in IPE publication (n=24, 83%) in the last five years. Pharmacy students and recent graduates also perceived the need to incorporate IPE in the undergraduate curriculum. However, possible barriers to implementation within pharmacy schools have been discussed, in addition to challenges to collaborative practice in the healthcare setting. Students and pharmacists provided many insightful reflections about these challenges. The reporting of the challenges is much more explicit in the included article than what the facilitators offered.

The results of this study will be discussed as part of the strengths and limitations of this review. The strength of this review is that it is the first systematic review exploring pharmacy perspectives toward IPE and collaborative practice from quantitative and qualitative literature. It is also the first to investigate the phenomenon from a uniprofessional perspective. The protocol for this study was peer reviewed and published prior to starting it (159). This systematic review is based on 29 studies published between 2000 and 2015 and focused on quantitative, qualitative, and mixed method research studies. The diversity in the type of IPE initiatives employed is a strength and points to great potentials in utilising effective IPE strategies. The search terms accounted for some of the interchangeable terms used to

describe IPE and collaborative practice, in addition to interchangeable terms for perception, as shown earlier in the search terms. This systematic review enabled the researcher to combine different studies from different locations at different times to clarify pharmacy perceptions towards IPE and collaborative practice in different settings. The included papers originated from ten different countries with different educational and healthcare settings. Nevertheless, themes were consistent across the spectrum. The included studies stemmed from a rigorous systematic review methodology including a comprehensive search strategy, robust assessment for methodological quality with systematic method applied for data extraction and synthesis.

In line with previous IPE literature, the following themes have been identified from this review:

1. Inconsistency in reporting IPE research;
2. Professional image of the pharmacist;
3. Lack of longitudinal follow-up;
4. Lack of IPE research on faculty;
5. Lack of mixed method studies.

### **3.5.1 Inconsistency in reporting IPE research**

Heterogeneity in the included studies and the different research designs used limited the opportunities for comparison between studies. It may have also accounted for some of the inconsistencies in the findings. Participant recruitment for most studies was voluntary and the characteristics of those not included were not reported. More than half of the included studies (n=15, 52%) were quantitative and used surveys. However, these varied from using different versions of validated instruments to ones developed based on the literature with no indication of validity of these instruments. Although, surveys provided data for statistical analysis, it focused on a single outcome measure: student readiness (190). Additionally, it was difficult to detect statistical differences in pre- and post-studies as many of the respondents already had a high level of readiness for IPE (201, 257, 260). It is possible the scales used are not sensitive to detect changes after educational intervention or IPE activities were of short duration, lessening the impact of these activities on attitudes (201). Unfortunately, it is still not possible to determine behavioural change or improved patient outcome once they start practising, even in studies showing significantly improved perception; longitudinal delivery of IPE activities is not yet linked to this situation (260). Further research is needed to develop a scale that provides clarity and consistency sensitive enough to measure change in attitude.

There were also mixed results related to differences in attitudes between pharmacy and other healthcare students similar to attributes affecting positive attitudes. These discrepancies highlight the need for control group studies. Additionally, the methodological rigour was an issue for most of the included studies, with many of the studies (n=25) having scores on the

MMAT tool ranging from 0-50%. In a recent BEME systematic review, out of 258 papers that were quality assessed, less than 10% (n=25) were deemed of high quality (4).

### **3.5.2 Professional image of the pharmacist**

One notable finding from this review is the perception of the professional image of the pharmacists. Pharmacy practice is rapidly evolving with pharmacists pursuing a much more advanced therapeutic role and collaboration with other healthcare professionals. Being an integral part of the health team is essential to ensure optimal quality of care delivered to patients. Despite the advances in the scope of pharmacists' practice in the recent years, the perception of pharmacists as undervalued persists with lack of awareness and lack of respect from other healthcare professionals, especially doctors. Concepts such as power play; territorialism, hierarchy, stereotype, and professional identity were perceived as obstacles to collaborative practice with some of the pharmacists not wanting to cross boundaries and perceiving that doctors are threatened by the advancement in pharmacist role. Pharmacists in many of the reviewed studies admitted confidence and courage to collaborate with other healthcare professionals, especially namely physicians. Additionally, findings of this review indicate that some pharmacists were not interested in collaboration. Those pharmacists had no previous experience of collaboration, believed that there was no need to pursue this further, and perceived other healthcare professionals to be uninterested in pursuing this further.

The findings of the professional image, and the feeling of being undervalued by other healthcare professionals particularly doctors have been mentioned by both students and practising pharmacists. These findings are important to curriculum developers and practice leaders. The lack of confidence by pharmacy students in certain IPE activities, especially those with other healthcare students with more advanced experiences need to be explored. It is crucial to ensure the IPE exercise is appropriate to all learners and the curriculum goals need to be clear and relevant to each participating profession (201, 254) in addition to ensuring authenticity of the case (256). Although this could be discouraging, it is important to consider that the magnitude of pharmacists' scope of practice has not yet reached its pinnacle. In addition to it not being fully investigated or published as yet, its significance has not been captured in this review.

### **3.5.3 Lack of longitudinal follow-up**

Most of the included IPE studies tended to focus on short term improvements which aligns with other IPE literature (229, 274). Many of the included studies focusing on student perceptions were of short duration, focused on one cohort, and lacking longitudinal follow-ups to measure meaningful outcomes in terms of perception or patient and system outcomes (274). The effect of IPE educational interventions on attitudes varied. Longitudinal IPE activities showed significant improvement in positive attitudes. However, understanding to what led to this significant improvement is limited. Future work must include longitudinal evaluation focusing

on intrinsic and extrinsic factors that may affect perception. This allows us to track changes in the process and reporting of significant long term effects.

#### **3.5.4 Lack of IPE research on faculty**

The review found a clear absence of research on faculty perception towards IPE (46, 275, 276) with only one of the included studies focusing on pharmacy faculty perception. In this review, lack of faculty development has affected student experiences and was sensed by students (253). Therefore, research in this area would be valuable and provide richness of data. Further research is necessary (Chapter 4).

#### **3.5.5 Lack of mixed method studies**

Although the mixed method approach has been advocated for IPE research (chapter 2) and is viewed as the most effective design to gain in-depth insight of behavioural attitude and views, less than a quarter of the included studies employed mixed method approaches (n=5, 17%). These studies were of very low quality. It has been recommended that IPE research would benefit from rigorous mixed method studies that employ both qualitative and quantitative research methods to provide detailed insights of how IPE effects change in both the health care process and patient outcomes (44). There is a need for more mixed method approaches in exploring IPE and collaborative practice to allow us to understand further the complexities of perceptions and behaviours.

### **3.6 Limitations**

This systematic review has several limitations. Studies included were limited to those written in English, so some relevant studies not published in English may have been missed. There is the potential of publication bias, as only full text articles were included and grey literature was not searched. This review was based on 29 articles where the focus on pharmacy perspectives was the primary focus of these studies. However, despite best efforts to systematic search the four databases and include articles that fit with the research objective, some may have been missed unintentionally. No attempt was made to ensure the reported activities reflect the actual definition of IPE and collaborative practice.

Challenges and facilitators discussed were considered in some studies but not all should be viewed as possible influencing factors, bearing in mind the strength of these themes have not been reported by all of the included studies and were varied and inconsistent. Additionally, many included studies only focused on two health disciplines: pharmacists and doctors. They did not explore the relationship with other healthcare professionals. Further study is needed to examine other stakeholders' perspectives. These include other healthcare professionals, policy makers, administrators, and governmental officials. Many of the included studies focused on single events, single programmes, or single institutions, thus limiting the generalisability of findings.

Studies included in this review also shared some important limitations that could be taken into consideration in future studies. Many studies involving an IPE intervention did not have a pre- and post-study design to measure the change in attitude following the intervention (252). In some of the included activities, some participants were graded on their participation or submitted a reflection assignment and hence they could have acted and responded differently as (252, 263). Low response rate could be due to coding errors or participants not completing the post-survey (259, 268). All the included studies relied on self-reporting and with voluntary participation, so those who have participated may have a pre-established interest in the topic and were highly motivated with an element of social desirability resulting in bias toward more positive experiences and attitude (258, 263, 266). However, this was not the case in this study, as many challenges and barriers have been reported in this review. Another limitation is the small-scale nature of the studies and the absence of controlled studies. Participants are from a single geographical area, region, and country, so findings cannot be generalised to other similar populations.

### **3.7 Conclusion**

This review provided insights into pharmacy perspectives of IPE and collaborative practice. This is the first systematic review investigating pharmacy perspectives of IPE worldwide. This review has consolidated and synthesized existing findings regarding pharmacy perspectives on IPE and provides a better understanding of what shapes these perspectives. It is crucial to realise that the positive attitudes of pharmacy students, practising pharmacists, and faculty are extended and built upon. Appropriate training and support on interprofessional communication is needed to increase pharmacist confidence when dealing with other healthcare professionals. These findings will provide an opportunity to stakeholders and policy makers to develop and implement IPE activities that are meaningful, comprehensive, and unique.

Sustained efforts are required not just in undergraduate curricula but also in healthcare settings to improve and promote an interprofessional culture at the individual and organisational level. More IPE collaboration at the undergraduate and practice level should be developed. It is likely that through structured integration of IPE into the undergraduate curricula, more faculty development and increased collaboration in healthcare settings will have a positive effect on attitudes and, ultimately, greater patient outcomes. Despite any limitations reported, this review adds knowledge to existing IPE research and literature. It is important to look beyond the challenges and obstacles and look for ways to facilitate integrating IPE into the curriculum and promoting more collaborative working in practice. In this study, suggestions for way forward have been discussed and should be taken into consideration.



# Chapter 4: Perspectives of pharmacy faculty in the Middle East and Qatar

## 4.1 Background

Integrating IPE into different healthcare curricula remains a challenge despite the evidence that supports and promotes IPE in health professional education (4, 22, 24). It is not only the learners' attitudes which could be a barrier to implementing IPE, but also faculty attitudes (46, 51). Furthermore, it has been suggested faculty characteristics such as profession, prior IPE experiences, and the intention to engage with IPE are linked to positive IPE attitudes while the link between gender and attitudes has not been confirmed. Other faculty characteristics that have failed to demonstrate any effect on attitude included age, current faculty position, employment status, highest level of education, and years of experience as a healthcare professional (46, 277). This chapter focuses on the perspectives of pharmacy faculty in the Middle East as their perspectives has not been investigated previously. The aims of this chapter are to:

- Explore the awareness, views, attitudes, and perceptions of pharmacy faculty in Arabic speaking Middle Eastern countries towards IPE and collaborative practice.
- Identify enablers and barriers perceived by pharmacy faculty in Qatar resulting from integrating IPE into the pharmacy curriculum.
- Identify resources needed to implement IPE within the pharmacy curriculum in Qatar.

## 4.2 Research Design

A two-staged sequential explanatory mixed method design was used to capture a comprehensive perspective of pharmacy faculty in the Arabic Speaking Middle East toward IPE and collaborative practice. The first stage was completed through a quantitative survey. Then an in depth discussion of these perspectives was obtained from a sample of pharmacy faculty representatives, in Qatar, through a qualitative stage of conducting two focus groups based on the quantitative phase results. This was followed by integrating and interpreting the data from both stages.

### 4.2.1 Stage 1: Quantitative Survey

#### 4.2.1.1 Study design

This was an exploratory cross-sectional survey of faculty at pharmacy schools in Arabic speaking Middle Eastern countries.

#### 4.2.1.2 The survey

A self-administered anonymous online survey was created in Snap 10 Professional®. The survey could be completed in 20 minutes. The survey included three different validated scales used together, as part of expanding IPE at an academic institution, to measure faculty attitudes towards IPE, interprofessional teamwork, and interprofessional learning in the academic setting (46). To meet all the study's objectives, further questions based on published literature (278) and the study team's previous IPE experiences, were added to the survey to provide a broader perspectives on IPE in the Middle East.

The survey contained questions related to the following domains:

- Respondent characteristics (e.g. gender, age, academic discipline, number of years in academia, and primary academic role);
- Respondent opinions and experiences of IPE (e.g. identifying statements describing IPE, grading the importance of topics for IPE, grading the potential benefits of IPE, importance of assessing students' readiness for IPE activities), and respondent likelihood to engage in IPE;
- Multi-select questions were included based on the following: opportunities envisaged for IPE in their pharmacy programmes for the next five years, anticipated learning outcomes students should possess having experienced IPE, educator attributes an instructor implementing IPE should possess, perceived barriers potentially encountered while implementing IPE, pathways for IPE implementation in their curriculum, and healthcare professions to be included;
- Respondents' attitudes towards IPE were assessed by using a 42 item five-point Likert scale comprised of the following three validated instruments: 14-item Likert scale adapted to measure attitudes toward interprofessional health care teams (279); 15-item Likert scale to assess attitudes towards IPE (50) and 13-item Likert scale adapted to assess attitudes towards interprofessional learning in the campus-based academic setting (280). Permission from the original authors of the survey was obtained (Appendix 17).
- Open-ended questions were also included to assess respondents' perceived factors that may facilitate or hinder their involvement in IPE. The final section of the survey offered respondents an opportunity to provide any additional (open-ended) comments they may have about IPE.

Before piloting, the survey was reviewed for face and content validity by the authors and three faculty (two from Scotland and one from Qatar). Piloting was conducted with three pharmacy faculty in the Middle East who were excluded from the final study results. Only minor

modifications to the text were made after piloting; these minor changes were to make it easier to read and understand.

#### 4.2.1.3 Survey implementation

During the development phase, an electronic database of pharmacy schools in Arabic speaking Middle Eastern countries was created that included country name, schools of pharmacy in each country, faculty or administrator (Dean and/ or Head of Department) name and their email addresses. These were selected from online searches of schools of pharmacy websites. The selected emails were based on the available email addresses online. For the identified schools, a search was also conducted to identify the type of pharmacy programmes offered and healthcare programmes offered in each university. In total, 334 email addresses from 89 pharmacy schools in 14 countries were listed in this database as mentioned in chapter 1. An email containing the survey link was sent to all the names in the database. Two reminders at two-week intervals were sent to the study respondents.

#### 4.2.1.4 Analysis

Data were imported into SPSS® version 22 for analysis. Respondents' characteristics and multi select questions were analysed descriptively using frequencies and percentages. To analyse the Likert scale questions the following scores were attributed: a score of 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree and 5 = strongly agree (Appendix 3 & 4). Overall, mean ratings for the three attitudinal scales were calculated and expressed as means and standard deviations taking into consideration that a reverse coding technique was used for negatively worded statements. To examine the effect of faculty characteristics on their IPE attitudes, a series of independent *t*-tests were conducted. Independent variables that we considered included age, gender, years of experience and years of experience with IPE, likelihood of engaging in IPE, and identifying the correct IPE definition. Additionally, a one-way, between-groups analysis of variance (ANOVA) and *post hoc* comparisons using the Tukey test were conducted. *P* values at  $\leq 0.05$  were considered significant. Years of experience with IPE were grouped into two categories: one category is for respondents with none or less than 1-year experience and the other category is for the other respondents. Negative statements were reversely scored. These were:

- *Scale 1:*
  - Developing an interprofessional patient/client care plan is excessively time-consuming
  - Working in an interprofessional manner unnecessarily complicates things most of the time
  - In most instances, the time required for interprofessional consultations could be better spent in other ways

- *Scale 2:*
  - Clinical problem solving can only be learned effectively when students are taught within their individual department/school
  - It is not necessary for undergraduate health care students to learn together
- *Scale 3:*
  - Interprofessional efforts weaken course content
  - Interprofessional courses are logistically difficult
  - Accreditation requirements limit interprofessional efforts

Reliability analysis was performed on each of the attitudinal scales by obtaining a value for Cronbach's coefficient alpha. Thematic analysis was performed manually for responses from the open-ended questions.

#### **4.2.2 Stage 2: Qualitative Focus group**

Two focus groups were conducted with two groups of pharmacy faculty in Qatar. These were grouped based on shared attributes in terms of hierarchy and background:

1. Pharmacy faculty: academics in the clinical pharmacy and practice section with some working in practice settings as well.
2. Pharmacy administrators i.e. deans, associate deans, assistant deans and directors: academics with administrative portfolios at the college.

Only respondents from the Qatar survey who indicated they were willing to participate in a focus group were invited. The steps followed for the focus groups process outlined in the methodology chapter relating to planning, recruiting, implementing, and analysing.

### **4.3 Results**

#### **4.3.1 Stage 1**

The study data was collected over two stages as follows:

- College of Pharmacy in Qatar University between 20 September – 16 November 2013.
- Arabic speaking Middle East (excluding Qatar) between 12 October - 15 November 2014.

The survey was sent to 334 email addresses available. Overall, 117 were submitted. The overall response rate was 117 out of 334 (35%) (Table 29).

Table 29: Level of Response Rate from the Different Countries.

Country	Numbers of College of Pharmacy	Number of universities who responded	No of potential respondents per country based on the database	No of actual respondents per country	Response rate per country
<b>Egypt</b>	17	5	34	7	20%
<b>Bahrain</b>	1	1	1	1	100%
<b>Jordan</b>	12	7	52	24	46%
<b>Saudi Arabia</b>	16	7	63	23	36%
<b>Kuwait</b>	1	1	11	5	45%
<b>Lebanon</b>	5	4	62	20	32%
<b>Oman</b>	2	1	4	1	25%
<b>Palestine</b>	5	3	13	4	30%
<b>Sudan</b>	5	1	4	1	25%
<b>Syria</b>	6	2	15	3	20%
<b>UAE</b>	7	5	26	7	26%
<b>Yemen</b>	2	0	4	0	0%
<b>Iraq</b>	10	0	20	0	0%
<b>Qatar</b>	1	1	25	21	84%
<b>Total</b>	90	38	334	117	35%

#### 4.3.1.1 Demographic data

Table 30 highlights the sociodemographic and faculty characteristics of respondents. More than 72.4% of respondents were aged between 25 and 44 years old with the majority being males (51.4%). Respondents were mostly from Jordan (22%), Qatar (19.3%) and Lebanon (18.3%). Most respondents (45.9%) were at the assistant professor rank (equates to lecturer in UK context) and 6 out of 10 had a clinical pharmacy background. More than half of respondents had been working in higher education for more than five years (63.3%).

Table 30: Sociodemographic and Faculty Characteristics of Respondents

Characteristics	Frequency (Percent)
Gender (n=106)	
Male	56 (51.4%)
Female	50 (45.9%)
Missing data	3 (2.8%)
Age group (years) (n=108)	
18-24	1 (0.9%)
25-33	36 (33.0%)
34-44	43 (39.4%)
45-54	19 (17.4%)
54-65	9 (8.3%)
Missing data	1 (0.9%)
Country of respondents (n=107)	
Qatar	21 (19.3%)
Bahrain	1 (0.9%)
Egypt	7 (6.4%)
Jordan	24 (22.0%)
Saudi Arabia	13 (11.9%)
Kuwait	5 (4.6%)
Lebanon	20 (18.3%)
Oman	1 (0.9%)
Palestine	4 (3.7%)
Sudan	1 (0.9%)
Syria	3 (2.8%)
UAE	7 (6.4%)
Iraq	0
Yemen	0
Missing data	2 (1.8%)
Academic discipline (n=107)	
Clinical Pharmacy and Practice	66 (60.6%)
Pharmaceutical Science	41 (37.6%)
Missing data	2 (1.8%)
Primary academic role (n=107)	
Lecturer	16 (14.7%)
Assistant professor	50 (45.9%)
Associate Professor	17 (15.6%)
Full Professor	19 (17.4%)
Other (including 2 Qatar teaching assistants)	5 (4.6%)
Missing data	2 (1.8%)
Number of years working in higher education/academic sector? (n=107)	
< 1	5 (4.6%)
1-5	33 (30.3%)
6-10	29 (26.6%)
11-15	12 (11.0%)
>15	28 (25.7%)
Missing data	2 (1.8%)

The countries that participated in the survey, including the university name, pharmacy qualification offered at both undergraduate and postgraduate level and other healthcare programmes offered in that university is shown in Table 31. A total of forty universities from 12 countries participated.

Table 31: Countries participating in the Survey, University Name, Pharmacy Degrees Offered at Both Undergraduate & Postgraduate level and Other Healthcare Programmes Offered during study period

Country	University name	Pharmacy qualifications offered	Other healthcare programmes offered
<b>Bahrain</b>	University of Bahrain	Associate pharmacy degree	Nurse & health sciences
<b>Egypt</b>	Alexandria University	BSc, MSc, PhD, PharmD	Medicine, dentistry, nursing & health sciences
	Egyptian Russian University	BSc	Dentistry
	German university	BSc, MSc, PhD	Biotechnology
	Misr International University	BSc	Dentistry
<b>Jordan</b>	Al-Zaytoonah University	BSc, MSc	Nursing & physiotherapy
	American University of Madaba	BSc	Medical Laboratories & Nutrition and Dietetics
	Applied Science Private University	BSc, MSc	Nursing
	Hashemite University in Jordan	BSc	Medicine, nursing and health sciences
	Isra University	BSc, MSc	Nursing, Rehabilitation Sciences and Lab Technology
	Jordan University of Science and Technology	BSc, PharmD, MSc	Medicine, dentistry, nursing & health sciences
	Petra University	BSc, MSc	Health sciences
	Philadelphia university	BSc	Nursing
	University of Jordan	Bsc. PharmD. Msc. and PhD	Medicine, dentistry, nursing, pharmacy technician & health sciences
	Zarqa Private University	BSc	Nursing & health sciences
<b>Saudi Arabia</b>	King Faisal university	PharmD	Medicine, dentistry, nursing & health sciences
	Jazan University	PharmD	Medicine, dentistry, nursing & health sciences
	King Abdulaziz University	PharmD, MSc	Medicine, dentistry & nursing
	King Khalid University	BSc, PharmD	Medicine, dentistry, nursing, health sciences and pharmacy technician
	King Saud Bin Adulazizi	PharmD	Medicine, dentistry, nursing & health sciences
	Princess Nourah University	PharmD	Medicine, dentistry, nursing & health sciences
	Qassim University	PharmD	Medicine, dentistry, nursing & health sciences
	Umm-Al-Qura University	BSc, PharmD	Medicine, dentistry, nursing & health sciences
<b>Kuwait</b>	Kuwait University	BSc, MSc, PharmD	Medicine, dentistry & health sciences
<b>Lebanon</b>	Beirut Arab University	BSc, MSc, PhD, PharmD	Medicine, dentistry, nursing & health sciences
	Lebanese American University	BSc, PharmD	Medicine, nursing and health sciences
	Lebanese International University	BSc, PharmD	Health sciences
	Lebanese University	PharmD, MSc, PhD	Medicine, dentistry, nursing & health sciences
	Saint Joseph University	PharmD, MSc, PhD	Medicine, dentistry, nursing & health sciences
<b>Oman</b>	Oman Medical College, Oman	BSc	Medicine
<b>Palestine</b>	Al-Quds University	BSc, MSc	Medicine, dentistry, nursing & health sciences

	An Najah National University	BSc, PharmD, MSc	Medicine, nursing & health sciences
	Hebron University	BSc	Nursing & health sciences
<b>Qatar</b>	Qatar University	BSc, PharmD, MSc	Health sciences
<b>Sudan</b>	University of Medical Sciences and Technology	BSc, MSc	Medicine, dentistry & nursing
<b>Syria</b>	Aleppo university	BSc, MSc, PhD	Medicine, dentistry, nursing & health sciences
	University of Damascus	BSc, MSc, PhD	Medicine, dentistry, nursing, pharmacy technician & medical technology
<b>UAE</b>	Gulf Medical University	PharmD	Medicine, dentistry, nursing & health sciences
	UAE university	PharmD	Medicine, nursing and health sciences
	University of Sharjah	BSc	Medicine, dentistry, nursing & health sciences
	Al Ain University of Science and Technology	BSc	None

#### 4.3.1.2 The three IPE attitudinal scales and reliability analysis

Overall, respondents had very positive attitudes toward IPE. Table 32, summarises the pharmacy faculty attitudes towards Interprofessional Health Care Teams. Table 33 summarises the pharmacy faculty attitudes towards IPE. Table 34 summarises the pharmacy faculty attitudes towards interprofessional learning in the academic setting. Pharmacy faculty overall had an overwhelming positive attitude towards IPE. For scale 1 in relation to pharmacy faculty attitudes towards interprofessional health care teams, the percentage of agreement varied between 30.9% and 91.8%, with a mean percentage of agreement of 74.2%. The highest percentage was perceived for the following statement 'Developing a patient care plan with other team members avoids errors in delivering care' where 91.8% (n=101) agreed or strongly agreed with this statement. The least percentage of agreement was perceived for 'Working in an interprofessional manner unnecessarily complicates things most of the time (30.9%, n=34)'.

For scale 2 related to the pharmacy faculty attitudes towards IPE, the percentage of agreement varied between 15% and 92.8%, with a mean percentage of agreement of 80.3%. The highest percentage of agreement was perceived for the following two statements: 'Interprofessional learning will help students think positively about other health care professionals (92.8%, n=102)'. and 'For small-group learning to work, students need to trust and respect each other (92.8%, n=102)'. The least percentage of agreement (15%) was perceived for the following statement: 'It is not necessary for undergraduate health care students to learn together' (n=104).

For scale 3 which related to the pharmacy faculty attitudes towards IPL in the university setting, the percentage of agreement varied between 16.3% and 90%, with a mean percentage of agreement of 58.7%. The highest percentage was perceived for the following statements: 'It is



important for faculty health centre campuses to provide interprofessional learning opportunities (90%, n=99) with the least perceived for the following statement: 'Interprofessional efforts weaken course content (16.3%, n=18)'. Additionally, nearly 40% of respondents were undecided towards some statements such as 'Faculty like teaching students in other faculty departments'; 'Students like courses that include students from other academic departments'; and 'Students like courses taught by faculty from other academic departments'.

Table 32: Scale 1 - Attitudes toward Interprofessional Health Care Teams

	n (%)				
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Patients receiving interprofessional care are more likely than others to be treated as whole persons (n=105)	2 (1.8%)	3 (2.7%)	16 (14.5%)	38 (34.5%)	46 (41.2%)
Developing an interprofessional patient care plan is excessively time-consuming (n=106)	8 (7.3%)	33 (30.0%)	16 (14.5%)	35 (31.8%)	14 (12.7%)
Interprofessional learning should be a goal of this college (n=108)	1 (0.8%)	2 (1.8%)	16 (14.5%)	55 (50.0%)	34 (30.9%)
The interprofessional approach makes the delivery of care more efficient (n=106)	1 (0.8%)	2 (1.8%)	7 (6.4%)	33 (30.0%)	63 (57.3%)
Developing a patient care plan with other team members avoids errors in delivering care (n=106)	1 (0.8%)	2 (1.8%)	3 (2.7%)	34 (30.9%)	67 (60.9%)
Working in an interprofessional manner unnecessarily complicates things most of the time (n=107)	14 (12.7%)	34 (30.9%)	25 (22.7%)	22 (20.0%)	12 (10.9%)
Working in an interprofessional environment keeps most professionals enthusiastic and interested in their jobs (n=107)	2 (1.8%)	1 (0.8%)	16 (14.5%)	46 (41.8%)	42 (38.2%)
The interprofessional approach improves the quality of care to patients/clients (n=106)	2 (1.8%)	0	4 (3.6%)	30 (27.3%)	70 (63.6%)
In most instances, the time required for interprofessional consultations could be better spent in other ways (n=107)	17 (15.5%)	24 (21.8%)	21 (19.1%)	31 (28.2%)	14 (12.7%)
The interprofessional approach permits health professionals to meet the needs of family caregivers as well as patients (n=106)	1 (0.8%)	2 (1.8%)	16 (14.5%)	48 (43.6%)	39 (35.5%)
Having to report observations to a team helps team members better understand the work of other health professionals (n=106)	1 (0.8%)	0	5 (4.5%)	46 (41.8%)	54 (49.1%)
Hospital patients who receive interprofessional team care are better prepared for discharge than other patients (n=105)	1 (0.8%)	1 (0.8%)	9 (8.1%)	33 (30.0%)	61 (55.5%)
Team meetings foster communication among members from different professions or disciplines (n=105)	1 (0.8%)	0	10 (9.1%)	44 (40.0%)	50 (45.5%)

Table 33: Scale 2 - Attitudes towards Interprofessional Education

	n (%)				
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Interprofessional learning will help students think positively about other health care professionals (n=107)	1 (0.9%)	0	4 (3.1%)	41 (37.3%)	61 (55.5%)
Clinical problem solving can only be learned effectively when students are taught within their individual department/school (n=106)	20 (18.2%)	39 (35.5%)	15 (13.6%)	19 (17.3%)	13 (11.8%)
Interprofessional learning before qualification will help health professional students to become better team-workers (n=106)	1 (0.8%)	0	5 (4.5%)	44 (40.0%)	56 (50.9%)
Patients would ultimately benefit if health care students worked together to solve patient problems (n=105)	1 (0.8%)	2 (1.8%)	5 (4.5%)	46 (41.8%)	51 (46.4%)
Students in my professional group would benefit from working on small-group projects with other health care workers (n=107)	1 (0.8%)	1 (0.8%)	7 (6.4%)	54 (49.1%)	44 (40.0%)
Communications skills should be learned with integrated classes of health care students (n=104)	2 (1.8%)	2 (1.8%)	11 (10.0%)	49 (44.5%)	40 (36.4%)
Interprofessional learning will help to clarify the nature of patient problems for students (n=106)	1 (0.8%)	1 (0.8%)	6 (5.5%)	49 (44.5%)	49 (44.5%)
It is not necessary for undergraduate health care students to learn together (n=104)	30 (27.3%)	47 (42.7%)	13 (11.8%)	9 (10%)	4 (5%)
Learning with students in other health professional schools helps undergraduates to become more effective members of a health care team (n=106)	1 (0.8%)	0	6 (5.5%)	51 (46.4%)	48 (43.6%)
Interprofessional learning among health care students will increase their ability to understand clinical problems (n=106)	1 (0.8%)	0	9 (8.1%)	44 (40.0%)	50 (47.3%)
Interprofessional learning will help students to understand their own professional limitations (n=105)	1 (0.8%)	0	7 (6.4%)	48 (43.6%)	49 (44.5%)
For small-group learning to work, students need to trust and respect each other (n=105)	1 (0.8%)	0	3 (2.7%)	40 (36.4%)	62 (56.4%)
Interprofessional learning among health professional students will help them to communicate better with patients and other professionals (n=104)	1 (0.8%)	2 (1.8%)	0	44 (40.0%)	57 (51.8%)
Team-working skills are essential for all health care students to learn (n=105)	1 (0.8%)	3 (2.7%)	0	38 (34.5%)	63 (57.3%)
Learning between health care students before qualification would improve working relationships after qualification (n=104)	1 (0.8%)	6 (5.5%)	0	38 (34.5%)	59 (53.6%)

Table 34: Scale 3 - Attitudes towards Interprofessional Learning in the Academic Setting

	n (%)				
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Interprofessional learning better utilizes resources (n=105)	1 (0.8%)	2 (1.8%)	27 (24.5%)	49 (44.5%)	26 (23.6%)
It is important for academic health centre campuses to provide interprofessional learning opportunities (n=104)	1 (0.8%)	0	4 (3.6%)	60 (54.5%)	39 (35.5%)
Interprofessional learning should be a goal of this campus (n=105)	1 (0.8%)	1 (0.8%)	18 (16.4%)	53 (48.2%)	32 (29.1%)
Students like courses taught by faculty from other academic departments (n=105)	2 (1.8%)	11 (10.0%)	42 (38.2%)	35 (31.8%)	15 (13.6%)
Students like courses that include students from other academic departments (n=105)	1 (0.8%)	2 (1.8%)	46 (41.8%)	40 (36.4%)	16 (14.5%)
Faculty should be encouraged to participate in interprofessional courses (n=104)	1 (0.8%)	0	6 (5.5%)	53 (48.2%)	44 (40.0%)
Faculty like teaching to students in other academic departments (n=105)	1 (0.8%)	7 (6.3%)	46 (41.8%)	32 (20.1%)	19 (17.3%)
Faculty like teaching with faculty from other academic departments (n=104)	1 (0.8%)	9 (8.2%)	42 (38.2%)	36 (32.7%)	16 (14.5%)
Interprofessional efforts weaken course content (n=104)	24 (21.8%)	38 (34.5%)	23 (20.9%)	11 (10.0%)	7 (6.3%)
Interprofessional efforts require support from campus administration (n=103)	1 (0.8%)	2 (1.8%)	4 (3.6%)	45 (40.9%)	51 (46.4%)
Interprofessional courses are logistically difficult (n=103)	2 (1.8%)	15 (13.6%)	34 (30.9%)	36 (32.7%)	16 (14.5%)
Faculty should be rewarded for participation in interprofessional courses (n=101)	1 (0.8%)	1 (0.8%)	16 (14.5%)	44 (40.0%)	39 (35.5%)
Accreditation requirements limit interprofessional efforts (n=104)	21 (19.1%)	17 (15.5%)	31 (28.2%)	23 (20.9%)	12 (10.9%)

Table 35 summarises the overall mean scores on the three attitudinal scales. Reliability analysis revealed high internal consistency with Cronbach's alpha for the three scales = 0.807, 0.911 and 0.801 respectively.

Table 35: Summary of Mean scores on the Three IPE Attitudinal Scales

	Mean $\pm$ SD	Range
Scale 1: Attitudes toward Interprofessional Health Care Teams	52.87 $\pm$ 6.448	(17-65)
Scale 2: Attitudes towards interprofessional education	64.53 $\pm$ 7.92	(21-75)
Scale 3: Attitudes towards interprofessional learning in the academic setting	48.91 $\pm$ 6.169	(24-63)

A one-way, between-groups analysis of variance (ANOVA) and *post hoc* comparisons using the Tukey test indicated the mean overall score for scales 1 and 2 were not significantly different in different locations (Table 36). However, the effect of location had a significant effect on the attitude scale of interprofessional learning in academic setting (scale 3),  $F(6,84) = 3.62$ ,  $p = 0.003$ . *Post hoc* analysis using the Tukey test of significance indicated the mean score was significantly lower in Jordan ( $M = 44.65$ ,  $SD = 6.77$ ) than in Lebanon ( $M = 52.35$ ,  $SD = 5.44$ ),  $F(6, 84) = 7.70$ ,  $p = 0.003$ . There were no other significant differences between the other countries.

Table 36: Summary of Total Mean Scores on the Three IPE Attitudinal Scales Based on Different Countries/Regions

Scale	Mean (SD)							
	Qatar (n=21)	Jordan (n=24)	KSA (n=13)	Lebanon (n=20)	Other GCC* (n=14)	Other North Africa† (n=8)	Other Bilad Sham∞ (n=7)	Total (n=107)
1	53.85 (5.98)	49.82 (8.06)	54.36 (7.45)	55.39 (4.00)	51.69 (5.48)	53.57 (5.80)	53.00 (6.16)	52.92 (6.46)
2	65.16 (6.09)	62.36 (10.92)	64.25 (7.24)	68.94 (4.84)	64.23 (7.56)	62.88 (6.62)	63.60 (7.77)	64.68 (7.83)
3	48.68 (5.14)	44.65 (6.77)	50.92 (7.37)	52.35 (5.44)	50.36 (4.86)	49.14 (3.67)	44.00 (4.36)	48.95 (6.20)

\* GCC: Bahrain, Kuwait, Saudi Arabia & United Arab Emirates./ ∞ Bilad Al-Sham: Jordan, Lebanon, Palestine & Syria./ † N. Africa: Egypt and Sudan.

Lebanon had the highest positive total mean score in all the three scales while Jordan had the lowest total mean score in the attitudes towards interprofessional health care teams and attitudes towards inter-professional education. Other Bilad al-sham countries (Syria and Palestine) had the lowest total score in their attitudes towards interprofessional learning in an academic setting.

The overwhelming majority of respondents (90.8%) perceived IPE to be moderately important or very important. The survey also asked respondents to indicate with which health care profession they would like their students to interact. Medical students were ranked the highest (n=104, 95.4%) followed by nursing (n=94; 86.2%) and then health sciences (n=69; 63.3%).

#### 4.3.1.3 Variables tested that may affect attitudes

Table 37 indicates the different variables that significantly affected faculty attitudes. Respondents who were aged 45 years or above had more of a positive attitude for the mean score of scale 1 – attitudes towards interprofessional health care – than those who were 44 years or below ( $p = 0.039$ ). Over two thirds of the respondents ( $n=79$ ), who indicated that they are likely to engage in or to continue to engage in IPE within the next three years, had significantly higher mean scores for the three scales 1, 2, and 3 than those who were not likely to engage in IPE ( $p < 0.001$ ). Additionally, the number of years of IPE experience for each pharmacy school in the Middle East was explored and the study results indicated a significant difference in the mean score of scale 3 between the groups who had less than one year IPE experience and the group who had more than one year of experience ( $p = 0.006$ ).

Table 37: The Variables that Significantly Affected Faculty Attitudes

	Mean (SD)							
	Age		Intent to engage		Years of IPE Experience*		IPE definition*	
	44 years or below (n=80)	45 years or above (n=28)	Not likely, unlikely /not sure (n=30)	Likely or very likely (n=79)	None or less than 1 (n=46)	1 to over 15 years (n=32)	Correctly identified IPE definition (n=55)	Did not correctly identify IPE definition (n=32)
Scale 1 – Attitudes towards inter-professional health care teams	52.1 (6.82)	55.2 (4.74)	48.4 (7.74)	54.5 (5.06)	51.6 (6.91)	53.7 (5.62)	53.9 (5.28)	50.2 (8.05)
Scale 2 – Attitudes towards inter-professional education	64.2 (8.84)	65.7 (4.84)	60.0 (10.47)	66.1 (6.17)	63.0 (8.91)	66.4 (7.24)	66.7 (6.18)	60.8 (9.94)
Scale 3 – Attitudes towards inter-professional learning in academic setting	48.6 (6.46)	49.8 (5.45)	43.9 (5.90)	50.6 (5.33)	47.0 (6.12)	51.0 (5.80)	50.6 (5.95)	46.4 (6.45)

\*Middle East only excluding Qatar.

#### 4.3.1.4 Experience of IPE and identifying the correct IPE definition

Respondents were given four statements and were asked to choose the statement they felt was the best IPE definition according to CAIPE definition. The respondents' answers were recoded as either a correct or incorrect identification of the statement. There was a statistically significant difference in the mean score of scales 1, 2 and 3 between respondents who did and those did not correctly identify the statement ( $p = 0.018$ ;  $p = 0.002$ ;  $p = 0.006$  respectively). Other variables such as gender and academic discipline did not significantly affect faculty attitudes.

Forty-seven out of 107 of respondents (44%) indicated they had no IPE experience, and 43 out of 107 (40%) indicated they had from 1 to 5 years' experience of IPE. The majority of respondents (75%) who indicated they have 6-10 years of experience did not correctly identify the IPE definition and none of the respondents who indicated they have 11-15 years of experience identified the correct definition of IPE. These results are shown in Figure 18.

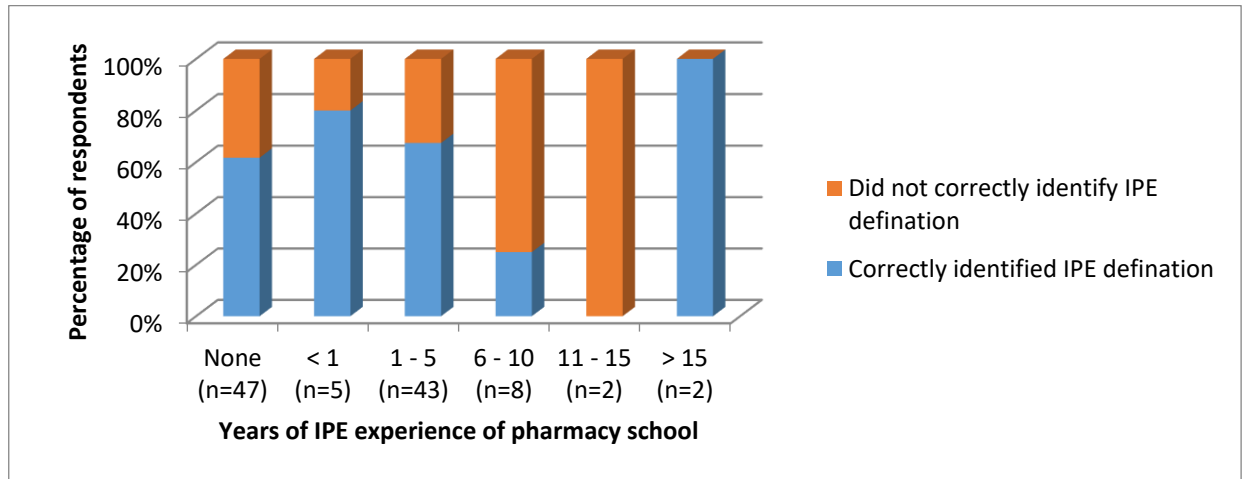


Figure 18. Experience of IPE and correctly identifying the statement

#### 4.3.1.5 Topics important for IPE

The respondents were also asked to rank the importance of fifteen topics as related to IPE with 1 being 'not at all important' to 5 'very important'. Patient safety was ranked the highest by 78.0% of the respondents (n=85) followed by 71.6% for communication skills (n=78), 68.8% for medication safety (n=75) and 67.0% for interprofessional team roles (n=73) as shown in Figure 19.

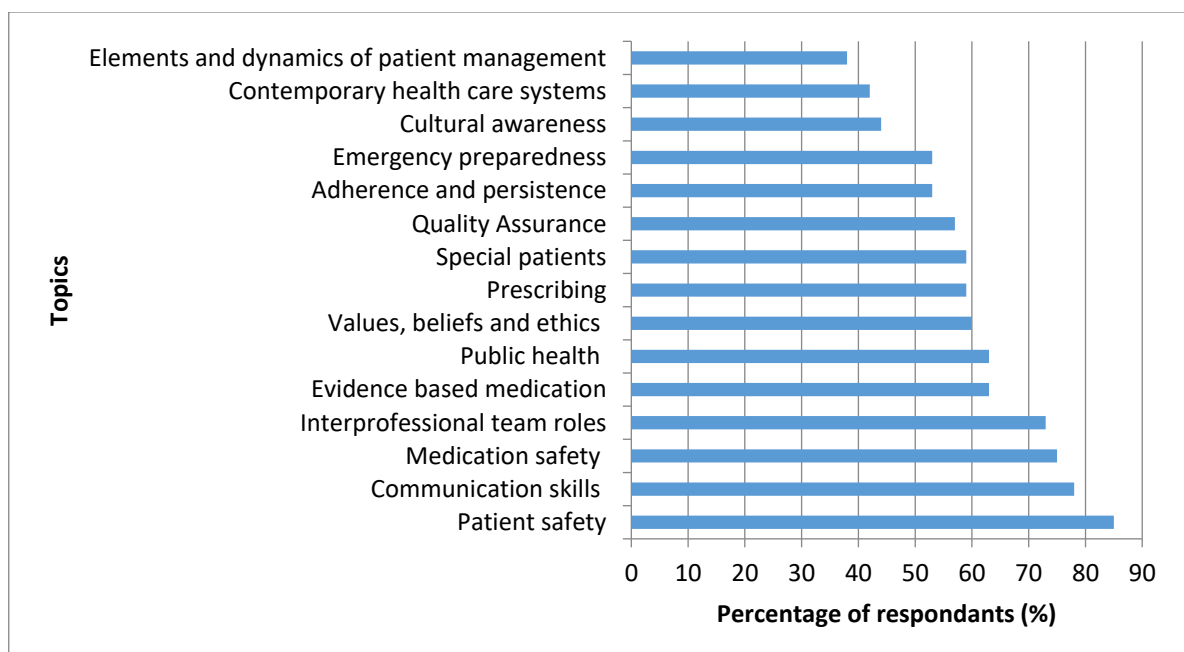


Figure 19. Ranking for Topics of IPE as perceived by respondents

#### 4.3.1.6 IPE perceived benefits

Respondents were further asked to rank IPE perceived benefits (Figure 20). More than three quarter of the respondents (78.0% of respondents, n=85) perceived 'respects the integrity and contribution of each profession' as the highest benefit of IPE followed by 'encouraging professionals to learn with, from and about each other' (73.4% of respondents, n=80), 'enhances practice within professions' (70.6% of respondents, n=77) and 'increases professional satisfaction (63.2%, n=67). The least perceived benefit (43.9%, n=47) was 'focuses on the needs of service users and carers'.

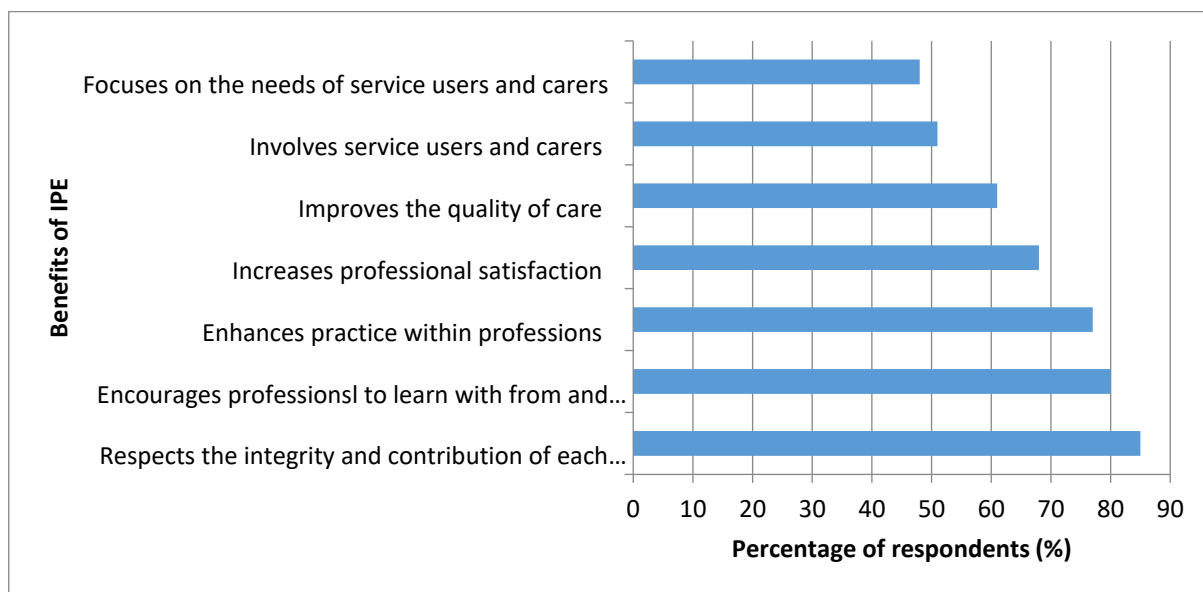


Figure 20. Benefits of IPE as perceived by respondents

#### 4.3.1.7 Learning outcomes for IPE

Respondents selected the learning outcomes that they would like students to possess following incorporation of an IPE program (Table 38). The highly perceived outcomes were to be 'able to recognise and respect the roles, responsibilities, and competence of other professions in relation to one's own' (87.2%, n=95) and to be able to work with other professions to effect change and resolve conflict in the provision of care and treatment (87.2%, n=95). Other perceived benefits identified in the open-ended questions were 'enhanced communication skills and teamwork', 'roles and responsibilities clarification' and 'working together to ensure shared decision making'. Respect was also considered important. Many academics believed being involved in IPE is part of their self- and professional development and that it increases students' satisfaction.



*Table 38: The IPE-Related Learning Outcomes that Respondents Would Like Students to Possess (n=107)*

Learning Outcome	Frequency (percent)
Able to recognise and respect the roles, responsibilities and competence of other professions in relation to one's own	95 (87.2%)
Able to work with other professions to effect change and resolve conflict in the provision of care and treatment	95 (87.2%)
Able to work with others to assess, plan, provide and review care for individual patients	88 (80.7%)
Able to describe one's roles and responsibilities clearly to other professions	87 (79.8%)
Able to tolerate differences, misunderstandings and shortcomings in other professions	85 (78.0%)
Able to recognise and observe the constraints of one's role, responsibilities and competence, yet perceive needs in a wider framework	78 (71.6%)
Able to facilitate interprofessional case conferences, team meetings, etc	70 (64.2%)
Able to enter into interdependent relations with other professions	69 (63.3%)

#### 4.3.1.8 IPE in pharmacy programmes

The most popular method for incorporating IPE into the pharmacy programmes in the next five years, as envisaged by respondents, was regular IPE events (51.4%, n=56), followed by IPE clinical rotations (49.5%, n=54), and new and innovative curriculum design for IPE (46.8%, n=51). Less popular methods were having an IPE lead for the course (17.9%, n=19) but with only 5.5% (n=6) of the respondents indicating that IPE will not be taught in their institutions.

#### 4.3.1.9 Attributes needed for interprofessional educators

Team teaching experience was the highest attribute selected (74.5%, n=82) followed by 68.8% (n=75), indicating group facilitation experience, ability to overcome miscommunication that may arise from different professions' perspectives, and engaging in critical reflection on interprofessional teaching as shown in Table 39.

*Table 39: Educator Attributes for Implementing IPE (n=107)*

Statement	Frequency (percentage)
Team teaching experience	82 (75.2%)
Group facilitation experience	75 (68.8%)
Practiced in helping student overcome miscommunication that may arise from different professions' perspectives	75 (68.2%)
Engages in critical reflection on interprofessional teaching and implements changes in the process	75 (68.2%)
Skilled in helping groups through conflict	73 (67.0%)
Expertise in the competencies needed for practice in the setting	70 (64.2%)
Capable of helping learners connect theory to practice	67 (61.5%)
At ease with the technology and learning methods being used (e.g. problem based learning, active learning)	61 (56.0%)
Accomplished in developing targeted assessments and providing specific and sensitive feedback	58 (53.2%)
Pragmatic expectations of interprofessional learning	51 (46.8%)

#### 4.3.1.10 Pharmacy students and other healthcare students

The survey asked respondents to indicate with which health care professions they would like their students to have an IPE experience. Medical students were ranked the highest (97.2%, n=104), followed by nursing (87.9%, n=94) and then health sciences (64.5%, n=69). Other professions which counted for were 23.4% (n=25) and included dieticians, nutritionists, occupational therapists, pharmacy technicians, physiotherapists, psychologist, public health personnel, respiratory therapists, social worker, sports sciences, and epidemiologist and bio-statistician.

#### 4.3.1.11 Perceived implementation barriers

Twenty possible barriers were listed and academics were asked to specify which would impede their implementation (Table 40). Respondents were given the option of choosing more than one barrier.

*Table 40: Barriers Encountered or Maybe Encountered while Trying to Implement IPE*

Barrier	Frequency (percent)
Cultural challenges for each profession	59 (54.1%)
Scheduling common courses and activities	58 (53.2%)
Limited resources	58 (53.2%)
Time and resources needed	58 (53.2%)
Lack of conceptual support	56 (51.4%)
Communication issues	53 (48.6%)
Logistics	44 (40.4%)
Time commitment	42 (38.5%)
Lack of infrastructure to reward faculty members for engaging in	40 (36.7%)
Leadership and administrative support	40 (36.7%)
Faculty resistance to IPE	36 (33.0%)
Unique pedagogical approaches among each profession	34 (31.2%)
Faculty development	32 (29.4%)
Insufficient classroom space	31 (28.4%)
insufficient interdisciplinary faculty	32 (29.4%)
Lack of consistency with which students are prepared to enter	28 (25.7%)
Geographic separation of the different health care profession	26 (23.9%)
Corresponding baseline knowledge and abilities	25 (22.9%)
Subsequent course and content ownership	22 (20.2%)
Student resistance to IPE	16 (14.7%)

Higher percentages for perceived barriers for implementing IPE that scored highly included cultural challenges for each profession (54.1%, n=59), scheduling common courses and activities (53.2%, n=58), limited resources (53.2%, n=58) and time and resources needed (53.2%, n=58). Student resistance to IPE was perceived as a barrier by only 14.7% of

respondents (n=16). Additionally, faculty were encouraged to provide additional comments about negative factors that would have influenced or would influence their involvement in IPE. Sixty-nine responses were provided and content was reviewed. Time, logistical problems, professional hierarchy/conflict, 'fear of professional encroachment', 'resistance to change', and, in particular, 'resistance from medical faculty members' was most frequently reported. Moreover, organisational barriers such as 'lack of recognition or support', or resources' and 'the significant time required to deliver is disproportionate from the contact times' were highlighted in the respondents' response. A negative perception of the role of pharmacists by other healthcare professionals was also a factor mentioned. Examples of respondent verbatim quotes from the different countries, identifying barriers to IPE are shown in Table 41.

*Table 41: Examples of Respondent's Quotes about Barriers Perceived to Implementing IPE*

Country	Quote
<b>Kuwait</b>	'Applicants to the healthcare programmes used to be accepted based on their GPA. This reinforced the attitude of 'hierarchy' where medical students felt 'higher' than the rest. Fortunately, 2014 is the year where all this changed. Students are now accepted based on their FIRST choice - whatever it is'.
<b>Sudan</b>	'The medical community in my country work as uniprofessional teams where each profession does their work with little or no interaction with other professions. The introduction of clinical pharmacy is quite recent and hence a lot of pharmacists are faced with rejection that may sometimes lead to conflict'.
<b>Lebanon</b>	'Conceptual barriers about what IPE is truly about'.
<b>Bahrain</b>	'It is easier said than done, as we all know how important IPE is but in practice is another story. It might be hard to set up at first, but even harder to sustain it in a long run. Sustainability is a matter of great concern'.
<b>Qatar</b>	'IPE not embraced by all the programmes educating healthcare provider'.
<b>Egypt</b>	'Lack of sincere efforts to develop interprofessional education'.

\*GPA = grade point average.

#### 4.3.1.12 Perceived implementation facilitators

In addition to providing comments regarding perceived barriers as shown above, faculty were encouraged to provide additional comments about positive factors that would have influenced or would influence their involvement in IPE. Sixty-eight responses were provided and comments were reviewed. All responses were positive with faculty very keen to see IPE incorporated into their curricula. The most frequently noted benefits were graduating collaborative practice-ready graduates, improving patient care overall, and better understanding of your own and other health providers' roles and responsibilities. Additional noted benefits noted were curricula development; enhancing the interprofessional communication skills and teamwork; increased awareness about a pharmacist's role; organisational support in terms of good incentive, reward and appreciation; and interest by different healthcare programmes to apply it to their curricula. Respect was another important factor frequently mentioned by respondents. Many faculty believed it is part of their self- and professional development, as well as optimising the student learning experience and their preparedness for practice. Examples of respondent verbatim quotes from different countries highlighting the positive factors for implementing IPE are shown in Table 42.

*Table 42: Examples of Respondent's Quotes about Positive Factors Perceived to Implementing IPE*

Country	Quote
<b>Lebanon</b>	'The birth of a new culture of communication and collaboration instead of competition, the achievement of the ultimate goal of all health care partners which is the appropriate response to the patient's needs'.
<b>Saudi Arabia</b>	'IPE can be an asset and may define the future environment of the healthcare delivery in a nation as the role of clinical pharmacists and physicians are being redefined in the modern era which will impact the working of other healthcare professionals as well as patients directly'.
<b>Egypt</b>	'Dissemination of the disciplines encouraging interprofessional education reflects positively on health care programmes and patient safety'.
<b>Kuwait</b>	'Promote student confidence in each profession, promote respect for the other professions, and team working'.
<b>Qatar</b>	'All professions should support the idea and put aside their ego and differences. Our main target is the PATIENT'.
<b>Sudan</b>	'I believe interprofessional education allows each student to appreciate and understand the role of other profession and this may enable them to understand their own constraints, their need for other professions hence affecting changes and resolving conflict'.

#### **4.3.2 Stage 2**

Two focus groups were convened for pharmacy faculty in Qatar to explore in depth the perceptions and experiences of the different participants concerning IPE and collaborative practice. Common themes were identified. The number of faculty who attended the focus groups were: faculty members (n=5) and academic administrators: (n=5). All the faculty participants (n=5) were at Assistant professor level. Their experience working at the College of pharmacy ranged from 6 months – 5 years. Three of the participating faculty were cross appointed to a hospital setting. All had pharmacy background and four were from North American environment. The academic administrators (n=5) who participated in the focus group included the Dean, Associate Dean for Academic Affairs, Associate Dean for Research and Graduate studies, Assistant Dean for Faculty and Student Affairs and the Director of the PharmD program. Their experience working at the College of pharmacy ranged from 6 months – 6.5 years. Findings from the analysis are presented under three themes focusing on enablers, barriers, and recommendations as summarised in Table 43.

Table 43: Summary of Key Themes and Subthemes for Pharmacy Faculty and Pharmacy Administrator Focus Group

Enablers	Barriers	Recommendations
Student related benefits <ul style="list-style-type: none"> <li>• Understanding roles and responsibilities</li> </ul>	Initial IPE experiences: <ul style="list-style-type: none"> <li>• Lack of familiarity with the others curriculum</li> <li>• Composition of the group</li> <li>• Logistical challenges</li> <li>• Commitment from the other professions</li> <li>• Student perception:</li> <li>• Gender issues</li> </ul>	Faculty recommendations for future IPE: <ul style="list-style-type: none"> <li>• Establishing an IPE unit/committee</li> <li>• IPE curriculum</li> <li>• Faculty development workshops</li> <li>• Extra curricula activities</li> </ul>
Current positive influences <ul style="list-style-type: none"> <li>• Initial IPE experiences</li> <li>• Cross appointed faculty</li> <li>• Accreditation</li> <li>• New pharmacy graduates</li> <li>• Initiatives at the National level</li> <li>• Changing role of the pharmacist</li> </ul>	Current working practices and processes: <ul style="list-style-type: none"> <li>• Hierarchy</li> <li>• Healthcare professionals attitude</li> <li>• Lack of collaborative practice</li> </ul>	

#### 4.3.2.1 Pharmacy faculty perceptions of the enablers

In general, pharmacy academics highlighted the need and importance of IPE to be part of the curriculum in terms of student related benefits and the current positive influences that have taken place to nurture an interprofessional environment both in the academia and practice as shown below.

##### 4.3.2.1.1 *Student related benefits: understanding roles and responsibilities*

Pharmacy faculty expressed the need for students to learn together as when they graduate they will be working with other healthcare professionals. Therefore, it is essential they gain an understanding about their own contribution to the healthcare team as well as learning about others' roles and responsibilities, so they can appropriately refer or interact with other health care providers. This will lead, according to participants, to mutual appreciation and respect.

... as a pharmacist, I do have an important role. I do know things better and there's an area where I can provide something that the physician cannot. So the physician needs my help in order to better the outcome ... And it's, it's not the case, so I think we need to build respect and understand, how important for example nursing can be to the health care team, to the patient outcomes and to also understand the limitations of the physician and what role we can provide (Pharmacy administrator participant 1).

Another benefit of IPE for students is that learning in an IPE environment will expand their horizon and will make them think outside the box of their silo professions:

... not get them closed minded, the students. If you're introducing them to another profession, it kind of expands their mind so it doesn't just focus solely on what they've learned ... they would look at the other, the whole picture instead (Pharmacy faculty participant 1).

One administrator noted students are being introduced to the concept of IPE and multidisciplinary care at healthcare settings in their first year/s in the pharmacy programmes:

...but they're kind of just accepting it as theory as there are a lot of other topics, we're telling them about pharmacy, so I think, they believe us when we tell them it's going to be important. But it's probably not until they're more senior students and have been on SPEP [Structured Practical Experiences in Pharmacy] that they even get a better sense of what it could actually mean for them in a real-life practice (Pharmacy administrator participant 5).

#### 4.3.2.1.2 *Current positive influences*

Pharmacy faculty discussed in length the various positive influences that have taken place both at the college level and at the national level paving the way for interprofessional collaboration. At the college level, a number of initiatives have taken place, including the initial IPE experiences, the establishment of cross-appointed faculty members, the accreditation of the pharmacy programme, and graduating highly qualified students from the pharmacy programme. At a national level, this includes various initiatives that have taken place to promote collaborative practice and the advancement perceived in the role of the pharmacist which is highlighted further below.

##### 4.3.2.1.2.1 *Initial IPE experiences*

Two IPE activities had taken place at the time of this focus group. Faculty leading these activities recognised the college support that paved the way to overcome logistic and administrative barriers. One IPE activity arose from mutual interest in designing it through personal professional contacts. Four factors eased the organisation of this activity: faculty interest in the topic, prior experience of working with the other faculty members, student enthusiasm, and faculty flexibility to adjust schedule when needed:

I guess what made it easy was that we had prior relation [with the faculty at University of Calgary], like I knew the person on the other side, before and had worked with them before. That made it easy. I guess the enthusiasm of the students, because it did require modification and movement of their schedule so we had support from other faculty who could switch their lecture time. The students weren't saying 'why do we have to go over there?'. They were open to the experience (Pharmacy administrator participant 5).

The other IPE activity that had taken place due to pharmacy faculty personal interest in the topic from their previous experiences:

... in my college in Canada, it was a College of Pharmacy and Nutrition, so I was used to already working with Nutrition. Here in Qatar, they were here on campus, so before we left for the summer, we contacted them and they seemed to be interested (Pharmacy faculty participant 2).

These activities were well received by faculty and students.

I think the benefits were that we did see our students working with the nutrition students, and they were actually creating one kind of care plan template. As well, there was a lot of collaboration, because our students were P2 [in their second year], theirs were P4 [fourth year student], they were helping to teach our students about different lab values that they might not have experienced yet and the feedback from the students was very positive (Pharmacy faculty participant 2).

#### 4.3.2.1.2.2 *Cross appointed faculty*

Pharmacy faculty commented on the College of Pharmacy initiative towards the establishment of cross appointed faculty clinicians where some pharmacy faculty, in addition to their teaching and academic activities, are assigned a clinical site at Hamad Medical Cooperation to work in and precept pharmacy students. The cross-appointed faculty works closely with other healthcare professionals to provide patient care. Pharmacy faculty believed that cross-appointed faculty could play a major role in facilitating IPE and ensuring it relates to the practice settings:

They can use this experience [cross appointment] to like kind of direct how to do this education to fit exactly the real practice. You don't want like somebody who's detached from the practice; he doesn't know exactly the real set up there. So I would think this is a plus initiative we have already the cross appointment and with time we're going to have like more people spending more time in hospital setting in the right environment (Pharmacy administrator participant 3).

One of the cross-appointed faculty highlighted examples of where their students in internship are interacting with other healthcare professionals:

For my rotation, the physicians involve our students a lot actually and in terms of they get like homework assignments and so do the residents and then they come back and they have to, present whatever the question is that they were asked. They have to share it with the group, then they learn from the residents as well, because they all have their homework assignments too (Pharmacy faculty participant 3).

Another faculty felt the importance of them being role models to their students:

But we're hoping that now this year with the PharmD students being precepted by PharmD faculty, they're actually seeing the collaborative efforts, on our parts, so hopefully they can use that as a model wherever set—whichever setting that they go to (Pharmacy faculty participant 4).

#### 4.3.2.1.2.3 *Accreditation*

Another positive influencing factor is that the pharmacy programme is fully accredited by the CCAPP, which requires evidence of IPE incorporation into the pharmacy curriculum as part of its standards. Pharmacy faculty felt that having IPE as part of the accreditation standards is a strong drive towards promoting IPE and IPC. They recognised that the college administration and Qatar University administration have been always supportive of any initiative that is good for the students and for accreditation. They have also noted that IPE is in the college strategic plan and is a priority.

What the university is doing for the programmes so far that they've been generous with the resources... especially when it's anything that's linked to accreditation, the university is ready to pay money and to make sure that we maintain our accreditation (Pharmacy administrator participant 1).

#### 4.3.2.1.2.4 *New pharmacy graduates*

Pharmacy faculty are enthusiastic about what the future holds for their students and were adamant they will be agents for change:

Since they [pharmacy students] joined this college and we've been putting in their mind that 'you are going to change the practice' and 'you are going to change the scope of the pharmacist' ... and this collaboration is going to be part of the change, so I don't think it's very far away from the messages that they have been taking and applying over the past years. (Pharmacy administrator participant 4)

#### 4.3.2.1.2.5 *Initiatives at the national level*

Participants noted that Qatar is undergoing a slow transition from the traditional physician-centred care to more team-based care. They highlighted some of the national initiatives that are ongoing to promote collaboration between the different healthcare professions with the College of Pharmacy being part of them. These include:

1. An Academic Health System initiative which aims to integrate the health care practices with academia and focus in its mission and vision on multidisciplinary and collaborative care;
2. The Qatar Simulation Consortium which is a forum that brings together all the health care professionals and educational institutions in the country with an emphasis on simulation education;
3. The Qatar Interprofessional Healthcare Council which was formed in 2009 with representations from all the healthcare schools in Qatar;
4. The annual skills competition held by the College of North Atlantic- Qatar.

One of the pharmacy faculty considered these initiatives as a promise leading to a collaborative future:

I am very optimistic to say because most of these initiatives bring together people from all settings including Hamad Medical Corporation, which is the major health care provider in the country. And people from Hamad come and they recognise the value of having pharmacists there, in everything they do and we have been invited in all the initiatives that are happening in the country. So I'm very optimistic about—things will happen. And since there are initiatives in place, I think it will happen soon (Pharmacy faculty participant 5).

Another pharmacy administrator noted that these initiatives are in parallel with other initiatives at academic settings, which will make transition easier:

so hopefully if these things are happening simultaneously ...this will make the change within the hospitals in Qatar easier to happen. So we're lucky that this is happening here, probably not in other areas in the region (Pharmacy administrator participant 1).

#### 4.3.2.1.2.6 *Changing role of the pharmacist*

One academic administrator reflected on the transition of the pharmacy practice from the traditional product-centred model to being patient-centred, which makes IPE more important. He highlighted how other healthcare professions have noted the impact of clinical pharmacists on healthcare delivery, leading to more supporters for teamwork and hence more interest in collaboration:



... before the concept of clinical pharmacy became clear, we were not really enthusiastic about IPE. Maybe because we did not have much role to play in the wards, in the hospital where the pharmacist were isolated in the basement of the hospital and in some cases there is like a small pharmacy in those like new wards but not working as part of the team, not part of the medical team actually, nor making decision for the patient. This has never been the case. However, things have changed with clinical pharmacists working in the hospital and really more and more doctors are looking are seeking their advice i.e. issues of drug, drug interaction and stuff like that (Pharmacy administrator participant 3).

Similarly, one of the cross-appointed faculty reflected on her practice experience in a clinic in Qatar where she believed practice is changing slowly:

But again, a lot of it is also myself and the other provider, the nurse practitioner that's there, we're both from a North American environment. And I think the physician is more from this region. They're now beginning, they've built a lot of rapport with us, they're beginning to understand us and now they see what benefit we could give to them. So they are slowly changing their ways, but, it will take time (Pharmacy faculty participant 4).

#### 4.3.2.2 Pharmacy faculty perception of the barriers

##### 4.3.2.2.1 *Initial IPE experiences*

In general, participants discussed at length the challenges they have encountered or observed from the first two IPE experiences. These included: lack of familiarity with the others' curriculum, composition of the student groups, logistical issues, commitment from the other professions, student perception and gender issues.

##### 4.3.2.2.1.1 *Lack of familiarity with the others curriculum*

The majority of the participants expressed lack of familiarity with the other healthcare professions curricula in Qatar. Faculty who led the initial IPE initiatives noted they learnt about the other curriculum during the process but they did not know anything before. Another faculty was not aware of the healthcare programmes that exist in the country.

we should be exchanging the whole curriculum and exploring where are the areas and which courses do we think we can do things together (Pharmacy administrator participant 1).

Many pharmacy faculty in the focus group noted that IPE is a new initiative in the region and hence there is no model in the country or in the region to adopt:

We don't have a bench mark or a model to follow for example, this means that we need to start by ourselves... I'm sure that we can do it and be the pioneer in it... but this is, this is a challenge of course and we are up to that challenge but it's not easy (Pharmacy administrator participant 4).

##### 4.3.2.2.1.2 *Composition of the group*

One of the highlighted issues that in one of the initial IPE activities students were not from the same level. Although it seems to have worked, one of the faculty emphasised that students need to be from the same year or at a similar level.

We found the nutrition students somehow more strong like with the lab data because they get more of it. But our students were actually pretty strong with, with the care plan approach. So they did learn from each other, I think (Pharmacy faculty participant 2).

Some faculty members indicated they struggled, in some of the groups, in their attempts to engage students from the different professions together:

But again you did see a lot of groups where the nutrition and pharmacy were separate, and it was very difficult despite the many facilitators that went to that table to help them, they just, were not mingling very well. Could've been a personality issue, or it could've been they just probably they did not know how to work with each other in terms of how the other profession would benefit (Pharmacy faculty participant 4).

They acknowledged that some students may have found it easier to focus on the issue from their uniprofessional perspective only:

I think some of the challenges were trying to make that process of facilitating the collaboration between the students and not just having them work in isolation .... In some groups we know it was just easy for them to just work on their problems independently without necessarily coming together (Pharmacy faculty participant 2).

Another faculty member, commenting on a separate activity, felt there was a lack of orientation on how to work together, which led students to cluster in their own profession due to familiarity and comfort with an element of showcasing their profession as better than the other:

...in the last diabetes outreach activity, biomedical sciences were there, nurses were there- but they weren't really working together. I felt they were in the same place but they were separated from each other... not talking to each other... that students and faculty were there to show themselves, 'I wanna show pharmacy' 'when I see things going well in nursing, too many people there, I'm not happy'... So it was more of being selfish, sorry to say that, more of competition and again I think because from the very beginning it wasn't structured but because we left it like that, everybody wants to show their strength and be proud of it (Pharmacy administrator participant 1).

#### 4.3.2.2.1.3 *Logistical challenges*

Another important theme emerging from the focus group was the logistical challenges they faced. It was apparent from the initial IPE experiences that the different academic calendars of the different healthcare academic institutions were problematic. For example, Qatar University has two semesters whereas other institutions have three semesters. Additionally, participants recognised IPE activities are more complex and require more time to prepare due to the diverse needs of the different healthcare students. It needed more effort and more coordination and the collaboration itself took time.

I have a set of learning outcomes for my students that I want to achieve by the end of the two-hour session. Now if I have this mix of students ... additional learning outcomes that they want to address so how am I going to manage this so that I don't have more contact hours with the students. I think this is going to be a critical one, for those who are teaching or coordinating the course I think across all colleges (Pharmacy administrator participant 1).

In addition to attending a number of prior planning meetings between campuses, the geographical distance between the different universities was another reported possible barrier

for both the involved students and faculty members as they needed to travel to different locations for the planning and then the execution of the activity. Although the college arranged shuttle buses for transportation, some faculty felt some students would feel uncomfortable being in an unfamiliar location. Furthermore, scheduling a mutually convenient time in an already heavy and full curriculum was another challenge.

I think also just like different schedules, like academic schedules and different times. And students are out on SPEP versus on campus doing course work. I know that varies by professions as well so that could be a challenge (Pharmacy faculty participant 3).

#### 4.3.2.2.1.4 *Commitment from the other professions*

A significant challenge was the varying levels of interest amongst the different healthcare professions. Although they appeared to be interested, they lacked commitment, as IPE is not a requirement in their curricula. One of the pharmacy faculty reflecting on her experience in the skills competition stated:

we developed the whole case with very little input from our partnering institution and so the reality is that it's going to be huge, challenging to do even one-on-one course per year. It's a huge challenge, so we need to think about all of those issues before going too aggressively and then failing in the process (Pharmacy faculty participant 3).

Another faculty administrator highlighted the lack of contribution from the medical school in pursuing IPE opportunities:

if they teach them in a way, that 'you are the Gods of medicine' then they will be problematic. But it's totally in the hands of their mentors and like the administrators of the medical school, how keen they are on IPE. Until now, I don't see that they want do anything about it (Pharmacy administrator participant 1).

#### 4.3.2.2.1.5 *Student perceptions*

Although students were generally positive about IPE activities, pharmacy faculty noted that students may have some perceived negative stereotype that will take time to change:

before they start on and seeing what other professions can do there may be already a hierarchy in their heads... so breaking that down right away and understanding the importance could be something that is a bit difficult right away (Pharmacy faculty participant 1).

Additionally, some of the pharmacy faculty were surprised that some of our students are very much influenced by the practice and are not challenging physicians although they are capable:

our PharmD students are very frequently making a recommendation to a patient, and when then we're like, well why are you recommending that? they say, 'because the doctor said so- this is what we do'. And they're not challenging that. They're not thinking critically themselves (Pharmacy faculty participant 3).

#### 4.3.2.2.1.6 *Gender issues*

The College of Pharmacy currently accepts only female students to its undergraduate programmes despite that students in their internship and upon graduating will be mixing with male healthcare professionals and patients. Some faculty questioned whether the concept of having mixed gender IPE activities is feasible. Some of the pharmacy administrators felt it

would not be possible to have mixed gender IPE activities as male undergraduate students are not allowed to enter female buildings at Qatar University due to Qatari cultural traditions. They felt some students will find the interaction with male students uncomfortable.

Another participant commented on an intra-professional virtual activity where he had to ensure that some students are not communicating with male students upon their request. Faculty recognised that female students may become more passive in certain courses such as physical assessment. However, another faculty commented that this is usually student specific. Some are very conservative but most of the students who go on an internship interview with a male patient and interact with male healthcare professionals with no problems. Faculty believed that there should be no segregation in IPE activities as they will be working together when they graduate. The same happens during internship, where they will have to work with all healthcare professionals regardless of gender. Overall, faculty believed that this should not be a barrier to integrating IPE but may require more targeted facilitation in the interaction with focus on cultural values and IPE values.

I think as they go through the years, our students become very confident that I don't see them having an issue interacting with other male students. I would think maybe in the beginning yes. But towards like their fourth year, especially when they go out into their SPEP rotations and they're working with other healthcare providers which the majority of them in Qatar are males, I think they become a little bit more comfortable. So I think it depends on the year that you're referring to (Pharmacy faculty participant 4).

#### 4.3.2.2.2 *Current working practices and processes*

##### 4.3.2.2.2.1 *Hierarchy*

Overall, participants felt the healthcare system in Qatar is still operating on a hierarchical structure. Although IPE was perceived as an important component in overcoming this, it was also felt that these hierarchal differences could impede any initiative, including IPE because of the more traditional attitudes and the culture as it is still. It was also noted that hierarchy does not only exist between different professions but can happen within the same profession. This leads to professionals who are perceived to be at the lower end feeling uncomfortable making recommendations and suggestions:

... there's a fear of being wrong about something. So I notice like when I'm on rounds at the hospital, they dismiss - if they don't know the answer to something, they'll dismiss the concern or the problem as if it's not an issue. And there's very little challenge even like for example within physicians. If you've had a physician who's the head- like I've seen this happen where if the head of a particular area has showed up on rounds then the physician who's caring for the patient becomes very passive, and the head of that particular consulting team starts making all the decisions even though they don't know the patient (Pharmacy faculty participant 3).

A pharmacy administrator reflected on the hierarchical culture in this region, which reinforces the idea that the physician is always at the top of the structure, and this is usually instilled in the mindset of healthcare students. As a result, students, or even healthcare professionals are

naturally intimidated by this structure and feel unable to make recommendations or discuss their suggestions.

there are some misconceptions in the society, talking about this part of the world, which I am a part of. And when we look at the, for example the physician, as the doctor, who knows everything, okay, they know everything about drugs. They probably know more than us, I'm just saying what, what a pharmacy student may think, and this will shape their behaviour when they become pharmacists. Being continuously intimidated by the physician if they say something, that they, usually what the physician says is right and is something that cannot be challenged. There is also the societal misconceptions about nursing. Nursing in this part of the world, is looked at, or used to be, I think it's changing, right now, as something that is a low kind of job. That these people don't know anything, okay? (Pharmacy administrator participant 1)

There are lots of nurses they're interacting with [referring to PharmD students], but my impression is... that I don't perceive that they're consistently seen as an equal partner in the care provision. ...the doctor is at the top of the hierarchy as opposed to the patient being at the top – because we all should be serving the patient (Pharmacy administrator participant 5).

#### 4.3.2.2.2 *Healthcare professionals' attitude*

The healthcare workforce in Qatar are a heterogeneous and international group from diverse backgrounds and many in this focus group have perceived this as a challenge to collaboration, particularly in the physicians' attitudes towards the advancing role of the pharmacist. Many physicians are accustomed to an environment where they are the sole decision maker and are threatened if another healthcare professional is perceived as challenging their decision.

So imagine as a pharmacist for example coming in and making a recommendation to a medical team, they're very resistant and very surprised that I would highlight a particular error, or not even error, but something that could be done better. And they feel very threatened by that, so I think that will also come out in IPE sessions as well, because students are being taught by, those health professions (Pharmacy faculty participant 3).

physicians in particular, still see pharmacists as a threat, from my interaction from, like today I have a physician who is coming in, we will be having a joint session, teaching physical assessment to pharmacy students and from my interaction they see it as a threat. They see that maybe pharmacists are embedded and they are encroaching into the areas that are not their areas, so maybe some of the things that need to be done is demystifying this kind of misconception, about some of our role, because sometimes they think when we do these collaborations, it's trying to encroach into their activities, so there is need to have certain things to demystify this kind of misconception (Pharmacy faculty participant 5).

Pharmacy faculty, especially those in cross-appointed positions, described situations where nurses are subservient and in many cases do not challenge the physician recommendations or requests and are afraid to speak up because they are often spoken to in a very negative manner.

the nurses if they don't think the patient should get a medication because of something-adverse effect or something -they won't even tell the doctor, they'll just say the patient refused it, and just write like 'refuse' in the MAR [medication chart] and they won't approach the physician about it. Because they're so scared of any repercussions from them--- (Pharmacy faculty participant 2).

#### 4.3.2.2.3 *Lack of collaborative practice*

Although one of the cross-appointed faculty commented on his practice as the only model in the country that is 'very interprofessional and very collaborative', many noted that in the majority of the hospitals it's mainly interaction and responding to queries rather than actual collaborative efforts.

I don't see a lot of interaction with other healthcare providers. I never see a physiotherapist at the hospital. I never see a dietician at the hospital -I think they exist. I never see a social worker (Pharmacy faculty participant 3).

One administrator reflected on the culture of collaboration:

in this part of the world we tend to be silenced, we don't tend to work in teams and this is why we try to teach our students to work in teams, although there are negative sides to that but we try to force it (Pharmacy administrator participant 1).

#### 4.3.2.3 Pharmacy faculty recommendation on implementation

##### 4.3.2.3.1 *Recommendations for future IPE*

Although pharmacy faculty expressed their concerns about the challenges that will be encountered integrating IPE into the pharmacy curriculum, many enthusiastically provided thoughtful recommendations and suggestions for effective implementation of IPE. Most of these focused on establishing an IPE committee, suggestions for incorporating IPE into the pharmacy curriculum, the need for faculty professional development, and raising awareness about IPE and collaborative practice.

##### 4.3.2.3.1.1 *Establishing an IPE unit/committee*

Pharmacy faculty, in this focus group, were aware of the complexity of coordinating and planning IPE initiatives. The suggestion of appointing a formal champion to coordinate IPE initiatives was discussed. Others suggested establishing an IPE unit or committee with representatives from the different healthcare institutions led by an IPE coordinator and given a dedicated budget. This dedicated unit would also require administrative support to deal with logistics and organising the different IPE initiatives. They have noted that although IPE is now an accreditation requirement for many of the healthcare programmes, unfortunately no one has taken the lead, which is critically important to develop successful and sustainable IPE initiatives.

We love to have committees here and we have an IPE committee, don't we? [referring to Qatar Interprofessional Health Council], but I think in terms of coordinating in terms of what will be the systematic delivery of IPE, it needs somebody like the formal champion to coordinate, just know what everybody is doing, to ensure the natural progress of it. So, I think it's probably, to do it well, it's insufficient for the course coordinators to work in isolation (Pharmacy administrator participant 5).

##### 4.3.2.3.1.2 *IPE curriculum*

Some of the pharmacy faculty have experienced IPE in their undergraduate programmes as students in a North American setting and have reflected on these experiences. These included

problem-based learning on a complex case in their third year, pairing up with a nursing student to go to a nursing home in their first year, volunteering with another healthcare professional's site during their first year, and an IPE course with nursing students. Another discussed the feasibility of doing this in Qatar, such as organising a volunteer activity during first year to discover other healthcare professions and communicate or shadow another healthcare provider:

The challenge would be finding the right health care providers that are going to demonstrate IPE, but now that we have 'cross-appointments' in place so we're working at the hospitals. I think we will be able to identify some of the healthcare providers who are open to different work professions (Pharmacy faculty participant 3).

Faculty agreed that the pharmacy curriculum was already heavily condensed and were not in favour of adding an additional course with more credits specifically focused on IPE. They would prefer to have IPE integrated within assigned courses. Possible courses suggested were integrated case based learning, physical assessment, SPEP, and professional skills. Even a suggestion of starting with shared courses such pathophysiology, anatomy, physiology, and to some extent pharmacology. One faculty member reflecting on her experience of shared courses in the early years encouraged that group work after the lecture should be mixed with no segregations of professions:

We did all our pharmacology at first year and we had it with the medical students....so we had like a didactic lecture and then pharmacy students were in one group for PBL and then medical students in their own group. And it didn't work well at all, it caused a lot of negative attitudes because there wasn't any interaction, like we were in a lecture hall listening to the same lecture but there was no interaction.... I think it was actually very negative to the learning process, so I think the PBL should've been mixed. And we had like different exams so that – they would say 'we're getting the harder exams'. So it has to be the same assessment for all the students that are doing that (Pharmacy faculty participant 3).

Gradual introduction of IPE in with vertical integration across the professional years, including graduate programmes was discussed. This can be started, as an example, with theory, then moving into case-based learning, simulation, and into integrating the IPE into actual experiential training.

The question was posed whether introducing IPE too early will 'dilute the development of their own professional identity' (Pharmacy administrator participant 5).

or if

simulations or placements kind of have to be delivered in their later years, because I think in the first two years most disciplines are trying to develop their own skills, and what they're supposed to do. Introducing it too early I think, but I could be wrong, because I'd never done it before, could be maybe harmful. I think they need to be pretty versed in what their role is before they can interact with others (Pharmacy faculty participant 4).

One faculty member reflected on an IPE experience she was involved in and preferred IPE to have real life cases versus theoretical discussions:

more classroom-based to introduce them to the idea. Something like where they're given a case. It's not a real life patient but giving them a case to work through would be helpful. And then making them move to the next step of going into the practice and dealing with a real patient during their SPEP rotation (Pharmacy faculty participant 3).

I think the thing that works the best is on SPEP rotations in clinical practice having the students work together to follow like a real-life patient is the best model. When I was a student in Canada, we did have IPE so every year each semester we met, like at the hospital in a big room and we were all divided up like into different professions at a table and we had to sit around and talk about our profession. I think we all didn't want to be there, and we all like dreading these IPE sessions. It seems like everyone was just explaining to the medical physician what they did and this was always quite a frustrating process it didn't quite work that well ... However, I was part of a pilot where students were assigned to a patient who was actually admitted to the hospital, and we had to follow their progress throughout their hospital care and then like, kind of report on it, we worked together to solve the problem (Pharmacy faculty participant 3).

A target of one activity per semester per professional year was suggested with one course designated to deliver the IPE activity. Pharmacy faculty and administrators did not really favour online delivery as face-to-face interaction was perceived to be an important factor:

I don't know if their attitudes with other professions would change, if they're interacting online versus face-to-face. I think that face-to-face would be much more effective (Pharmacy faculty participant 3).

One faculty reflected on the experience of online IPE delivery:

What ended up happening again was that people started working on their own, focusing on what they had to answer and what would be tested on and didn't really interact because of the online system itself, so we didn't find it particularly useful (Pharmacy faculty participant 1).

Additionally, participants hoped that those involved in IPE would be compensated with a reduction in their teaching workload as IPE preparation requires a lot of time and preparation, much more than delivering a lecture to your own profession.

I think the major concern is just the logistic and the time required, so we did one event in first term and I spent lots and lots of hours just trying to arrange that. And, and then if you incorporate more professions I think that would increase as well (Pharmacy faculty participant 2).

Well, we need time for sure... dedicated time to work on it, reduction in the number of lectures (Pharmacy faculty participant 3).

For IPE initiatives to be successful and sustainable, both pharmacy faculty and administrators felt it is important to align it to the Qatar National Vision and National Health Strategy. They also agreed that support from the university administration and from the Supreme Council of Health [now known as Ministry of Public Health] was deemed necessary for IPE to flourish and advance. Administrators felt that there is a need for sustained and continuous awareness about IPE. For example, one administrator suggested that the Supreme Council of Health through the Qatar Council for Healthcare Practitioners could work on imposing IPC as mandatory for the local accreditation of healthcare practitioners and programmes. Another



suggested changing the laws so that when errors occur, the healthcare team is accountable and liable.

All comes down to buy-in. I think like getting the administration, the faculty and your students on board, plus the other programmes you're trying to work with and I think all those things will come together. I've been involved with other projects now, when you have that buy-in it seems like things do come together but the trick is making sure everyone's on the same page and realize the benefit (Pharmacy faculty participant 2).

At an administrative level, like the Supreme Council of health as well as the university administration need to understand the importance of this. And that's a huge barrier that's going to take a lot of work to get them to understand, because we've seen that they struggle with these concepts in the past (Pharmacy faculty participant 3).

#### 4.3.2.3.1.3 *Faculty development workshops*

Another important element for successful and effective delivery of IPE, discussed by participants, is organising IPE faculty development workshops to increase awareness about IPE and the need for it; learn more about innovative IPE initiatives; how to effectively prepare the students for IPE sessions; and to ensure that facilitators are well trained to facilitate IPE activities. They felt it is important that faculty members are confident in organising, leading, and facilitating IPE initiatives across the different healthcare curricula from classroom to practice settings.

We need to train the faculty member to do this, so it's not only the knowledge that they already have but they need to have skills too, to be able to deliver the right message to students also who are coming from different disciplines (Pharmacy administrator participant 4)

And so, in the future, if I do this again I'd need to somehow facilitate maybe a more integrated approach (Pharmacy faculty participant 2).

People, I don't know, maybe they'll be really excited but don't know how to implement so things might kind of fall off, or may be resistant to it because they don't really get it or understand why would it be beneficial for their students. So there would be some education needed with instructors (Pharmacy faculty participant 2).

Similarly, participants stressed the need to provide continuous professional development to practitioners focused on interprofessional practice to facilitate and promote sustained collaborative practice.

#### 4.3.2.3.1.4 *Extra curricula activities*

Some participants highlighted the importance of having outreach events and social interaction with other healthcare students to establish relationships with other professions that will continue throughout the rest of their career. Examples cited were raising money for charity or a group function to get to know the other profession more. One participant reflecting on her experience:

I find if I'm a pharmacist and I approach a physician and make a recommendation and they don't know me, they're more resistant. But, if they know me, and you're friends with them, or you talked about their family first, you always, I feel like you get accepted a lot more. So, if our students, from the beginning can learn to interact with other professions, even at a social level not just at a professional level, I think that would be

helpful for them when they graduate and go out and practise (Pharmacy faculty participant 3).

Others felt that conducting extra-curricular IPE activity would be unrealistic as students already felt overloaded and overwhelmed.

#### **4.4 Discussion**

This study provides an initial insight into pharmacy faculty perspectives towards IPE in Arabic speaking Middle Eastern countries using mixed method methodology. Overall, most responses reflect positive IPE attitudes and concur with previous studies reporting positive attitudes by faculty members towards IPE (46, 51, 277, 281-284). It is encouraging to see these positive attitudes and realise that respondents are aware of the importance and benefits of IPE. Promisingly, many of the positive factors identified reflect the IPE shared competencies domains recently developed by a research team in Qatar and which include role clarification, interprofessional communication, patient and family centred care, and shared decision making (Chapter 1) (43). Mutual respect, professional development, and awareness of the pharmacist's evolving role were also identified as facilitators in the survey. These are in addition to the positive influences, identified in the focus group by the pharmacy faculty in Qatar, both at college and national level, cementing the basis for IPC in the country.

The majority of the respondents in the survey phase were from Jordan, Qatar, Lebanon, and Saudi Arabia, which indicates that they are involved or plan to be involved in IPE. The countries that had few responses may indicate that they have a limited IPE experience or understanding. They may have ignored or deleted the survey due to their negative attitudes towards IPE and hence the attitudes we have reported are mainly positive (277). There was no response from both Iraq and Yemen, which are both experiencing difficult political situations.

Age, likelihood to engage in IPE, and years of IPE experience were the factors related to faculty members' attitudes towards IPE. Experienced faculty appear to have more positive attitudes toward IPE. This could be attributed to the reward system in academia where junior faculty members are pressured to focus on promotion and may consider involvement in IPE research time consuming and less valued (285). Additionally, Kandiko and Blackmore argue that the importance of being confident in one's own discipline comes before progression to IPE (285). Respondents who had experiences of IPE and were more likely to engage were more motivated and had positive attitudes to IPE. Perhaps this is to be expected since they had previously perceived the benefits that can come from such opportunities.

A number of issues need to be considered as a result of this study. Despite most respondents having positive attitudes towards IPE, many had difficulty defining IPE. This may indicate a lack of knowledge of what IPE entails (46, 286) or a different cultural context of the education system. Additionally, many of the respondents in the survey indicated their colleges had the ability to deliver IPE but one cannot assume they are actually aware of the complexity of

delivering IPE activities and hence need time and the training to prepare. Many struggle with understanding the core principles and how to effectively translate their own discipline's academic skills to interprofessional skills (287). Healthcare faculty often have little experience of IPE or of collaborative practice (46, 269, 283). Faculty often refer to three domains of learning that need to be taken into consideration when designing IPE programmes. These domains are the basis for many faculty development initiatives and focus on addressing the attitude that can facilitate or impede successful implementation of IPE, increasing the knowledge about IPE and the other profession, and develop the essential skills needed to learn from, with, and about each other (45).

Nevertheless, for an effective and sustainable IPE programmes to be implemented, it is critical for faculty members to gain the knowledge, acquire the skills, and adopt a positive attitude towards IPE (288). This study highlighted that faculty members view the undertaking of IPE as an essential part of their professional development and not just as an additional responsibility (278). It is important to recognise that preparing faculty members is key in developing and implementing IPE, otherwise the initiative will be hampered significantly (289). Faculty development should be continuous and not just a matter of delivering it over a short period, assuming faculty master the skills in a short span of time (287). Ratka adds three important elements needed to transition faculty members from being pharmacy faculty to IPE champions. These are IPE development programmes, resources, and organisational support to ensure they have the needed competencies to develop and grow IPE in their curriculum (287, 289). Therefore, the focus on faculty development should not be on the individuals only but on the organisation and both are critical for succeeding and sustaining IPE programmes (45). Organisations need to support the facilitation of IPE by providing resources, allocate time, reward initiatives, and address system issues that impede the implementation of IPE (45).

In the focus group, although the faculty involved in the initial IPE experiences reported positive influences from the initial IPE experiences in the College of Pharmacy, they have highlighted the challenges they encountered or observed from organising these initiatives. Faculty may be positive towards IPE but a sense of frustration can develop, especially if workload increases and no incentive is apparent (284). Many may be keen to embrace IPE in their courses, unaware of the complexity of delivering IPE activities, and end up with a negative perception as they have not had the time and the training to prepare as new facilitators for IPE. The facilitation of IPE needs to be supported by providing resources, allocating time, rewarding initiatives and addressing challenges (45).

The perceived barriers highlighted in this study, in both the survey and focus group, include scheduling, limited resources, and time needed. Such barriers are generic worldwide and can be challenging. Long-term strategies should be implemented to overcome these at all levels: individual, organisational, and practice. An important perceived barrier cited by almost half of the respondents in the survey was the cultural challenges for each profession. This was

echoed again later in the survey and in the focus group when respondents indicated 'hierarchy', 'conflict', 'professional encroachment', and 'resistance to change'. The comments by the pharmacy faculty implied that some healthcare professionals, specifically physicians, are resistant to the evolving role and skills of the pharmacist's new scope of practice (282, 290). Traditionally, physicians have been acknowledged as the decision makers in the clinical setting, dominating the team, and ultimately assuming responsibility for the patient (277, 291). Moreover, this power dynamic and inequity in salaries between professionals sustain a hierarchy that is potentially detrimental to collaborative practice (291-293).

The hierarchical structures and stereotyping existing between healthcare professionals can significantly impede IPC leading them to resist the idea of IPE and can have a negative effect on healthcare interaction with pharmacists. As identified by Mandy, Milton, & Mandy (294), 'interprofessional rivalry, tribalism and stereotypes are known to exist within healthcare professions and detract from effective health delivery' (p 154 ). Additionally, differences in the salary between healthcare professions, with physicians being at the top of the salary scale, establish a class structure and impedes the concept of fostering IPE and collaborative practice (292). These hierarchical issues may result in power struggles between the professions that may be experienced by students undertaking IPE (278). The powerful global status of the medical profession has been noted as a barrier to IPE success and to overcome these power differentials between the different healthcare professions needs to be addressed (282, 290). Many of the medical programmes' accreditation bodies support IPE and this is expediting the medical faculty's positive shift (290, 295).

Once the need to lessen the influence of hierarchies is realised, then an environment can be created where respect and the recognition of other professions becomes the norm. Frenk et al. (36) propose the 'promotion of interprofessional and transprofessional education that breaks down professional silos while enhancing collaborative and non-hierarchical relationships in effective teams' (p 1951). Integrating IPE pre-licensure will enhance collaboration between the professions by encouraging positive stereotypes (296). Unfortunately, not having experienced IPE in the undergraduate curriculum can result in continuing negative perceptions (297). Healthcare faculty leading these initiatives need to respect differences between professions and foster opportunities to explore these interprofessionally (292, 298). Gilbert (2005) adds that stereotyping needs to be addressed by innovative strategies (292). These barriers may be experienced globally. However, overcoming them may involve different strategies depending on the context. Policy-makers should introduce policies and strategies appropriate for their local challenges and needs (8).

Another challenge is that pharmacy education in the Middle East is often traditionally taught with little emphasis on patient-centredness. However, in recent years, doctoral programmes have been introduced replacing the traditional Bachelor of Pharmaceutical Sciences (98, 299). The move towards clinically oriented programmes to graduate pharmacists with expanded

scope of practice has had an impact on the profession moving towards patient-centred team-based practice (300). Furthermore, accreditation standards now call for providing elements within the required curriculum with IPE experiences for students and faculty from other health profession programmes (277, 290). With the move towards Western accredited, clinically oriented pharmacy programmes, as in Qatar University College of Pharmacy (who acquired the first full Canadian accreditation), it is hoped IPE will be embedded and the boundaries of pharmacists' practice will expand. Similarly, many countries in the Arabic speaking Middle East, including Saudi Arabia and Lebanon, are seeking Western accreditation in which incorporating IPE is a standard that must be applied. This is similar to other healthcare programmes where accrediting bodies require evidence of IPE incorporation into the curricula, which is an important element in pushing IPE forward (277, 290). However, there are many countries within the Middle East region that are traditionally taught (87).

In the survey, Lebanon had the highest positive total mean score in all three subscales. There is no explanation to support this from published literature but could be due to one of the universities, Lebanese American University School of Pharmacy, embracing IPE programmes since 2011 as its part of their accreditation by the Accreditation Council for Pharmacy Education (ACPE). Another university in Lebanon is seeking Canadian accreditation and working towards implementing IPE into their programmes. With the move towards clinically oriented pharmacy programmes, it is hoped that these changes will facilitate the implementation of IPE into their programmes.

From this study, IPE activities appear to be happening in some countries more other countries. It would be useful to explore these activities further and see whether they adhere to the definition of IPE especially, as less than two thirds of the respondents were not able to identify the definition of IPE. It is important to reinforce that even with enthusiasm in taking the initiatives, IPE initiatives are unlikely to be sustained unless action is taken to address structural, financial, and attitudinal constraints (301).

Academic institutions in the Middle East vary and any IPE planning need to take into consideration the needs of faculty and organisations to pave the way to effective IPE programmes. Nevertheless, there is also a need to change the healthcare culture in the Middle East to support IPE and collaborative practice. The healthcare practice will need to implement and embed collaborative practice to overcome resistance to IPE by the healthcare workforce (282).

#### **4.5 Strengths and Limitations:**

The strength of this study is that it identifies a geographical region and the perspectives of pharmacy faculty, and neither of these have been previously investigated. Moreover, the findings of this study have had significant implications already for the development of IPE and have been very valuable in advancing IPE in Qatar and the region. Faculty development has

been identified in this study as an important process to move IPE forward. As such the College of Pharmacy at QU led the first interprofessional education symposium for academic healthcare faculty in Qatar early in 2015 followed by hosting the First Middle Eastern Conference on Interprofessional Education, in December 2015 (further information in Chapter 7). With regards to limitations, this study relied on voluntary participation and hence the study sample cannot be truly representative of pharmacy academics in the area. Those who participated may have been more positive about IPE than those who declined. The study sample, for the survey phase, included only faculty members who have publicly available email addresses and the focus group included only pharmacy academics from Qatar. The quantitative stage set the scene for situating IPE Qatar in the Middle East prior to using Qatar as a case study for the Middle East in the subsequent chapters as many did not have English as their first language. Another limitation is that survey questions may have been interpreted differently by respondents. The response rate between the different participating countries ranged from 0% to 84% with an overall response rate of 35% which is considered low, limiting generalisability but it provided a snapshot of IPE perceptions from the Middle East.

#### **4.6 Conclusion**

This is the first study to explore the perceptions of pharmacy faculty towards IPE from a Middle Eastern perspective. The positive responses by pharmacy faculty in the Arabic Speaking Middle Eastern countries in general and in Qatar in particular suggests a willingness to integrate IPE into curricula. Implementing IPE will create opportunities for pharmacy and healthcare schools to interact and collaborate to prepare their students for future roles. The infrastructure of any IPE programme needs to be planned from an early stage and barriers need to be addressed to develop an effective and sustainable programme. Moreover, addressing the needs of the faculty, training them, and getting the support from the organisation is vital for IPE success. Pharmacy faculty are ready to pursue IPE and this is important in developing IPE in Middle Eastern countries.

# Chapter 5: Perspectives of Pharmacy Students

## 5.1 Background

In an IPE environment, students are provided with a structured opportunity to interact with other healthcare professional students to acquire knowledge, skills, and professional attitudes believed to clarify roles, responsibilities and contribution of other members of the healthcare team and enhance interprofessional communication and teamwork (18, 61). Interprofessional education studies suggest that when students graduate they can translate this learning into actions in their practice (4, 18). As mentioned in the introductory chapter, although many studies have investigated students' attitudes, very few recent articles are from Middle Eastern countries (60, 61, 71, 72, 250) and hardly any employ a mixed methods design. Therefore, this chapter will be the first study utilising mixed methods to explore student perceptions from both the Middle Eastern context and pharmacy perspectives. Soliciting student perspectives will not only improve the educational experience for the students but will result in student motivation and interest and inform curriculum development (302).

There is some evidence in the IPE literature demonstrating a number of student characteristics have been linked to positive attitude and these include age, gender, professional programme, patient care experience, and previous IPE experience (18, 177, 187, 192-194, 303-305). Educational progress and personality of the individual did not seem to influence attitude (192). One study detected differences between different professions for junior students only (193) and another demonstrated no significant effect linked to gender, previous exposure to IPE, professional programme, and previous leadership experience (189).

The aims of this chapter are to:

- Explore the awareness, views, attitudes and perceptions of pharmacy students in Qatar towards IPE and collaborative practice.
- Identify enablers and barriers perceived by pharmacy students resulting from integrating IPE into the pharmacy curriculum.
- Identify resources needed to implement IPE within the pharmacy curriculum.

## 5.2 Research Design

A two-staged sequential explanatory mixed method design was used to comprehensively capture the perspectives of pharmacy students toward IPE and collaborative practice. A quantitative survey was conducted as the first stage of the study, followed by an in-depth discussion of these perspectives from pharmacy student representatives through a qualitative phase by conducting two focus groups. This was followed by integrating, interpreting, and analysing the data from both stages.

## 5.2.1 Stage 1: Quantitative Survey

### 5.2.1.1 Study design

This was an exploratory cross sectional survey of all pharmacy students at the College of Pharmacy in Qatar University. Universal sampling was used due to the small number of pharmacy students at the College. The language of instruction at the college is English so the survey was self-administered in English.

### 5.2.1.2 The survey

A self-administered online survey, created in Snap 10 Professional®, tested to be completed in 15 minutes was used to solicit anonymous responses from the respondents. The survey consisted of 15 questions. The survey was based on the modified version of the RIPLS survey validated to measure students' perception in a Middle Eastern context (61). Additional questions, based on published literature and authors' experiences were added to explore students' perceptions further. The survey contained questions related to the following domains:

- Questions 1-5 were the participant characteristics: gender, age, year of study, nationality, and current marital status.
- Questions 6-7 were on students' previous exposure to RIPLS and IPE experiences. Students had the opportunity to describe briefly the IPE activity.
- Question 9 was the RIPLS scale. Respondents were asked to indicate their level of agreements with statements from a 20-item 5-point Likert scale (strongly disagree=1, disagree, undecided, agree and strongly agree=5) from the modified version of the RIPLS validated for students in the Middle East. Possible scores range from 20 to 100, with high scores reflecting a higher level of readiness and a positive attitude. The 20 items were divided into three subscales with internal consistency reliability of these subscales, assessed by Cronbach's alpha, was reported to be strong with 0.86 for teamwork and collaboration, 0.80 for professional identity, and 0.80 for patient centredness (61). Permission to use this scale was granted by the authors, El-Zubeir et al. (Appendix 18).
- Questions 10-13 were questions on future IPE opportunities students wish to undertake and their view on assessment.
- The last two questions (14-15) were an opportunity for respondents to provide any additional comments about IPE and collaborative practice and to indicate their willingness to participate in the next stage as part of a focus group.

A pilot involving five students was conducted to test for content and face validity of the survey and to assess the usability of the survey. Minor amendments to the wording were recommended. Students involved in the pilot were excluded from the actual study thereafter.



### 5.2.1.3 Survey implementation

The survey was distributed to all pharmacy students, including undergraduate and postgraduates, studying at the College of Pharmacy in Qatar University (n=132) during the period between September 21, 2013 to November 16, 2013, as shown in Table 44:

Table 44: Total Numbers of Surveys Distributed to the Students in the Different Pharmacy Years

Year	Number of students
First Professional Year Pharmacy	25
Second Professional Year Pharmacy	25
Third Professional Year Pharmacy	21
Fourth Professional Year Pharmacy	23
Part Time Doctor of Pharmacy (Yrs 1-3)	23
Full Time Doctor of Pharmacy	6
MSc Pharmacy	9
Total	132

All students at the College of Pharmacy received the weblink survey through their email, which is the main source of communication between the pharmacy college and its students. Further information about the study was emailed to all students at the same time the survey was sent. Two reminders were sent to the students (four weeks after the initial email and then one week before). Additionally, students had the chance to be entered into a prize draw for a Drug Information Handbook to encourage students to complete the surveys and increase the response rate. Participation was voluntary with no coercion.

### 5.2.1.4 Analysis

Completed surveys generated emails that were sent directly to the principal researcher. These anonymised online submissions were imported immediately to SPSS. Both descriptive and inferential statistics were utilised to analyse the results using SPSS version 22.0. Descriptive statistics (frequencies, percentages, mean, and standard deviations) were applied to fully describe respondents, views, attitudes, and experiences. For this analysis, students in their first and second years were categorised as junior pharmacy students; third and fourth year students were categorised as senior pharmacy students and MSc and PharmD students as postgraduate students. A one-way ANOVA was carried out to investigate the effect of professional years' groups (junior, senior and postgraduate students) on attitudes (RIPLS subscale) with *post hoc* analysis using Tukey's test to determine differences between groups. Additionally, a series of independent *t* tests were carried out. To analyse responses based on a standard Likert scale with a score of 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree and 5 = strongly agree. Overall, mean ratings for each statement answered for each of the student groups were calculated and expressed as means and standard deviations. *P* values at  $\leq 0.05$  were considered significant. Negative statements were reversely scored. These were:

- Question 9, statement 11: I don't want to waste my time learning with other health care students;
- Question 9, statement 12: It is not beneficial for undergraduate health care students to learn together;
- Question 9, statement 13: Clinical problem-solving skills should only be learned with students from my own discipline;
- Question 9, statement 14: The function of nurses and therapists is mainly to provide support for doctors.

The first three statements were reversed in one study by McFadyen (196) and the last one was reversed in another study as this statement is perceived as hindering the full potential of nurses and therapists in integrating with the healthcare team (183). Reversing was completed to be consistent with other items as higher scores correlates with more readiness (306). In terms of subscale analysis, the following statements were each used for subscale (Table 45):

*Table 45: Domains and Statements Covered in the Survey Subscale*

Subscale	Domains covered	Number of statements	Statements assigned
<b>Subscale 1</b>	Teamwork & Collaboration	10	1-10
<b>Subscale 2</b>	Professional identity	5	11-15
<b>Subscale 3</b>	Patient Centredness	5	16-20

Open comments were analysed thematically with illustrative quotes used to describe key themes. Reliability analysis was performed on the RIPLS statement by obtaining a value for Cronbach's coefficient alpha.

### **5.2.2 Stage 2: Qualitative Focus group**

Two focus groups were conducted with the two groups of pharmacy students:

1. Junior pharmacy students (no experiential training, in year 1 and 2);
2. Senior pharmacy students (have had an experience in pharmacy practice in years 3 and 4, and MSc and PharmD students). The researcher would have preferred having a third group for postgraduate students but due to the small number of potential postgraduate student participants, they were merged with senior pharmacy students focus group.

The steps of the focus group process outlined in the methodology chapter relating to planning, recruiting, implementing and analysing were followed (Chapter 2).

## 5.3 Results

### 5.3.1 Stage 1

#### 5.3.1.1 Demographic data

The survey was sent to 132 pharmacy students and collected over a period of eight weeks. The response rate was 102/132 (77%). Table 46 shows the sociodemographic and faculty characteristics of students who responded to the survey. The majority of the respondents were female (92%, n=94). Almost three quarters of the respondents were aged between 20-24 years old (73%, n=75). Nearly one third of the student respondents were from Egypt (29%, n=30), followed by Sudan (15%, n=15) and then Palestine (13%, n=13). The majority of the respondents were undergraduate students (79%, n=81).

*Table 46: Sociodemographic and Student Characteristics of Respondents*

Characteristics	Frequency (Percent)
Gender (n=102)	
Male	8 (8%)
Female	94 (92%)
Age group (years) (n=102)	
< 20	12 (12%)
20 – 24	75 (73%)
25 – 29	11 (11%)
30 – 40	3 (3%)
> 40	1 (1%)
Country of respondents (n=101)	
Qatari	4 (4%)
Egyptian	30 (29%)
Sudanese	15 (15%)
Palestinian	13 (13%)
Jordanian	7 (7%)
Syrian	11 (11%)
Iranian	3 (3%)
Other (please specify)	18 (18%)
○ Algerian: 2 (2%)	
○ Yemeni: 2 (2%)	
○ Bangladesh: 1 (1%)	
○ Djiboutian: 1 (1%)	
○ Iraqi: 4 (4%)	
○ Canadian: 1 (1%)	
○ Eritrean: 1 (1%)	
○ Somalian: 2 (2%)	
○ Lebanese: 1 (1%)	
○ Tunisian: 2 (2%)	
○ Pakistani: 1 (1%)	
○ Libyan: 1 (1%)	
What is your current marital status? (n=102)	
Single	92 (90%)
Married	9 (9%)
Separated	0
Divorced	1 (1%)
Widowed	0

Year of study (n=102)	
Year 1 Pharmacy	16 (16%)
Year 2 Pharmacy	24 (24%)
Year 3 Pharmacy	21 (20%)
Year 4 Pharmacy	20 (19%)
Full time PharmD	3 (3%)
Part time PharmD (year 1)	3 (3%)
Part time PharmD (year 2)	3 (3%)
Part time PharmD (year 3)	4 (4%)
MSc Pharmaceutical science (year 1)	3 (3%)
MSc Pharmaceutical science (year 2)	5 (5%)

### 5.3.1.2 RIPLS Scale for pharmacy students

Although most students (86%, n=87) did not complete RIPLS before and less than a quarter of the students (24%, n=24) had previous IPE activities, it was evident from the student responses that the majority agreed/strongly agreed with the positive statements, as shown in Table 47. The RIPLS had good internal consistency, alpha = 0.896 for the 20 included statements. Twenty-three of the respondents (23%) described briefly these IPE encounters. These included a two-day IPE workshop at Calgary University Qatar (n=9); didactic lecture introducing IPE for first year students (n=5); skills competition for healthcare students (n=2); unplanned interaction with other healthcare students during their internships (n=3); multidisciplinary educational sessions during internships (n=1); and an online course (n=1). One student commented on the skills competition which she had participated in:

‘This event gave me deep understanding of the responsibilities of each member of the health care providers and illustrates the importance of multidisciplinary team’ (Postgraduate pharmacy student 112).

Another student feedback about the IPE workshop:

‘it was very useful I understand more things about other professions and how to communicate with them’ (Senior pharmacy student 107).

Table 47: Attitudes towards Interprofessional Education

	n (%)				
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
<b>Subscale 1: Teamwork &amp; Collaboration</b>					
1. Learning with other students will help me become a more effective member of a health care team (n=102)	3 (3%)	1 (1%)	0	44 (43%)	54 (53%)
2. Shared learning will help me to understand my own limitations (n=102)	2 (2%)	0	6 (6%)	39 (38%)	55 (54%)
3. Shared learning with other health care students will increase my ability to understand clinical problems (n=102)	2 (2%)	2 (2%)	2 (2%)	41 (40%)	55 (54%)
4. Learning with health care students before qualification would improve relationships after qualification (n=102)	2 (2%)	2 (2%)	10 (10%)	39 (38%)	49 (48%)
5. Communication skills should be learned with other health care students (n=100)	2 (2%)	1 (1%)	7 (7%)	40 (40%)	50 (50%)
6. Shared learning will help me to think positively about other professionals (n=100)	2 (2%)	0	6 (6%)	48 (48%)	44 (44%)
7. Shared learning with other health care students will help me to communicate better with patients and other professionals (n=101)	2 (2%)	4 (4%)	3 (3%)	46 (46%)	45 (45%)
8. I would welcome the opportunity to work on small-group projects with other health care students (n=101)	1 (1%)	3 (3%)	8 (8%)	30 (30%)	59 (58%)
9. Shared learning will help to clarify the nature of patient problems (n=101)	2 (2%)	0	6 (6%)	44 (44%)	49 (48%)
10. Shared learning before qualification will help me become a better team worker (n=101)	2 (2%)	2 (2%)	5 (5%)	45 (45%)	47 (46%)
<b>Subscale 2: Professional Identity</b>					
11. I don't want to waste my time learning with other health care students (n=101)	45 (45%)	44 (43%)	2 (2%)	3 (3%)	7 (7%)
12. It is not beneficial for undergraduate health care students to learn together (n=100)	50 (50%)	41 (41%)	3 (3%)	2 (2%)	4 (4%)
13. Clinical problem-solving skills should only be learned with students from my own discipline (n=101)	39 (39%)	44 (43%)	12 (12%)	2 (2%)	4 (4%)
14. The function of nurses and therapists is mainly to provide support for doctors (n=101)	27 (27%)	42 (41%)	18 (18%)	11 (11%)	3 (3%)
15. There is little overlap between my future role and that of other healthcare professionals (n=101)	18 (18%)	28 (27%)	18 (18%)	26 (26%)	11 (11%)
<b>Subscale 3: Patient Centredness</b>					
16. I like to understand the patient's side of the problem (patient situation) (n=101)	1 (1%)	0	1 (1%)	41 (41%)	58 (57%)
17. Establishing trust with my patients is important to me (patient situation) (n=101)	2 (2%)	1 (1%)	0	20 (20%)	78 (77%)
18. I try to communicate compassion to my patients (patient situation) (n=101)	4 (4%)	3 (3%)	4 (4%)	36 (35%)	54 (54%)
19. Thinking about the patient as a person is important in getting treatment right (patient situation) (n=102)	2 (2%)	2 (2%)	2 (2%)	35 (34%)	61 (60%)
20. In my profession, you need skills in interacting and cooperating with patients (patient situation)	1 (1%)	1 (1%)	0	31 (30%)	69 (68%)

### 5.3.1.3 Comparison of RIPLS means, for each statement, between groups

Overall, RIPLS mean score did not significantly differ across the three groups (Table 48). It is interesting to note that junior pharmacy students had the highest mean score for every statement in subscale 1: teamwork and collaboration. However, statistically significant differences were identified for two of the RIPLS items:

- Shared learning will help me to understand my own limitations,  $F(2, 99) = 4.04, p = 0.021$ . *Post hoc* comparisons using the Tukey HSD test revealed that the mean score for the junior undergraduates ( $M = 4.63, SD = 0.77$ ) was significantly different than the mean score for postgraduates ( $M = 4.05, SD = 0.74$ )
- Shared learning before qualification will help me become a better team worker,  $F(2, 98) = 5.47, p = 0.006$ . *Post hoc* comparisons using the Tukey HSD test revealed that the mean score for the junior undergraduates ( $M = 4.64, SD = 0.54$ ) was significantly different than the mean score for senior undergraduates ( $M = 4.51, SD = 0.99$ ) and for postgraduates ( $M = 4.05, SD = 0.74$ )

Table 48: Summary of Mean Scores for RIPLS Statements for the Three Groups

	Junior undergraduate (n=40) Mean (SD)	Senior undergraduate (n=41) Mean (SD)	Postgraduate (n=21) Mean (SD)	Total (n=102) Mean (SD)
<b>Subscale 1: Teamwork &amp; Collaboration</b>				
1. Learning with other students will help me become a more effective member of a health care team	4.55 (0.93)	4.41 (0.84)	4.19 (0.40)	4.42 (0.81)
2. Shared learning will help me to understand my own limitations	4.63 (0.77)	4.41 (0.74)	4.05 (0.74)	4.42 (0.78)
3. Shared learning with other health care students will increase my ability to understand clinical problems	4.53 (0.91)	4.39 (0.83)	4.29 (0.46)	4.42 (0.80)
4. Learning with health care students before qualification would improve relationships after qualification	4.33 (0.97)	4.27 (0.87)	4.24 (0.70)	4.28 (0.87)
5. Communication skills should be learned with other health care students	4.44 (0.88)	4.24 (0.86)	4.40 (0.60)	4.35 (0.82)
6. Shared learning will help me to think positively about other professionals	4.36 (0.84)	4.30 (0.79)	4.29 (0.56)	4.32 (0.76)
7. Shared learning with other health care students will help me to communicate better with patients and other professionals	4.41 (0.97)	4.17 (0.83)	4.24 (0.70)	4.28 (0.86)
8. I would welcome the opportunity to work on small-group projects with other health care students	4.64 (0.87)	4.34 (0.83)	4.14 (0.73)	4.42 (0.84)
9. Shared learning will help to clarify the nature of patient problems	4.59 (0.79)	4.27 (0.81)	4.14 (0.57)	4.37 (0.77)
10. Shared learning before qualification will help me become a better team worker	4.64 (0.54)	4.15 (0.99)	4.05 (0.74)	4.32 (0.82)
<b>Subscale 2: Professional Identity</b>				
11. I don't want to waste my time learning with other health care students*	4.23 (1.20)	4.10 (1.16)	4.14 (0.73)	4.16 (1.09)
12. It is not beneficial for undergraduate health care students to learn together*	4.37 (1.08)	4.29 (1.01)	4.24 (0.44)	4.31 (0.94)
13. Clinical problem-solving skills should only be learned with students from my own discipline*	4.36 (1.01)	3.98 (0.99)	3.90 (0.77)	4.11 (0.97)
14. The function of nurses and therapists is mainly to provide support for doctors*	3.72 (1.21)	3.90 (0.97)	3.67 (0.91)	3.78 (1.06)
15. There is little overlap between my future role and that of other healthcare professionals*	3.21 (1.40)	3.00 (1.25)	3.38 (1.20)	3.16 (1.29)

<b>Subscale 3: Patient Centredness</b>				
16. I like to understand the patient's side of the problem	4.53 (0.78)	4.60 (0.50)	4.43 (0.51)	4.53 (0.63)
17. Establishing trust with my patients is important to me	4.70 (0.91)	4.70 (0.61)	4.67 (0.48)	4.69 (0.72)
18. I try to communicate compassion to my patients	4.21 (1.24)	4.39 (0.86)	4.38 (0.59)	4.32 (0.98)
19. Thinking about the patient as a person is important in getting treatment right	4.45 (1.04)	4.46 (0.67)	4.57 (0.51)	4.48 (0.81)
20. In my profession you need skills in interacting and cooperating with patients	4.65 (0.83)	4.61 (0.49)	4.62 (0.50)	4.63 (0.64)

\*negatively worded items were scored in reverse.

#### 5.3.1.4 Variables tested that may affect attitudes

Comparison of RIPLS subscale means by groups, previous completion of RIPLS, previous experience of IPE and need for assessment was conducted. There were no significant differences effect between the subscale means between the groups: junior, senior, or postgraduate students (Table 49).

Table 49: Summary of Means Scores on the Three Subscales for the Three Groups

	Junior undergraduate Mean (SD)	Senior undergraduate Mean (SD)	Postgraduate (SD) Mean (SD)	Total (SD) Mean (SD)
Subscale 1	45.36 (6.45)	43.00 (6.77)	42.10 (3.74)	43.75 (6.23)
Subscale 2	19.89 (4.01)	19.27 (3.59)	19.33 (2.27)	19.51 (2.27)
Subscale 3	22.79 (3.56)	22.79 (2.23)	22.67 (2.15)	22.77 (2.79)

Additionally, there were no significant differences between the subscale means for respondents who had previously completed the RIPLS and those who had not completed the RIPLS nor between RIPLS subscales and marital status. There was a significant difference between the mean score of subscale 1, teamwork and collaboration, between respondents who had previous experience of IPE ( $M = 46.0$ ,  $SD = 4.2$ ) and respondents who had no previous experience of IPE ( $M = 43.0$ ,  $SD = 6.6$ ),  $t(97) = 2.03$ ,  $p = 0.045$ . Additionally, there was a significant difference between the mean score on subscale 2, professional identity, for respondents who thought it was important to be assessed for IPE ( $M = 20.0$ ,  $SD = 3.78$ ) and those who did not think it was important to be assessed for IPE ( $M = 18.5$ ,  $SD = 2.59$ ),  $t(98) = 1.99$ ,  $p = 0.05$ .

#### 5.3.1.5 Types of IPE activities (n=101)

Students were asked to select the type of IPE activities they would like to be incorporated into in their programme (Figure 21). An IPE workshop was favoured by a substantial majority of respondents (84%, n=85), followed by IPE events (73%, n=74), and then as part of certain courses in the curriculum by just over half of the respondents (55%, n=55). The two least favoured options by only 1% of respondents were professional development programmes and replacing courses with IPE courses, as shown below.



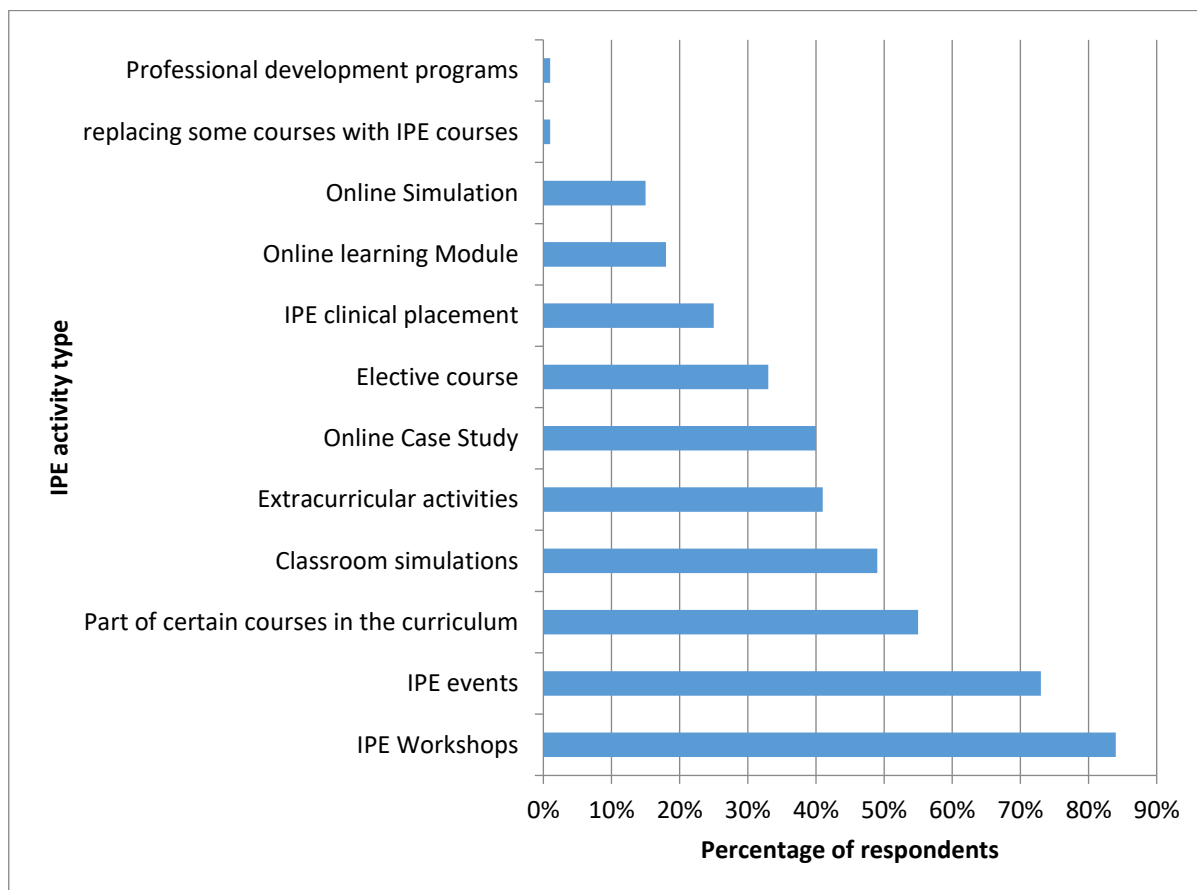


Figure 21. Type of IPE activities

Seventy-eight students (out of 101 students) responded to the open answer question on the type of learning activities they would be interested in participating in with other healthcare students. These included case-based learning focusing on real patient cases (51%, n=40); IPE workshops (14%, n=11); simulation (12%, n=9); IPE clinical placement (5%, n=4); therapeutic knowledge and treatment (5%, n=4); forum to exchange experiences (4%, n=3); integrated care plans (4%, n=3); interprofessional communication (4%, n=3); opportunities for shared decisions (3%, n=2); competitions (1%, n=1); gaming (1%, n=1); health informatics (1%, n=1); journal club (1%, n=1); research (1%, n=1); multidisciplinary educational sessions (1%, n=1); and taking courses together (1%, n=1).

#### 5.3.1.6 Pharmacy students and other healthcare students (n=101)

The survey asked respondents to indicate with which healthcare professions they would like to have an IPE experience. Medical students were ranked the preferred at 97% (n=99) followed by nursing at 86% (n=88) and then health sciences at 59% (n=60). Other professions noted were 11% (n=11) and included dietician, nutritionists, biomedical scientist, pharmacy technician, physiotherapist, paramedics, global health specialists, social worker, psychologist and psychiatrics.

### 5.3.1.7 Importance of assessment

The survey asked respondents about their thoughts on the importance of assessing students for their IPE activity. In response to questions on the importance of assessment of an IPE activity, nearly two thirds of the students 69% (n=70) thought it is important to be assessed.

### 5.3.1.8 Additional comments

Finally, students were encouraged to provide additional comments about IPE. Twenty-one responses were provided and their content was reviewed. All responses were positive with students very keen to see IPE incorporated into their curricula:

we want it to be more often (Junior pharmacy student 44).

it's a great chance for students to learn how to work with each other (Senior pharmacy student 22).

I would love to see it implemented in Qatar ... it's a great opportunity (Junior pharmacy student 125).

A student mentioned:

I am keen to take part in such an education; I have a good impression that interprofessional education would be a great experience to be applied in Qatar and Middle East. I feel enthusiastic to work with health care students because a collaborative work would have lots of benefits in the health care system everywhere (Junior pharmacy student 80).

Another student commented:

I believe it is really helpful because as pharmacists we are not alone and we need to exchange knowledge to provide our patients the maximum healthcare (Senior pharmacy student 124).

## 5.3.2 Stage 2

Two focus groups were convened for pharmacy students to further explore the perceptions and experiences of the different participants about IPE and collaborative practice to identify common themes. The number of students who attended the focus group: junior pharmacy students (n=15) and senior students (n=12). The groups were far larger than anticipated. However, it was decided to continue with these numbers to further enhance the breadth of data collected. The focus groups were conducted for better understanding of the survey results.

In exploring the qualitative data (Chapter 2), three main themes were identified in relation to the pharmacy students' perspectives. These were on the pharmacy students' perception on the enablers, barriers, and recommendations to implementing IPE and collaborative practice (Table 50). Quotes are presented to illustrate the different perspectives presented.

Table 50: Summary of Key Themes and Subthemes for Junior and Senior Pharmacy Students' Focus Group

Enablers	Barriers	Recommendations
Professional related benefits: <ul style="list-style-type: none"> <li>Understanding roles and responsibilities</li> </ul>	Previous IPE experience: <ul style="list-style-type: none"> <li>Group dynamic</li> <li>Lack of confidence and uncertainty</li> </ul>	Student recommendations for future IPE: <ul style="list-style-type: none"> <li>IPE activities</li> </ul>
Patient related benefits: <ul style="list-style-type: none"> <li>Improve quality of patient care</li> </ul>	Educational related issues: <ul style="list-style-type: none"> <li>Assessment:</li> </ul>	Patient: <ul style="list-style-type: none"> <li>Changing patient and public perception about pharmacists</li> </ul>
Current positive influences: <ul style="list-style-type: none"> <li>IPE experiences</li> <li>Healthcare professionals with Western background</li> <li>New pharmacy graduates, driver for change</li> </ul>	Current working practices and processes: <ul style="list-style-type: none"> <li>Pharmacist role and image</li> <li>Healthcare professionals attitude</li> <li>Patient attitude</li> <li>Lack of collaborative practice</li> </ul>	Pharmacy profession: <ul style="list-style-type: none"> <li>Continuing Professionals Development for Pharmacists</li> <li>Support for the profession</li> </ul>

### 5.3.2.1 Pharmacy students' perceptions on enablers

Focus group participants discussed various benefits and advantages from implementing IPE and collaborative practice. Enablers have been categorised under three different themes: professional related benefits, patient related benefits, and current positive influences driving the change toward IPE and collaborative practice.

#### 5.3.2.1.1 *Professional related benefits: understanding roles and responsibilities*

Students were aware of the importance of working together to enhance their interprofessional communication and how as a team they will be more efficient in providing better patient care. Pharmacy students also recognised the need for IPE in terms of understanding the roles and responsibilities of other professions. They highlighted that every profession has limitations and all healthcare professionals are needed to complement each other.

Nobody were [sic] perfect, I mean I can see that even the physician can do the mistake (Senior pharmacy student 2).

They recognised that knowing about other professions will allow them to refer patients to the right person:

You understand the others professional role so when you need some information you know where to go, who to ask, and what their role is (Senior pharmacy student 10).

In addition to understanding others' role, many students highlighted that being in an interprofessional environment would also enhance their understanding of their own roles and responsibilities, their contribution, and their impact in the interprofessional team, creating greater self-confidence.

Whenever you work with others, you really realise, how... you can have an influence... you know what is exactly your job and it add, it builds more to your self-confidence when you go and work with other people (Junior pharmacy student 12).

During IPE, it's nice to see what contribution you as an individual can bring to the table. Here in the college, we are always used to relying on each other, so during IPE it's nice to see what contribution you as an individual can bring to the table (Senior pharmacy student 12).

Some students highlighted that a lack of understanding of other professional roles can result in uncertainty in dealing with the others, leading to unclear role boundaries.

It is important to know your role and it is important for you to know the other's role and for others to know your role... Some physicians didn't like know what to expect of you. Like they would suggest medications, they would suggest doses and wouldn't give you like the time to you to suggest yourself (Senior pharmacy student 7).

With understanding roles and responsibilities of other professionals came respect and appreciation of the contribution made by others leading to a healthy productive environment as perceived by students. Some students reflected on how this occurred as a result of participating in an IPE session:

I think when we are studying in isolation, the medical students do not appreciate pharmacist's role, the pharmacist does not appreciate nutrition's role and so on. We had a chance to have an IPE session with nutrition students and we learnt a lot about their role and that it's very important and we, we couldn't think of the things they, they did. They have their own specialist and it was very important. So, I think the appreciation of each other's roles is very important (Junior pharmacy student 6).

Similarly, other students reflected how this was observed in practice settings:

What I found interesting was pharmacists were called when there was a problem with the prescription or anything, then the physician they accepted it, they were not like okay you know, because some physicians they don't accept they actually listen to the pharmacist. And the physicians and the pharmacists there, you can actually see how they work together for the patient to get the best outcome, patient outcome so I think that was I mean that was interesting (Senior pharmacy student 5).

#### 5.3.2.1.2 *Patient related benefits: improved quality of patient care*

Students expressed that all healthcare professionals are working toward the same goal: providing patient-centred care and this should be completed collaboratively rather than individually. They agreed that collaborative practice with healthcare professionals working together will result in an improved quality of patient care, leading to an improved healthcare system with better outcomes for the patient and less redundancy, or even contradiction, in information given to patients.

Making decisions together instead of telling the patient go there and go there, so we are getting all together in one place to make a decision for the patient (Junior pharmacy student 4).

Working collaboratively will reduce drug-related problems and all the problems that would happen due to miscommunication afterwards (Junior pharmacy student 9).

#### 5.3.2.1.3 *Current positive influences*

##### 5.3.2.1.3.1 *IPE experiences*

Most students in both focus groups reported exposure to IPE within the past year. Students mentioned and commented on the following four IPE learning experiences:

- A case based IPE activity, with nutrition students, for second year pharmacy students held at Qatar University;
- A case based IPE activity, with nursing students, for third year pharmacy students held at the university of Calgary;
- An IPE workshop with various healthcare students held at the University of Calgary;
- A skills competition held at College of North Atlantic for senior pharmacy students.

Students thoroughly enjoyed these experiences and found them to be opportunities to exchange knowledge between professions.

When we had the IPE session with nutrition students, we learnt their approach. The method that they use to reach some points. And they learnt how we make choices and how we select a particular drug. So it's like exchanging knowledge between both professions (Junior pharmacy student 8).

Students indicated on how icebreakers make a difference in breaking the initial barriers and getting to know their team better and become comfortable. One student commented on the skills competition:

It was amazing where we have been working with all health disciplines and there were cases related to respiratory, to paramedicine, and dental therapist. Imagine, I didn't know how to work with them before but after the competition, now I am more confident on how to approach these health disciplines (Senior pharmacy student 8).

Other comments included:

Students learning together in such a clinical setting will help, will help them to avoid mistakes in the future. Because at the end we're going to work together (Junior pharmacy student 12).

It's better to learn to interact with the other professionals before being actual practitioners, to identify the right way to interact with them and be prepared for it (Senior pharmacy student 11).

A student commented on the case based IPE activity with nursing students:

I was surprised about nurses' knowledge. The advantage of being part of this experience it was like now I can trust nurses more, much better than what I expected before. It was a nice experience (Senior pharmacy student 2).

Well we got to know how the nurses deal with the patient, that's the first thing and got to learn more about each other (Senior pharmacy student 4).

#### 5.3.2.1.3.2 *Healthcare professionals with Western backgrounds*

Another positive influence was the employment of healthcare professionals with Western background experience. Students believed that these professionals had collaborative practice experiences and valued the contribution of the pharmacists.

It depends also on the person, I remember in one of the hospitals, I was with a consultant from the UK and because of his background, he had more understanding of the clinical pharmacist roles. And it was actually very comforting to go with him,

because he would always like to involve you even if the residents didn't involve you. He would even tell them like this is their role so give them a chance to do – so it was very nice to find someone who actually knows your role and gives you a chance to participate. So it was very nice (Senior pharmacy student 5).

#### 5.3.2.1.3.3 *New pharmacy graduates, drivers for change*

Pharmacy students were very enthusiastic on what the future holds for them. They highlighted that they have noticed some changes in the profession and in practice but these changes are very gradual and will take time to be implemented. Junior pharmacy students had a strong desire to drive change in practice and were optimistic that with the IPE training across the different health programmes in Qatar, collaborative practice will exist once they start practising. They expressed the importance of having IPE in their curricula and perceived it as:

building strong roots for the future to continue for the future (Junior Pharmacy student 1).

I think that also when we study from at a college level and we graduate you're not just graduating only one student, two or three, you're graduating a whole generation so this will lead the change – the change (Junior pharmacy student 14).

I still have four years, so maybe after those four years, practice would have changed. With IPE incorporated into the different curricula and being implemented in many colleges, for example in here, in the nutrition, of course maybe in Cornell, so after the years come, maybe when we are ready to graduate - the collaborative work will be more, more active and happening more (Junior Pharmacy student 9).

I think in order for change to happen, we the new graduate are responsible, we can make change if all of us stand for the thing, for the same thing and try to be involved, with the decisions. We must start, we don't want, we don't want to wait for the doctor, to tell us to start or to tell us what to do, we need to like, apply what, the knowledge we have in the situation or the case we're working on (Junior pharmacy student 2).

#### 5.3.2.2 Pharmacy students' perceptions on the barriers

##### 5.3.2.2.1 *Previous IPE experiences*

In addition to the common logistical challenges, such as the need for transportation between the different geographical locations of the different campuses and time spent travelling, students identified and discussed in length a number of different challenges and barriers they faced from participating in the various IPE activities including group dynamics.

##### 5.3.2.2.1.1 *Group dynamics*

The composition of the small groups in an IPE activity has been perceived as a challenge to some students. This relates to having students, within the groups, with varying clinical experiences, different professional years, inclusion of male students, leaders in the team, and personality of the different group members. Students reported being uncomfortable having students with varying levels in the same group.

First of all, the personality of the student and the student confidence changes or like develops with time and with knowledge. So not having student from same level will mean communication would not be so beneficial because they're going to be confident about what they're saying because they're older than us and we will feel we have nothing to contribute (Junior pharmacy student 12).

Additionally, as the College of Pharmacy currently admits only female students to its undergraduate programme, student views differed regarding the inclusion of male students in IPE activities. Students described experiences with male students going well. The majority agreed on the importance of having IPE sessions with male students, as they will work with them in the future. Still, they noted it will be challenging for some students who always attended segregated schools. In addition, some students are more conservative and may find interacting with male students uncomfortable initially.

Eventually we'll always deal with them, so it's much better to learn from now, how to deal with them, be comfortable to deal with them, with other doctors for example to make it easier afterwards (Junior Pharmacy student 9).

We have been studying in the college for four years or five years and we've never had the chance to deal with male students in the classroom, so it will be challenging ... I think maybe for some students it's more of a cultural barrier ... how they were brought up. Therefore, this affect some people and for others it's fine (Senior pharmacy student 10).

However, a few students highlighted that a number female students will be uncomfortable with these type of interactions as they are not used to them.

In our culture, there would be some students who wouldn't really interact with male students, it will be challenging for them - we'll have to approach that carefully ... I think but at the end you will have to practise with them ... that's why you can't avoid them and at the same time, you have to be careful how to introduce the students to that (Junior pharmacy student 14).

Furthermore, senior pharmacy students discussed at length leadership in the team. Reflecting on the IPE activity they had with one profession, nursing, students struggled working at the beginning without medical students. A 'top down' hierarchical direction was noted in the student conversation: doctors, pharmacists, and then nurses.

In this country, we believe that physicians are our leader. In my team [nurses and pharmacy students] we, we felt there is no one leading, no leadership actually there, no, no one can lead you, so somewhere we were just lost. Because of, as I told you, the culture of this country. But the advantage of being part of this experience it was like now I can trust nurses more, much better than what I expected before. It was nice. but then we led ... if there's no physician then pharmacists, if there's no pharmacists, even pharm-tech is more, more reliable than the nurses. This is how they're [nurse] taught ... but I don't know, I think we have to change this idea in ourselves and other people around us (Senior pharmacy student 2).

Others argued that this is not always the case and it depends on the personality of the different students:

I think like it depends on the profession, it depends on the person, personality. Like when I was in the IPE we had a medical student with us, he had a quiet personality, so in this case, I was leading the team. The next day we had another medical student, with a stronger personality, so when he came, I stepped back you know. It doesn't depend on the profession; it depends like on the personality (Senior pharmacy student 3).

Another student reflected on another IPE activity where the group chose the leader and found it interesting. They enjoyed that they were given the choice to choose their leader regardless

of the discipline. Rotational leadership depending on the situation, the scenario, and expertise where the pharmacy students assumed the roles of the leader was highlighted:

So, we were bound to be the leader because we had more knowledge about the topic than the physicians (Senior pharmacy student 12)

The nurse should not take the lead when it comes to recommending the drug ... It's not her responsibility. So, we should take the lead in this particular situation (Senior pharmacy student 11).

In some cases, it's the pharmacist taking the lead, in some cases nurses are the one who were taking the lead in this case (Senior pharmacy student 8).

#### 5.3.2.2.1.2 *Lack of confidence and uncertainty*

Another common theme identified as a challenge from participating in the IPE activity was a lack of confidence and uncertainty. A number of factors contributed to student uncertainty. These included lack of orientation on what to expect from the session; conducting IPE activities with unfamiliar topics that students have not covered; being the only pharmacy student in the small IPE group; and different approaches to the care plan. Students participating in IPE activities for the first time were uncertain of what an IPE activity entails. They found it difficult at the beginning as they were unsure what they should do and how to work together.

It was difficult, as I said before, difficult at the beginning, because we don't know, what should we do, but then once you get the idea it becomes fun, quite nice, it's just you have to really know the person in front of you (Senior pharmacy student 4).

Honestly, it was difficult. It was difficult to try to communicate with the other profession and it was difficult to make a decision together for the patient. First, we were working separately ... we couldn't, we weren't able to discuss and talk ... it consumed a lot of time ... I think if we practise more it will be easier in the future. But the first time it was difficult (Junior pharmacy student 6).

It was difficult because we've never had it before and we didn't know what to expect of each other. We were not sure how to start. Should the nurse start or should we the pharmacist start? It was a bit difficult at the beginning but then we got used to it (Senior pharmacy student 4).

Other students had an IPE activity in an unfamiliar topic and in one instance the student felt they had no role to play in the case given to them:

The IPE I was in, they gave us a case on a topic which we didn't study yet, we didn't know the drugs, we didn't know anything, so I was standing there like feeling useless and everybody like, 'what medication do we give, what is the dose?' and 'I didn't know!' (Senior pharmacy student 12).

We had an emergency case ... they didn't tell us anything. Just, a patient came and fell and then of course, because here [in Qatar] we don't have a big role in the emergency unit, ... we [pharmacy student and pharmacy technician] stood on the side just investigating the doctor and the nurse. Like they had, more, knowledge about this thing and we didn't know what to do at the first time (Junior pharmacy student 10).

Moreover, students expressed concerns regarding the IPE activity where they had to develop a collaborative care plan but the two professions had different approaches to do it that resulted in uncertainty on how to work together and mutually agree on an approach.



I think the difficulty was because they have a different way of making the care plan and we have a different way. So, at the end we had to combine it in one form, so that is the reason why it was difficult to, to make them understand our way (Junior pharmacy student 5).

We move horizontally [in the care plan] and they make them vertically. So students were telling, 'Okay, let's fill this column' and we're telling them, 'No we move horizontally', so half an hour to explain how we do the care plan, and half an hour they're explaining how they do their care plan. So, it was wasting time . we couldn't reach an endpoint, like making a final recommendation for the patient and we couldn't do that (Junior pharmacy student 4).

One student reflected on an IPE activity where she was the only pharmacy student in her group and felt pressured to be in an environment where other healthcare students were relying on her and, in her view, she had no peer support to check with her answers:

It was hard, because you know like in certain things they were like counting on, on me (Junior Pharmacy student 10).

When I was doing IPE workshop, I was afraid of being the only pharmacist there, so I was afraid of doing a mistake, what happens if I don't remember the medication, which I didn't! What happens if I don't know the doses because others are relying on me alone so I am always afraid to be the only one pharmacist and I cannot refer to other pharmacists (Senior pharmacy student 2).

Additionally, some students' uncertainty stemmed from their lack of understanding of their role and what they were required to do in an interprofessional team.

There was nurses and doctors, respiratory therapists, paramedics. So, when you think about it, you think it's easy to deal with them, but when we went like they gave us a case and it was confusing ... What was my role? What I'm supposed to do? Because the doctor was there and the nurse and they were talking about medication. I'm also talking about medication so I think like no one knows when to interfere, what's my role? (Senior pharmacy student 3)

Furthermore, junior pharmacy students believed medical students are much more knowledgeable than they are, affecting their confidence when participating in IPE activities. However, participating in these IPE sessions mitigated these concerns.

If you were with a medical student, they take more information than we do, and therefore we feel uncomfortable, about some things, so we don't communicate the same way. This will create some barriers between us in the knowledge I mean (Junior pharmacy student 9).

I don't think that is it because today, today we have a session with the one of the physician and he asked us 'what are these drugs?! You know more than me!', so I don't think that was an issue because their role is to diagnose the patient and our role is to manage patient medication as we know more than they do in medication. So, I don't think that we're going to lose the confidence and communications (Junior pharmacy student 4).

#### 5.3.2.2.2: *Educational related issues: Assessment*

Although students favoured participating in IPE, and were eager to see it integrated into their curricula, there were mixed views on incorporating assessment into interprofessional activities with most students resisting the idea as the pharmacy curriculum is already 'very heavy' and they feel they are already overloaded with assessments. Students admitted that they are

'grade oriented' and hence, if the IPE sessions were graded, they would 'lose interest' in the activity in which they are participating. Some students reflected on the IPE experience with nutrition students and highlighted how this session stressed the nutrition students who were graded rather than focusing and enjoying the experience as other students did.

For the IPE session, we were not graded on that session but the nutrition students were graded, so we, we saw they were very stressed and they couldn't communicate with us as they were focused on the grades. We were more relaxed. And we benefitted a lot! I think first sessions in IPE should not be graded (Junior pharmacy student 6).

#### 5.3.2.2.3 *Current working practices and processes*

Students identified and expressed concerns relating to the current working practices and processes including:

- Pharmacists role and image
- Healthcare professionals attitude
- Patient attitudes
- Lack of collaborative practice.

##### 5.3.2.2.3.1 *Pharmacists' role and image*

Students expressed frustration that the pharmacist's role in practice is 'not well established', with pharmacists being passive and not sharing their knowledge with other healthcare professionals. This was attributed to the pharmacists' heterogeneous undergraduate training heavily based on sciences rather than clinical practice and lack of exposure to the concept of team and collaborative practice.

The pharmacist is always silent, he's not sharing anything in primary health centre, you see the pharmacist, just sitting in his room, this room, and you can only see him through this, very small window, and he does not interact with the doctors at all. Even, when you go to the hospital, you don't see pharmacists going with, with the doctors in the ward round. Even when they go, when I volunteered once in Hamad Medical Hospital, the pharmacist the only pharmacist who was there, was not talking at all, he was not even participating in the case that was discussed, so only when the doctor asks him, he just answers him. But this is not, this is not called collaborative work (Junior pharmacy student 9)

We go for clinical round and the clinical pharmacist ... didn't say any word during the whole round and the physician wouldn't even ask him and take all decisions ... They have an idea or an understanding and that is why, why should I ask a pharmacist (Senior pharmacy student 11)

Additionally, some students expressed concerns that pharmacists in practice tend to discourage pharmacy students from discussing their recommendations and suggestions with physicians.

The pharmacist would stay passive and they will even ask the students not to be involved in situations. Like they would say there are situations only for the physicians to discuss but in several cases I had something to say and some information to share but they would prevent me from doing so, 'the preceptor tells the student don't talk in front of the doctor' (Senior pharmacy student 3).

#### 5.3.2.2.3.2 *Healthcare professionals' attitude*

Lack of appreciation, hierarchy and power were sources of frustration for pharmacy students. Several pharmacy students indicated that many healthcare professionals, mainly physicians, are uncomfortable with the pharmacists 'evolving role' and perceived still pharmacists as professionals 'selling drugs'.

Physicians come from different countries, same as pharmacists ... some of them trained in US, some trained in UK, some trained in Arabian countries so there, there is huge variation in the different team background (Senior pharmacy student 8).

Some doctors just simply don't accept our recommendations. 'I'm a doctor, I know better than you' And some of them don't like pharmacist making interventions or making decisions (Junior pharmacy student 7).

#### 5.3.2.2.3.3 *Patient attitudes*

Although some students had good experiences dealing with patients who appreciated the advice given to them by students, many argued that patients are barriers:

Some patients are very rude--- And they do not accept any intervention from the pharmacist and I cannot blame them. Because pharmacists are not doing their job properly. For example, in a health centre they will write just 'twice daily' and throw the medication and even when I tried to counsel my patient my preceptor would tell me, no you don't have time just give them the medication so that's why because they have no expectation from a pharmacist (Senior pharmacy student 9).

Patients always listen to the physician here, not just here but the whole of Middle East region because of the culture, because even the patient think that a physician is the best one and he's the one who knows everything ... So patients never trust you... maybe the physicians can help. When I was in a ward round, patient didn't listen to me, until the physician introduced me to them. He the physician said this pharmacist is here to help you and she knows more than me, so then the patient then came to me and asked me questions (Senior pharmacy student 2).

#### 5.3.2.2.3.4 *Lack of collaborative practice*

Senior students reported observing collaboration in some hospitals but that it was not consistent in all the hospitals in Qatar. Additionally, collaboration only occurs on 'a needed basis, there has to be a major problem' according to one senior student. Another junior student anticipated the reality of collaboration to be 'quite poor' according to what they hear.

I don't think that all hospitals actually apply the interprofessional concept because I've been as a patient into one of the hospitals and it was an emergency ... I was very disappointed there was absolutely no collaboration whatsoever. It was just one person, he took the decision and that's it (Senior pharmacy student 4).

What I see now that everyone is competing and their opinion is the right one, either the doctor, the nurse, the technician, and they are not really communicating, they are not really collaborating (Junior Pharmacy student 7).

The victim is the patient--- (Junior pharmacy student 9).

And who is the one who is going to lose? The patient. So, I think we should start from the beginning. And before we accumulate wrong perceptions about other professions (Junior pharmacy student 7).

The only thing that's happening right now is between physicians of different specialties...So for example when they want to diagnose a case, they would all come together and talk to each other but the problem is here, is that it is only between

physicians right now. Not involving all the other health care professionals (Junior pharmacy student 9).

Several senior students noted that in practice physicians are the leaders of the team with little contribution from other members of the team.

Actually, during the clinical rounds, like we had the interprofessional team but mostly the consultant he was responsible for everything, like writing medication. Sometimes, the clinical pharmacists will give suggestions like it is better that we reduce the dose or to switch from this agent to this agent but the other team members will not say anything, it's mostly the consultant (Senior pharmacy student 6).

Another student blamed physicians for not taking the lead and working collaboratively with the rest of the healthcare team:

Right now, the doctors in the profession are not implementing interprofessional practice in their jobs (Junior pharmacy student 9).

### 5.3.2.3 Pharmacy students' recommendations

#### 5.3.2.3.1 *Student recommendations for future IPE: IPE activities*

Students identified courses within their pharmacy curriculum they highlighted as best suited for incorporating IPE activities: Professional Skills and Integrated Case Based Learning courses. Some senior students suggested having an IPE course delivered as an elective as they are already loaded with courses. However, others disagreed, as they believed IPE is essential for all students.

Furthermore, students highlighted the need for extracurricular, outreach events focusing on chronic disease like diabetes and hypertension to provide a 'complete comprehensive services to patients'. In addition to IPE activities, students emphasised the importance of social interaction between healthcare students.

Students also reflected upon their IPE experiences and based on the challenges they have faced made several suggestions around the IPE activity. They identified a need for adequate orientation about the IPE activity plan and learning objective prior to the session. When needed, students prefer to work on the same interprofessional care plan.

Why is that I make it horizontal, and you are making vertical? If we both have the, the same way of developing the care plan (Junior pharmacy student 6).

They also highlighted the importance of having students from the same level in the IPE activity. So, this issue of confidence is really important. Ensure, whenever possible, that students are at similar levels. Many students asked for IPE sessions to be interactive and use simulation.

It would be more interesting to have something like a real life situation where you actually go to see a patient together and we discuss the patient's case and then we try to find a treatment for the patient (Senior pharmacy student 10).

Additionally, students suggested that IPE activities need to reflect the different practice settings.

For example, I'm a community pharmacist, there's something wrong with my prescription, how do I do a phone, for example I want to talk to the physician. How do I contact the physician? So, I need to learn how to communicate with others in different practice settings--- (Junior pharmacy student 12).

Students also reflected on the IPE activities they have been part of and emphasised the importance of using a well-planned icebreaker at the beginning of the IPE session.

When I went to the workshop, in the first day. They divided us into teams and left us in a room to introduce ourselves and then suddenly we had to start working on this scenario. We were like standing and not doing anything. We didn't know what to do and how to communicate with each other. We didn't know each other. So the next day, they changed it. They gave us activities to get to know each other more. I think that was important, that they changed it like that (Senior pharmacy student 7).

Many students requested introducing IPE opportunities in clinical placement with other healthcare students.

Because we've been noticing Calgary students are there practising, having rotations. The Weill Cornell having rotations, pharmacy students having rotations ... all working separately.... medical students were just few minutes writing the notes in front of me but I am not contactable. I'm not talking with them because we are not involved together, we don't have discussion together until we come to the round but at the end of the round we take the file with my preceptor sit down and discuss the case and I wish the medical students, nursing students were with us, with the preceptors discussing and sharing the same file and the same notes. So I felt that that would be very good opportunities. We can have a case, share it together, a real case, real patient case and there they can sit down discuss it together, so we can know their roles, their management and for us what we are expected to do in our management and then we can have preceptors from both sides and having this discussion together at the site of practice (Senior pharmacy student 8).

Students suggested rewarding students with participation certificates and encouraged the idea of competition or challenge where students in their interprofessional teams compete against each team in a friendly environment. Students encouraged having more IPE competitions.

In the competition environment, we didn't feel like we are being assessed. We were just focusing on the case ... There were people there who were taking notes and assessing us but we didn't care about it, we just want to focus on saving the patient because it was really like real life scenario. Patient who was gun shot, groaning you know, so I was very excited and I learned a lot from it ... but I missed the part of the feedback, if I got the part of the feedback [debrief] from each scenario that would have been very helpful to me (Senior pharmacy student 8).

#### 5.3.2.3.2 *Patients: Changing patient and public perception about pharmacists*

Students' emphasised the need to improve the professional image of the pharmacist and work on changing the patient and public perception about the pharmacy profession.

as we show how we care for our patients, like through patient education, patients will start to value how important is your opinion and, and value your involvement in the decision. So, they will start to be aware and they will start to ask for information and come back to you for clarification or issues ... so, we should, we should change their perception, we must change it because it's our field and we are the expert in medicine, ..., so like we should force them to change the perception that they have about us (Junior pharmacy student 12).

### 5.3.2.3.3 *Pharmacy profession*

#### 5.3.2.3.3.1 *Continuing professional development for pharmacists*

Students made several suggestions for how the pharmacy profession can contribute to introducing collaborative practice in Qatar. Students highlighted that it is not just them who require the IPE training but healthcare professionals require training and continuous professional development on interprofessional and collaborative practice. Moreover, students expressed dissonance between what is learnt in their programme and what is out there in the practice. They expressed that practising pharmacists need to be role models for them:

We learn things [at university] that we don't see in real practice and that makes it difficult. So pharmacists play a very important role in just doing their job in a professional way so that students can learn from them (Junior pharmacy student 12).

#### 5.3.2.3.3.2 *Support for the profession*

One important suggestion is the need for more support for the pharmacy profession. Media campaign promoting and representing the pharmacist role was suggested. Collective effort is needed by pharmacists from all practice settings to know what they are capable of and not to fear being involved and fighting for their rights. This will result in positive perceptions by healthcare professionals, patients and the public.

I think at the beginning it will be very hard. But then with time, when they see our experience and how we are experts in our field, they would rely more on us and we would collaborate more and so we would together provide better health outcomes (Junior pharmacy student 9).

I think when, when we start doing our role and taking the responsibilities we will gain the trust and then we will change the perception. The more we are showing our role in front of everyone, with the teams and with the patients, they will change their perception that we are passive, that we are not communicating with others, we're not doing that well (Senior pharmacy student 8).

## 5.4 Discussion

Overall, the results demonstrate a strong readiness and positive perception by pharmacy students toward IPE and collaborative practice. Pharmacy students in this study recognised the importance of working collaboratively and acknowledged the holistic approach of delivering and achieving high quality patient centred care. These findings are aligned with previous studies of healthcare students (190, 249, 307). Pharmacy students had comparable scores to those obtained in healthcare students (i.e. medicine, pharmacy, nursing, and nutrition) from a Lebanese university at baseline for Teamwork and Collaboration subscale ( $43.75 \pm 6.23$  vs.  $42.52 \pm 4.39$ ) and Patient Centredness subscales ( $22.77 \pm 2.79$  vs.  $22.75 \pm 2.46$ ). However, students in Qatar had higher scores on Professional Identity ( $19.51 \pm 2.27$  vs.  $17.99 \pm 3.02$ )(71). Overall, the students at the College of Pharmacy in Qatar University had slightly better readiness than students in Lebanon. This is the only study found using the same validated Middle Eastern scale to allow for some comparison.

Participating in previous interprofessional experiences had a positive impact on their perspectives. These findings confirm previous exposure to IPE has positive effect on attitude (71, 193, 308). This means those students with exposure to IPE activities were more positive about the need for IPE. This may indicate students saw the benefit of IPE and were keen to have more of it. Therefore, it is important to incorporate IPE initiative for students. Such initiatives provide students with an opportunity to understand the roles and responsibilities of other professions and enhance their understanding of their own roles and responsibilities in the interprofessional team, as demonstrated by the focus group results. This will create an environment of respect and appreciation amongst the interprofessional team members paving the way upon graduation for enhanced collaboration, anticipating positive impact on the quality of patient care (309).

Students recognised all healthcare professionals are working toward the same goal and that is providing patient-centred care. This should be completed collaboratively rather than individually to resolve the limitations each profession has. However, they were concerned about the way they are perceived by other members of the healthcare team, especially physicians. Students identified and expressed concerns relating to the current working practices and processes during the focus group. They were not happy with the status of pharmacists in practice and expressed frustration with pharmacists being passive. They felt there was lack of appreciation and that they were undervalued with a 'top down' hierarchical direction noted in the focus group with physicians at the top and other healthcare professionals' contribution being marginalised (185). This is similar to another study where pharmacy students blamed physicians for their status and as a result handing power and status back to the physicians (251). For a healthy interprofessional environment, team members need their roles to be perceived positively by others and hence educators need to be aware that negative perceptions of status may influence the functionality and attitudes of the team members (310). Concerns of hierarchy and lack of appreciation need to be addressed as this may impede effective interprofessional practice within the healthcare teams and impede successful integration of IPE pre-licensure (185).

One of the most encouraging observations of this study was the strong desire by junior pharmacy students to drive change in practice. They were optimistic with high expectations and held idealistic views that with the IPE training across the different health programmes in Qatar, collaborative practice will exist upon graduation. In contrast, senior students may have felt that this timescale is unrealistic. This was also reflected in the survey results where junior students had the highest mean for subscale 1 (teamwork and collaboration). This could be attributed to the realisation these students were at the beginning of their career and may have not perceived the challenges of practising collaboratively, unlike the rest who have had more experience. These findings concur with previous studies, which showed students in their senior years, those with postgraduate qualification, and those with prior working experiences had less

positive attitudes. They related these students are more aware of what happens in practice in terms of status and power differentials between the different groups of health professionals. This may interfere with the development of a collaborative practice environment and lead to negative perception (178, 192, 311-313).

Furthermore, a study comparing the attitudes of alumni and undergraduate students found that students had more positive attitudes than the alumni toward interprofessional healthcare teams. This was attributed to the alumni, who have been immersed into the real world, are aware of the challenges of collaboration between the healthcare members, resulting in a diminishment of their positive attitudes toward interprofessional teams (314). Additionally, in another study residents had less of a positive attitude toward collaboration than medical students and this was attributed to actual experiences of collaboration in real practice settings that may not promote the need for interprofessional teams and emphasise physician centrality (315).

A study in Qatar investigating pharmacy students' perceptions to pharmaceutical care, where they work closely with healthcare professionals and patients, demonstrated that senior students who have completed more internships may have noted the mismatch between what they are taught in the university and what is perceived in the practice (316). The same would be for IPE and, as perceived in this chapter, student perception of collaboration in the practice is mostly not harmonious and hence educators should inform students that when they enter the practice they may need to be agents of change to promote and advance collaborative working (317).

The IPE experiences mentioned in this study were initial IPE experiences at the College of Pharmacy. Although these experiences were generally positively perceived by students, they discussed at length many challenges they have faced mainly related to group dynamics, the lack of formal orientation, and guidance on how to work together. This led to uncertainty on what to expect from the IPE activity, as they were not acquainted with the idea. This is aligned with other studies that reported student dissatisfaction and negative views from initial IPE experiences (318).

Ignoring these concerns may result in intensification of negative attitudes towards participating in future IPE activities and working with other professionals in the practice upon graduation. Therefore, educators need to pay attention to the group dynamic of the student IPE teams and ensure equal mix of healthcare students to ensure no profession dominates the discussion (319). For students, case-based learning involving real case scenarios, IPE workshops, and simulations were the most relevant IPE approaches. Authenticity of the learning experience and using clinical realistic scenarios to imitate real life practice are important factors in influencing positive outcomes and are believed to enhance effectiveness of IPE (22, 320). The



IPE activity needs to be relevant to the participating students to facilitate their involvement rather than inhibiting it (319).

There were missed opportunities during the student internship for students to collaborate with other healthcare students. Additionally, there is resistance to incorporating assessment into IPE as students believed that they were assessment-overloaded and there was reference to IPE activities where some professions were assessed and others were not. This is an important consideration for future IPE activities. Unfortunately, effective assessment strategies to assess IPE are still lacking and this is an area that needs to be investigated further to develop and implement in IPE settings (321, 322).

Pharmacy students were least confident about their professional identity, as demonstrated in having the least two mean scores for two statements in the professional identify scale: 'There is little overlap between my future role and that of other healthcare professionals' and 'The function of nurses and therapists is mainly to provide support for doctors'. This weak sense of professional identity could stem from lack of role models, the reality of collaborative practice in terms of hierarchy and power, and their previous clinical experience. Their identity is further influenced by the lack of appreciation and resistance from the healthcare teams, especially physicians, to the evolving role of the pharmacists. The resistance perceived by the physician may stem from their view of the advancing role of the pharmacists as a threat to their professional identity, job security, and struggle with transferring some responsibilities to others within the team to protect their position in the hierarchy structure (33, 174, 323).

Moreover, pharmacy students had particularly negative views of practising pharmacists' interaction with other healthcare professionals. Pharmacy students saw the practising pharmacists as passive. It is possible that pharmacy students have a particularly low perception of the pharmacists' ability to communicate effectively with other healthcare professionals. Pharmacist image, lack of collaborative practice, and lack of role models for students as described by the pharmacy students must be a matter of concern and serious actions need to be taken to address this and to work towards having collaboration as the norm rather than on an as needed basis.

It is essential that healthcare students are mentored by role models during their educational experience who have positive attitude, value IPC and effectively communicate with the healthcare team to improve the quality of patient care (185, 249). Also, students needed to be provided with IPE opportunities to develop the competencies needed for them to be valued members contributing to healthcare teams (249). As identified in the focus group, students have observed collaboration in some hospitals in Qatar and hence these can be targeted for pharmacy placements to offer the students the chance to observe collaboration being practised. However, practice needs to be changed and practising pharmacists in Qatar need to be role models to students. Similar initiatives to those completed previously for the

incorporation of the concept of pharmaceutical care can take place. These include but are not limited to offering continuing professional development sessions on interprofessional communication and collaboration to pharmacists, preceptors and other healthcare professionals (316).

### **5.5 Strengths and Limitations:**

Students from all the pharmacy professional years, the relatively high response rate to both the survey and focus group and the mixed method design to provide a broader perspective about student perceptions and enriching the data obtained are particular strengths of this research. However, there were a few limitations to this study. The results are self-reported attitudes of students and hence results needs to be interpreted within this context. Additionally, the study only investigated the pharmacy student perspective so the other healthcare student perception is lacking. In addition, the majority of the survey respondents were female and all focus group participants were female. This may have affected the external validity of the study.

### **5.6 Conclusion**

This study has highlighted different dimensions in pharmacy students' perceptions. It also provided a useful insight into the readiness of pharmacy students in a Middle Eastern university. Although small, statistically significant results were noted between the different pharmacy groups. All students had positive attitudes towards IPE and collaborative practice. Students are seeking more IPE experiences formally incorporated into their curriculum and hence educators should capitalise on these positive and enthusiastic attitudes to identify the most effective means for delivering IPE and inform curricula planning. Collaborative practice-ready graduates will produce better educated professionals delivering higher quality care. Additionally, this study adds to the evidence supporting the incorporation of IPE into healthcare curricula. Practice needs to change with an emphasis on improving the pharmacist image to help create and nurture an interprofessional environment where all team members are appreciated and valued.

# Chapter 6: Perspectives of Practising Pharmacists

## 6.1 Background

With the move towards integrating IPE into the different healthcare curricula, which is essential to shape the effectiveness of collaborative practice, the call for promoting an interprofessional culture across the different healthcare settings in an ever-increasing complex healthcare needs is rapidly evolving. Interprofessional education on its own is not enough to ensure optimal health services are achieved (29). Pharmacists' attitudes towards collaborative practice in the literature is discussed in Chapter 3. These largely focused on the relationship between pharmacists and physicians. The tendency to focus more on these two professions is attributed to the recent advances in these professions, the high cost of healthcare, the increasing amount of drugs available, complexity of drug interactions between medications, cost of drug related morbidity, and increasing chances for medical errors (171).

Little is known about the perception of pharmacists in Qatar towards collaboration. Therefore, to develop effective collaboration strategies in practice settings, it is essential to survey the attitudes of practising pharmacists towards collaboration as positive attitudes are essential to successful implementation (324). Pharmacists practising in Qatar are a heterogeneous expatriate group with most pharmacists graduating from programmes in the region that focus on pharmaceutical sciences and industry rather than clinical pharmacy (63). The exceptions are those graduating from Qatar University College of Pharmacy where the programme is clinical and patient-oriented (63). The aim of this chapter is to explore the awareness, views, attitudes and perceptions of practising pharmacists in Qatar towards IPE and collaborative practice. This chapter identifies enablers and barriers perceived by practising pharmacists in an environment of collaborative practice.

## 6.2 Research Design

A two-staged sequential explanatory mixed method design was used to capture a comprehensive perspectives of practising pharmacists toward IPE and collaborative practice through a quantitative survey (stage 1). The survey is followed by an in depth description of these perspectives from practising pharmacist representatives through the qualitative stage by conducting three focus groups. This is followed by integrating and interpreting the data from both stages.

### 6.2.1 Stage 1: Quantitative Survey

#### 6.2.1.1 Study design

This was an exploratory cross sectional survey of practising pharmacists in Qatar. The survey was self-administered in English.

### 6.2.1.1 The survey

A self-administered online or paper survey in English, created in Snap 10 Professional®, planned to be completed in 25 minutes was used to solicit anonymous responses from the respondents. The survey consisted of 24 questions. The base of the survey was a 23-item 5-point Likert scale (strongly disagree, disagree, undecided, agree and strongly agree) modified version of the RIPLS survey validated to measure readiness of practising healthcare professionals (199). This scale is validated and is considered reliable with good internal consistency, with a reported Cronbach's coefficient alpha of 0.76 (199). Permission from the original authors of the survey was obtained (Appendix 19). However, the scale was not comprehensive enough to generate data that would achieve the study objectives. Therefore, further questions based on another published study (202) and author experiences, were added to provide a broader perspective on IPE from practising pharmacists. The survey contained questions related to the following domains:

1. Questions 1-8: Participant sociodemographic and practice characteristics: gender, age, place of work, years of experience, country of origin, country of highest degree, and how many years they practised pharmacy.
2. Questions 9-21: IPE definition; opinions, experiences about IPE and collaborative practice; frequency of interaction and collaboration with other healthcare professionals; the healthcare professionals they tend to interact with; and familiarity and previous experiences in IPE and collaboration; self-assessment of IPC knowledge and skills; interest in IPC training; and barriers to IPC training.
3. Question 22: RIPLS scale. Participants were asked to indicate their level of agreements with 23 statements from a 5- point Likert scale (strongly disagree, disagree, undecided, agree, and strongly agree) from the modified version of the RIPLS validated for healthcare professionals.
4. Question 23: The last question was an opportunity for participants to provide any additional comments about IPE and collaborative practice.

To assess the content and face validity of the survey, the survey was piloted among 10 practising pharmacists from the various practice settings. Minor modifications were made to the survey questions. Pharmacists involved in the pilot were excluded from the actual study thereafter.

### 6.2.1.3 Survey implementation

One of the challenges faced when estimating the study sample size and the distribution of the surveys to pharmacists was that there were no up-to-date lists or databases of practising pharmacists in Qatar from Ministry of Public health. It was estimated that the number of practising pharmacists in Qatar was around 1000. However, the College of Pharmacy in Qatar University has a database that includes names and contact information for pharmacists in

Qatar from various sectors including: community, hospital, and primary care. The database has been used in previous published research (204). This database contained around 557 pharmacists at the time of the study. Using Raosoft ® online sample size calculator (205), a recommended sample size of 228 was calculated to achieve a confidence level of 95% and a margin of error of 5% considering 50% response distribution. To account for non-response rate, a 25% increase to the sample size was considered. Consequently, the recommended sample size was 285, which was randomly selected.

The finalised version of the survey was distributed between September 26, 2013 and November 11, 2013 to all targeted pharmacists online. A paper survey was used if the pharmacist had no access to email or the internet. Two reminders were sent (half way through the period and three days before the deadline) to the selected pharmacists during this period. All participants had the chance to be voluntarily entered into a prize draw for an Apple iPad mini to provide an incentive to respond and enable an increased the response rate.

#### 6.2.1.4 Analysis

Completed surveys generated email alerts that were sent directly to principal researcher. These anonymised online submissions were imported immediately to SPSS version 22. Statistical analysis was completed using SPSS using descriptive statistics (frequencies, percentages, mean, and standard deviations) to fully describe respondents' views, attitudes, and experiences. A one-way ANOVA was carried out to examine the effect of practice settings on attitudes (RIPLS scale) and also on participant's experience of IPC with *post hoc* analysis using Tukey's test.

To analyse the Likert scale questions, the following scores were attributed: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree and 5 = strongly agree. Overall, mean ratings for each answered statement for each of the different practice settings were calculated and expressed as means and standard deviations. *P* values at  $\leq 0.05$  were considered significant. Open comments were analysed thematically with illustrative quotes used to describe key themes. Reliability analysis was performed on the RIPLS attitudinal scale by obtaining a value for Cronbach's coefficient alpha.

#### 6.2.2 Stage 2: Qualitative focus group

Three focus groups were conducted with three different groups of practising pharmacists (community, hospital, and primary care) to investigate practising pharmacist perspectives further and to see if differences exist between the different practice settings. The steps of the focus groups process outlined in the methodology chapter relating to planning, recruiting, implementing and analysing were followed.

## 6.3 Results

### 6.3.1 Stage 1

One hundred and seventy-eight pharmacists completed the survey with a response rate of 178/285 (63%).

#### 6.3.1.1 Demographic data

Table 51 highlights the sociodemographic and practising pharmacists characteristics of the respondents. Most respondents were male (52%, n=93). Eighty eight percent (n=157) of the respondents were aged between 25 and 44 years old. The majority were working in hospital settings (39%, n=69). More than 70% of respondents have worked in Qatar from 1 to 10 years. Most respondents were from Egypt (30%, n=54), followed by India (20%, n=37). More than two thirds of the respondents (67%, n=119) have had their highest pharmacy degree for more than five years.

*Table 51: Sociodemographic and Practising Pharmacists Characteristics of Respondents*

Characteristics	Frequency (Percent)
Gender (n=178)	
Male	93 (52%)
Female	85 (48%)
Age group (n=178)	
18-24	3 (2%)
25-33	87 (49%)
34-44	70 (39%)
45-54	13 (7%)
54-65	4 (2%)
66 and older	1 (1%)
Place of work (n=177)	
Chain community pharmacy	42 (24%)
Independent community pharmacy	13 (7%)
Public primary health care centre	41 (23%)
Private primary health care centre	11 (6%)
Public Hospital pharmacy	61 (35%)
Private Hospital pharmacy	8 (4%)
Other undefined setting	1 (1%)
Years practising pharmacy (n=174)	
<1	4 (2%)
1- 5	42 (24%)
6 -10	55 (32%)
11- 15	45 (26%)
16-20	12 (7%)
> 20	16 (9%)
Have never been a practising pharmacist	0
Years practising pharmacy in Qatar (n=178)	
<1	20 (11%)
1- 5	80 (45%)
6 -10	46 (26%)
11- 15	23 (13%)
16-20	5 (3%)
> 20	3 (2%)
Have never practised pharmacy in Qatar	1 (1%)

Country of origin (n=178)	
Qatar	3 (2%)
Egypt	54 (30%)
India	37 (20%)
Jordan	9 (5%)
Palestine	13 (7%)
Philippines	19 (10%)
Sudan	21 (11%)
Pakistan	4 (2%)
Syria	4 (2%)
Iraq	3 (2%)
Lebanon	2 (1%)
Australia	1 (1%)
Canada	1 (1%)
Iran	1 (1%)
Saudi Arabia	1 (1%)
New Zealand	1 (1%)
South Africa	1 (1%)
Tunisia	1 (1%)
The United Kingdom	1 (1%)
The United States	1 (1%)
Years since graduation with highest pharmacy degree? (n=177)	
<1	7 (4%)
1- 5	51 (29%)
6 -10	54 (30%)
11- 15	39 (22%)
16-20	12 (7%)
> 20	14 (8%)

### 6.3.1.2 Interaction with other healthcare professionals

Nearly three quarters of the respondents (74%, n=130) indicated that they often or almost always interacted with other healthcare professionals. The percentage was less when asked about the frequency of collaboration with other healthcare professionals (65%, n=114). Most respondents interacted with physicians (91%, n=162), followed by pharmacists (87%, n=154), and less than three-quarters of the respondents interacted with nurses (71%, n=127) (Table 52).

Table 52: Interaction with Other Healthcare Professionals

Characteristics	Frequency (Percent)
Frequency of interaction (dealing) with other health care professionals (n=175)	
Never	1 (1%)
Seldom	1 (1%)
Sometimes	43 (24%)
Often	46 (26%)
Almost always	84 (48%)
Frequency of collaboration (working with) with other health care professionals (n=175)	
Never	1 (1%)
Seldom	7 (4%)
Sometimes	53 (30%)
Often	40 (23%)
Almost always	74 (42%)
Type of healthcare professionals respondents interact with (n=178)	
Physician	162 (91%)
Pharmacist	154 (87%)
Nurse	127 (71%)
Physiotherapist	29 (16%)
Others	
• Pharmacy Technician	• 4 (2%)
• X ray technician	• 3 (2%)
• Nutritionist	• 1 (1%)
• Dentist	• 1 (1%)
• Laboratory technician	• 3 (2%)
• Veterinarian	• 1 (1%)
• Social workers	• 2 (1%)
• Radiologist	• 2 (1%)
• Respiratory therapist	• 4 (2%)
• Dietician	• 5 (3%)
• Dentist	• 2 (1%)
• Occupational therapist	• 2 (1%)
• Infection Control Specialists	• 1 (1%)
• Medical representative	• 1 (1%)
• Lab technologists	• 1 (1%)
• Psychologists	• 1 (1%)



### 6.3.1.3 Perspectives on factors affecting interprofessional collaboration

The respondents were asked to rank the response that best reflected their beliefs about factors affecting their IPC with 1 = 'not at all' to 5 = 'very much'. Respondents gave their highest score to the importance of IPC to the effectiveness of their work. However, pharmacists gave their lowest rating to satisfaction with the process of IPC in their work settings. Additionally, respondents believed that they understand other professionals' scope of practice much more than other professionals understand the pharmacists' scope of practice (Table 53).

Table 53: Experience of interprofessional collaboration

	Mean (SD)			
	Hospital pharmacists	Community pharmacists	Primary health care pharmacists	Total Mean
How important is interprofessional collaboration to the effectiveness of your work? (n=175)	4.17 (0.857)	4.18 (0.722)	4.43 (0.855)	4.25 (0.820)
How much do you understand other professionals' scope of practice? (n=178)	3.72 (0.725)	3.73 (0.924)	3.92 (0.688)	3.78 (0.785)
How much do your students/clients/patients expect you to collaborate with professionals from other disciplines? (n=176)	3.49 (0.994)	3.30 (0.933)	3.18 (1.093)	3.35 (1.002)
How much do other professionals understand the scope of your practice? (n=176)	3.23 (0.770)	3.13 (0.788)	3.35 (0.955)	3.23 (0.833)
How much administrative support is there for interprofessional collaboration in your work setting? (n=175)	3.26 (1.060)	3.05 (1.182)	3.22 (1.222)	3.18 (1.145)
How much do issues of confidentiality limit interprofessional collaboration? (n=173) *	2.88 (1.078)	3.30 (0.933)	3.29 (1.010)	3.13 (1.028)
How much are you satisfied with the process of interprofessional collaboration in your work setting? (n=176)	3.10 (1.002)	2.98 (1.300)	3.29 (1.045)	3.12 (1.117)

\* Statistically significant

Compared with pharmacists in hospital and primary healthcare settings, community pharmacists reported other professionals understood least about their scope of practice, had less administrative support, and were less satisfied with IPC. Hospital pharmacists gave their lowest rating to issues of confidentiality limiting their interprofessional collaboration and primary care pharmacists reported that students, clients, and patients expected them to collaborate less than community and hospital pharmacists. Additionally, a one way between-groups ANOVA was carried out to explore the effect of practice settings on respondents'

experience of interprofessional collaboration. There was a significant difference between responses to the question 'How much do issues of confidentiality limit interprofessional collaboration' ( $p = 0.034$ ). *Post hoc* testing using Tukey's test revealed there was a significant difference between hospital pharmacists ( $M = 2.88$ ,  $SD = 1.078$ ) and community pharmacists ( $M = 3.30$ ,  $SD = 0.933$ ),  $F(2,170) = 3.459$ ,  $p = 0.058$ .

#### 6.3.1.4 Self-assessment of IPC knowledge and skills

Table 54 highlights the seven items relating to respondent self-assessment of their IPC knowledge and skills from highest to lowest mean. Overall, respondents rated their knowledge much less than their skill level. Over a third of the respondents (34%,  $n=60$ ) rated their knowledge of IPC models and research as poor with 8% ( $n=14$ ) reporting this as not applicable. Similarly, their knowledge of team stages was satisfactory or poor for more than half of the respondents (59%, 105). More than a quarter of the respondents (27%,  $n=48$ ) rated their skills level for communicating effectively as satisfactory or poor.

Table 54: Self-Assessment of Collaboration Knowledge and Skills

Pharmacist rating on their personal	Mean (SD)			
	Hospital pharmacists	Community pharmacists	Primary health care pharmacists	Total Mean
Skill level for communicating effectively ( $n=174$ )	3.81 (0.675)	3.86 (0.749)	4.04 (0.669)	3.89 (0.701)
Skill level for managing conflict ( $n=174$ )	3.66 (0.803)	3.73 (0.798)	3.64 (0.802)	3.68 (0.797)
Skill level for Leadership skills ( $n=173$ )	3.59 (0.738)	3.65 (0.751)	3.68 (0.741)	3.64 (0.739)
Skill level for building rapport ( $n=174$ )	3.69 (0.966)	3.59 (0.826)	3.48 (0.886)	3.60 (0.899)
Knowledge of Leadership styles ( $n=173$ )	3.15 (0.925)	3.39 (1.021)	3.54 (0.908)	3.34 (0.961)
Knowledge of team stages ( $n=174$ )	2.97 (1.007)	2.93 (1.024)	3.22 (0.996)	3.03 (1.011)
Knowledge of interprofessional collaboration models and research ( $n=173$ )	2.90 (0.949)	2.60 (0.993)	2.84 (0.997)	2.79 (0.980)

#### 6.3.1.5 Interest in interprofessional collaboration training

Respondents were asked to rank their personal interest in attending five different IPC training opportunities. A one day IPC training workshop was favoured the most with least interest reported for enrolling in a university course delivered over a semester (Table 55). There was no statistically significant effect of practice setting on interest in IPC training,  $P$  greater than 0.05.

Table 55: Pharmacist Rating on their Personal Interest in Training Opportunities

Pharmacist rating on their perspective on participating in	Mean (SD)			
	Hospital pharmacists	Community pharmacists	Primary health care pharmacists	Total Mean
A training opportunity such as a 1-day workshop on IPC (n=174) *	4.10 (0.794)	4.09 (0.776)	4.45 (0.610)	4.20 (0.752)
Learning more about IPC (n=175)	4.07 (0.863)	4.15 (0.678)	4.31 (0.648)	4.17 (0.751)
a training opportunity such as Web-based (online) modules on IPC (n=175)	3.79 (1.100)	3.98 (0.963)	3.94 (1.066)	3.90 (1.045)
a training opportunity such as a 2-day workshop on IPC (n=175)	3.75 (0.968)	3.79 (0.948)	4.08 (0.868)	3.86 (0.939)
a training opportunity such as a 3-credit (1 semester) university course in IPC (n=176)	3.30 (1.228)	3.59 (1.203)	3.63 (1.248)	3.49 (1.228)

\* Statistically significant

Additionally, a one way between groups ANOVA was carried out to explore the effect of practice settings on respondents' perspective on training. There was a significant difference between responses to the question on the need for 'training opportunity such as a 1-day workshop on IPC' ( $p = 0.018$ ). Post hoc testing using Tukey's test revealed that there was a significant difference between primary care pharmacists ( $M=4.45$ ,  $SD=0.610$ ) and community pharmacists ( $M=4.09$ ,  $SD = 0.776$ ),  $F(2,171) = 4.124$ ,  $p=0.035$  and hospital pharmacists ( $4.10$ ,  $SD 0.794$ ),  $F(2,171)=4.124$ ,  $p= 0.032$ .

Respondents had the opportunity to answer an open-ended question: 'If you are interested in other training opportunities, please identify and explain'. There were 23 very brief responses to this question. Some suggested specific training topics such as 'working in diabetes/hypertensive clinic', 'scope of interprofessional collaboration', 'teamwork and communication skills', 'conflict resolution', 'leadership and crisis management', 'chronic diseases prevalent in Qatar', 'scope of practice'. Pharmacists expressed the importance of learning how to apply and promote collaboration into their practice settings.

### 6.3.1.6 Barriers to IPC training

Table 56 highlights the respondents' ranking of four potential barriers that may prevent them from attending an IPE training. Overall, the mean rank was similar between the different barriers with the time barrier being ranked as the highest. However, for primary care pharmacists travel limitations was ranked the highest. There was no significant effect of practice setting on perceived barriers to IPC training.

Table 56: Pharmacists' Perspective on Barriers to Interprofessional Collaboration

Pharmacist rating on their perspective on barriers to IPC	Mean (SD)			
	Hospital pharmacists	Community pharmacists	Primary health care pharmacists	Total Mean
time limitations (n=178)	3.58 (0.930)	3.50 (1.144)	3.49 (1.102)	3.53 (1.047)
financial limitations (n=178)	3.29 (1.099)	3.41 (1.218)	3.35 (1.230)	3.35 (1.171)
travel limitations (n=175)	3.33 (1.094)	3.16 (1.273)	3.53 (1.102)	3.34 (1.157)
a lack of administrative support (n=176)	3.29 (1.113)	3.16 (1.092)	3.29 (1.270)	3.25 (1.149)

#### 6.3.1.7 RIPLS scale for practising pharmacists

Overall RIPLS scores were high among hospital, community, and primary healthcare pharmacists indicating high readiness and better attitudes (Table 57). Cronbach's alpha for the 23 statements in the RIPLS scale was 0.809. A one-way ANOVA was carried out to look at effect of practice settings on attitudes. There was a significant difference between responses to the question 'the function of nurses and therapists is mainly to provide support for doctors' ( $p = 0.018$ ). *Post hoc* analysis using Tukey's test revealed hospital respondents ( $M = 2.75$ ,  $SD = 1.318$ ) scored significantly lower than community respondents ( $M = 3.36$ ,  $SD = 1.025$ ),  $F(2,169) = 4.101$ ,  $p = 0.019$ .

Table 57: Mean Scores for RIPLS Statement for Three Different Groups and Overall Score

	Mean (SD)			
	Hospital pharmacists	Community pharmacists	Primary Health care pharmacists	Total
<b>Subscale 1 – Teamwork and Collaboration</b>				
Learning with other health care professionals will help me be a more effective member of a health care team (n=174)	4.46 (0.63)	4.55 (0.69)	4.66 (0.59)	4.55 (0.64)
For small group learning to work, health care professionals need to trust and respect each other (n=173)	4.60 (0.58)	4.56 (0.57)	4.66 (0.52)	4.61 (0.56)
Team-working skills are essential for all health care professionals to learn (n=174)	4.62 (0.60)	4.57 (0.71)	4.66 (0.48)	4.61 (0.60)
Shared learning will help me understand my own limitations (n=172)	4.38 (0.67)	4.46 (0.69)	4.46 (0.68)	4.43 (0.68)
Patients ultimately benefit if health care professionals work together to solve patient problems (n=173)	4.66 (0.54)	4.68 (0.58)	4.72 (0.45)	4.68 (0.53)
Shared learning with other health care professionals will increase my ability to understand clinical problems (n=172)	4.61 (0.58)	4.70 (0.50)	4.72 (0.50)	4.67 (0.53)
Learning with health care students from other disciplines before qualification would improve relationships after qualification (n=173)	4.24 (0.72)	4.21 (0.80)	4.22 (0.62)	4.23 (0.72)
Communication skills should be learned with other health care professionals (n=171)	4.30 (0.78)	4.18 (0.79)	4.23 (0.75)	4.24 (0.77)
Shared learning will help me to think positively about other health care professionals (n=171)	4.41 (0.63)	4.35 (0.78)	4.46 (0.54)	4.40 (0.66)
Shared learning with other health care professionals will help me to communicate better with patients and other professionals (n=171)	4.50 (0.64)	4.40 (0.60)	4.42 (0.73)	4.44 (0.65)
I would welcome the opportunity to work on small-group projects with other health care professionals (n=172)	4.39 (0.74)	4.30 (0.69)	4.48 (0.74)	4.39 (0.72)
Shared learning helps to clarify the nature of patient problems (n=167)	4.44 (0.75)	4.40 (0.66)	4.49 (0.55)	4.44 (0.66)
Shared learning before qualification would help health care professionals become better team workers (n=171)	4.46 (0.64)	4.38 (0.68)	4.36 (0.75)	4.40 (0.68)
<b>Subscale 2 – Sense of Professional identity</b>				
Clinical problem-solving skills should only be learned with professionals from my own discipline (n=172)	2.88 (1.19)	2.84 (1.14)	2.68 (1.27)	2.81 (1.19)
The function of nurses and therapists is mainly to provide support for doctors* (n=172)	2.75 (1.32)	3.36 (1.03)	2.84 (1.36)	2.97 (1.27)
There is little overlap between my role and that of other health care professionals (n=170)	3.05 (1.14)	3.31 (1.16)	3.16 (1.15)	3.16 (1.15)
I would feel uncomfortable if another health care professional knew more about a topic than I did (n=170)	2.55 (1.23)	2.49 (1.22)	2.29 (1.28)	2.45 (1.24)
I have to acquire much more knowledge and skills than other health care professionals (n=171)	3.29 (1.08)	3.49 (1.12)	3.08 (1.10)	3.29 (1.10)
<b>Subscale 3 – Patient Centredness</b>				
I like to understand the patient's side of the problem (n=173)	4.31 (0.84)	4.48 (0.57)	4.46 (0.54)	4.41 (0.68)
Establishing trust with my patients is important to me (n=171)	4.47 (0.86)	4.65 (0.52)	4.68 (0.47)	4.59 (0.67)
I try to communicate compassion to my patients (n=170)	4.30 (0.92)	4.36 (0.62)	4.50 (0.61)	4.38 (0.75)
Thinking about the patient as a person is important in getting treatment right (n=173)	4.46 (0.86)	4.61 (0.62)	4.58 (0.58)	4.54 (0.71)
In my profession one needs skills in interacting and co-operating with patients (n=171)	4.34 (0.94)	4.48 (0.57)	4.48 (0.68)	4.43 (0.76)

One-way ANOVAs were performed and demonstrated no significant effect of location of practice for each of the three subscales, *P* greater than 0.05 (Table 58).

Table 58: One-Way ANOVAS for the Three Subscales

	Mean (SD)			
	Hospital pharmacists	Community pharmacists	Primary Health care pharmacists	Total
Subscale 1 – Teamwork and collaboration	58.02 (6.67)	57.84 (5.97)	58.40 (4.72)	58.08 (5.89)
Subscale 2 – Sense of professional identity	14.66 (4.17)	15.50 (3.45)	13.92 (4.20)	14.71 (3.99)
Subscale 3 – Patient centredness	21.88 (4.13)	22.50 (2.38)	22.70 (2.12)	22.32 (3.12)

### 6.3.1.8 Variables tested that may affect attitudes

#### 6.3.1.8.1 Previous IPE experience

*t*-tests were carried out demonstrating no significant effect for previous experience of IPE on the three subscales, *P* greater than 0.05 (Table 59).

Table 59: Effect of Previous Experience on Attitude Subscales

	Previous experience Mean (SD)	No previous experience Mean (SD)
Subscale 1 – Teamwork and collaboration	59.29 (5.04)	57.95 (6.29)
Subscale 2 – Sense of professional identity	14.03 (4.20)	14.78 (3.96)
Subscale 3 – Patient centredness	22.22 (4.64)	22.35 (2.68)

#### 6.3.1.8.2 Effect of gender

In the analysis of RIPLS subscales, female pharmacists had higher mean scores on team collaboration and patient centredness than male pharmacists. *t*-tests demonstrated a significant effect of gender on teamwork and collaboration. Females scoring higher ( $M = 59.33$ ,  $SD = 4.96$ ) than males ( $M = 56.87$ ,  $SD = 6.41$ ),  $t(160) = 2.70$ ,  $p = 0.008$ . There was no significant effect of gender on the two other subscales, *P* greater than 0.05 (Table 60).

Table 60: Effect of Gender on Attitude Subscales

	Male Mean (SD)	Female Mean (SD)
Subscale 1 – Teamwork and collaboration	56.87 (6.41)	59.33 (4.96)
Subscale 2 – Sense of professional identity	14.98 (3.74)	14.43 (4.19)
Subscale 3 – Patient centredness	22.18 (2.71)	22.42 (3.54)

### 6.3.1.9 Identifying the correct IPE/IPC definition

Although 60% ( $n=106$ ) of the respondents were aware of the term IPE, only 39% ( $n=70$ ) could identify the correct statement. More than one third (40%,  $n=72$ ) of respondents thought IPE is when different professions come together to learn about a common topic. Less than a quarter (21%,  $n=37$ ) of the respondents had previous experience of IPE. Just over half of the

respondents (56%, n=100) could identify the correct statement for interprofessional collaborations (Table 61).

Table 61: Previous Exposure to Interprofessional Education

Characteristics	Frequency (Percent)
Awareness of the term interprofessional education? (n=178)	
• Yes	106 (60%)
• No	72 (40%)
Respondents understanding of meaning of interprofessional education:	
• Not sure	24 (14%)
• Interprofessional education is when two or more professions come together to learn with from and about each other	70 (39%)
• Interprofessional education is when different professions come together and one profession describes itself to others	12 (7%)
• Interprofessional education is when different professions come together to learn about a common topic	72 (40%)
Previous experience of interprofessional education? (n=178)	
• Yes	37 (21%)
• No	113 (63%)
• Not sure	28 (16%)
Respondents understanding of meaning of Interprofessional collaboration (n=178)	
• Not sure	30 (17%)
• Interprofessional collaboration is when two or more professions come together to learn about a common topic to help them deliver the highest quality of care	48 (27%)
• Interprofessional collaboration is when two or more professions work together with patients, families, carers, and communities to deliver the highest quality of care	100 (56%)

There were 21 responses to the question asking those who stated they had IPE experiences to 'give a very brief statement of what this IPE was and any impact it may have had'. Many included examples of discussing patient cases with physicians and nurses, attending multidisciplinary lectures and conferences, and shared learning of common courses at their early years in the university. Stated benefits from such experiences is understanding roles of others and better patient outcome.

When *t*-tests were carried out, there was a significant difference between the means on subscale 1, teamwork and collaboration, when respondents correctly identified which statement described IPE ( $M = 57.23$ ,  $SD = 6.04$ ) compared to respondents who did not ( $M = 59.20$ ,  $SD = 5.51$ ),  $t(160) = -2.10$ ,  $p = 0.037$  (Table 62). Correctly identifying the statement about IPC did not have a significant impact on any of the three subscales.

Table 62: The Effect of Correctly Identifying the Definition of Attitude

	Correctly identified statement about IPE Mean (SD)	Did not correctly identify statement about IPE Mean (SD)
Subscale 1 – Teamwork and collaboration	57.23 (6.04)	59.20 (5.51)
Subscale 2 – Sense of professional identity	14.98 (3.97)	14.30 (3.95)
Subscale 3 – Patient centredness	22.34 (2.54)	22.24 (3.87)

The following variables did not have a significant effect on mean scores of the three subscales: country of origin and the country where respondents received their highest pharmacy degree.

#### 6.3.1.10 Additional comments

Twenty-six responses were provided to the last question of the survey asking for additional comments about IPE and collaborative practice. The most important themes were the importance of IPC to all healthcare professions and the need to promote it further as it will ultimately result in better patient outcomes and improved healthcare systems. Few respondents noted the obstacles for IPE and IPC including the low salary for community pharmacists, tight schedules, 'sensitive relationship' between pharmacists and doctors, and the need to advance the role of the pharmacists. One of the respondent highlighted the need to:

Be humble enough to admit your limitations as a professional. Honesty will help any professionals to have a better health care for the patients. Honesty in a sense that we don't know everything and ask for each other help. Humility first before honour' (Community Pharmacist Participant 171).

#### 6.3.2 Stage 2

Three focus groups were convened for practising pharmacists to explore further the perceptions and experiences of the different participants about IPE and collaborative practice and identify common themes. While a high number of pharmacists agreed to participate in the focus groups, the numbers who actually attended the focus group varied: community pharmacists (n=4), hospital pharmacists (n=6) and primary healthcare (n=4).

- Pharmacists working in the hospital included three clinical pharmacists and three hospital pharmacists. Five were working in Hamad Medical Cooperation and one in a private hospital. Their experience working in the hospital setting ranged from 1 – 14 years. Five received their pharmacy education from the Middle East and one did her pharmacy degree in Ireland.
- The experience range for the four participating community pharmacists working in Qatar was between 1 – 11 years with one holding a pharmacy manager position. All four received their pharmacy education in the Middle East or India.
- Regarding the four primary care pharmacists working in Qatar, their experience range was between 3 – 20 years with one holding a pharmacy manager position. All four received their pharmacy education in Middle East or India. One was a senior pharmacy supervisor, two were senior pharmacists and one was a primary care pharmacist.

In exploring the qualitative data, three main themes were identified in relation to the practising pharmacist perspectives. These were on the pharmacists' perceptions of the enablers,



barriers, and recommendations to implementing IPE and collaborative practice, as shown in Table 63. Quotes are presented to illustrate the different perspectives presented.

*Table 63: Summary of Key Themes and Subthemes for Community Pharmacists, Hospital pharmacists and Primary Care Pharmacists Focus Group*

Enablers	Barriers	Recommendations
Professional related benefits <ul style="list-style-type: none"> <li>• Enhance Interprofessional communication</li> <li>• Appreciation and trust</li> <li>• Enriching learning/practice experience</li> </ul>	Patient <ul style="list-style-type: none"> <li>• Negative patient perceptions</li> </ul>	Patient: <ul style="list-style-type: none"> <li>• Changing patient perceptions</li> </ul>
Patient related benefits <ul style="list-style-type: none"> <li>• Improve quality of patient care</li> </ul>	Pharmacy profession <ul style="list-style-type: none"> <li>• Lack of organisational support</li> <li>• Lack of pharmacist confidence</li> </ul>	Pharmacy profession: <ul style="list-style-type: none"> <li>• Training</li> <li>• Support for the profession</li> </ul>
Current positive influences <ul style="list-style-type: none"> <li>• Qatar National Vision</li> <li>• Accreditation</li> <li>• Changing role of the pharmacist</li> <li>• Healthcare professionals with Western background</li> <li>• New pharmacy graduates</li> </ul>	Current working practices and processes <ul style="list-style-type: none"> <li>• Hierarchy</li> <li>• Powerful professions</li> <li>• Multicultural environment</li> <li>• Pharmacist Educational Background:</li> <li>• Type of hospital: Chart documentation</li> <li>• No existence of collaborative practice</li> </ul>	Raising awareness <ul style="list-style-type: none"> <li>• Awareness about other professions</li> </ul>

#### 6.3.2.1 Pharmacists' perceptions of enablers

Focus group participants discussed various benefits and advantages from implementing IPE and collaborative practice. Advantages have been categorised under four different themes: professional related benefits, patient related benefits, and current positive influences driving the change toward IPE and collaborative practice.

##### 6.3.2.1.1 Professional related benefits

Participants identified professional related benefits of having collaborative practice at their settings and these were as follows:

##### 6.3.2.1.1.1 Enhanced interprofessional communication

Being in an interprofessional environment interacting and collaborating with different healthcare professionals enhanced and eased interprofessional communication as perceived by participants. Having this unique communication gave them the opportunity to learn how to interact with other health care professionals, when to refer to the right person, and clarify the differences between healthcare professional roles and responsibilities.

It's a matter of communication, having the capability to get more information from other professions and being able to communicate with them will make teamwork much easier and you will gain more experiences for the future to interact more and learn more and more from the other professions and learn more about their roles and responsibilities. You cannot exclude any profession from the healthcare team (Clinical Pharmacist Participant 2).

Participants noted that with the enhancement of interprofessional communication, negative perceptions of pharmacists by other professions will be lessened.

If I contact the doctor, I make a professional relationship. Okay? If I build on this strong relationship, the doctor himself may understand that I am not just as dispensing machine, okay? (Primary Health Care Participant 1).

#### 6.3.2.1.1.2 *Appreciation and trust*

Participants identified that appreciation and trust by the other healthcare professions will translate to an increase in self-confidence when working in a team rather than working individually. In particular, participants from the primary care and community settings recognised how the appreciation of a pharmacists by other healthcare professions, namely doctors, can occur:

First the doctors are too hesitant to ask us questions but as they get to know us and what we can offer... doctors will have more confidence in the pharmacists and they start asking us, they are trusting us (Primary Care Pharmacist Participant 4).

When you know about the importance and the role of the other professions, then you will come to understand and respect the other profession... when I started interacting with other professions by chance or by practice I understand their jobs are also so important as a part of the healthcare team, how each and every person can contribute to it. Day by day, the involvement of each profession in other profession gets .... better when we understand each other's professions (Community Pharmacist Participant 1).

Another noted benefit by hospital pharmacists is being valued by other healthcare professionals for their contributions. Clinical pharmacists narrated their experiences of consultants not starting the ward round without them in certain hospitals and the importance of including pharmacists in the healthcare team.

I think, now, everyone is appreciating the role of the clinical pharmacist, and as my colleagues here said that they don't start the round before the presence of the clinical pharmacist. So now I think all the professionals are leaning towards the presence of the clinical pharmacists (Clinical Pharmacist Participant 1).

#### 6.3.2.1.1.3 *Enriching learning and practice experience*

Participants noted that training with other healthcare students will enhance the student learning experience so it is important to study together. In addition, it will enhance their personality, experience, and education. One participant stated:

To see difference in the other healthcare perspective, how they think? This can enrich the student personality and enrich their education experience ... Working with, or training with, working with different specialties, head to head, working with different professionals and different personalities will encourage you to have more experience and more education (Clinical Pharmacist Participant 4).

Participants highlighted the importance of IPE for exchanging information between pharmacists and physicians to help patient care and to improve pharmacist knowledge:

Exchanging information between all of the staff including medical staff, its better... we want to improve our service for patient. That's why we should share information together and have discussion about it with doctors or nurse. It would

be better for patient safety and service (Primary Care Pharmacist Participant 3).

Interprofessional working can take pharmacists to different new areas opening up new sectors for pharmacists, professions (Community Pharmacist Participant 1).

#### 6.3.2.1.2 *Patient related benefits: Improved quality of patient care*

Throughout the focus group meeting, participants repeatedly emphasised that the ultimate goal for all healthcare professionals is the patient, so all should work together to achieve this and provide the patient with the best quality care possible. With working interprofessionally, participants perceived there will be reduction of errors including medication errors and all the healthcare professions will work together to provide better care to the patients.

What is your expertise, what is their expertise and collectively what you're going to do for patients. To serve high quality or the best quality service to a patient. Also, it is necessary to reduce errors to reduce any signs of negative or bad things in treatment ... Collectively integrating different efforts by healthcare professionals will produce a more effective treatment care to the patient (Primary Care Pharmacist Participant 1).

What's happening is that each healthcare professional thinks that he or she is the master of the patient care, while it's actually it is a teamwork effort so if we learn and value each professional role then we will all work together at the end of the day for the benefit of the patient (Clinical Pharmacist Participant 1).

#### 6.3.2.1.3 *Current positive influences*

Participants identified a number of positive influences driving the change toward collaborative practice in Qatar. They noted that there have been many improvements in the last three years. These include Qatar National Vision, the implementation of electronic prescribing and seeking accreditations for hospital and primary care settings.

##### 6.3.2.1.3.1 *Qatar National Vision*

Despite participants identifying many barriers and challenges for implementing a collaborative practice at their setting, they were optimistic on what the future holds with the implementation of Qatar National Strategy and the prospect of more opportunities for pharmacists and healthcare professionals.

But by the time the national health strategy comes into place, there will be much more opportunities for interprofessional practice. With more batches of student graduating they will be much more aware and be driver for change. For example, you know, I don't know how many of your students [Qatar university College of Pharmacy students] are aware of the national health strategy by our new Emir. If they know about it, they will find themselves in bigger roles as to what a pharmacist can do (Community Pharmacist Participant 1).

We are heading to the vision of Qatar in 2022, the whole system should all change, right? It should be all improved!!! So, when are you going to change it if you don't start now? (Hospital Pharmacist Participant 2).

##### 6.3.2.1.3.2 *Accreditation*

Participants noted a key change that is happening in the hospital and primary care settings which is seeking accreditation from Joint Commission International (JCI) for Hamad Medical Cooperation hospitals and seeking Canadian accreditation of primary health care centres

(Qmentum) to ensure highest standard quality healthcare is being followed. For example, one participant noted the new hospital accreditation is against medical abbreviation to avoid mistakes to ensure all are speaking the same language. Another experience narrated by one of the participants is ensuring that new physician orientation include elements of learning about other healthcare professions:

An example is the physician orientation we have for the new-comers from residents usually every month. As part of this orientation, they need to come and learn about pharmacy, pharmacists' role and our current practice as we're trying to minimize or reduce the obstacles or errors that may occur by the new-comers (Clinical Pharmacist Participant 2).

Practice in primary health care was identified as improving slowly and changing due to seeking accreditation. Multidisciplinary teams for heads of healthcare professions have been formed as a result of applying for accreditation and having pharmacists in these teams allow for pharmacy issues to be heard.

Currently, we have formed three multidisciplinary teams now in my practice. One for Clinical problem solving team and we have one quality, improvement team and third team we have educational team. This emerged from seeking Canadian accreditation... for all the primary health care centres (Primary Care Pharmacist Participant 1).

Similarly, some of the hospital pharmacist participants noted another important outcome of implementing IPE and collaborative practice is improvement in the healthcare system by establishing multidisciplinary committees

If it's not integrated, you cannot have a very good and efficient system ... In my hospital, we had multidisciplinary committee which aims to introduce the other healthcare professional perspectives and [to] work on improving the system and issues related to it. So, we started to work on the system and developed protocols so everyone worked together to resolve concerns and issues, share their experiences which reflected in the improvement of the system (Clinical Pharmacist Participant 2).

#### 6.3.2.1.3.3 *Changing role of the pharmacist*

Participants noted the recent transformation of the pharmacist role moving from being product-focused to being patient-focused. Many acknowledged this move has been challenging and required much effort, but the outcome has been very positive and rewarding.

At the beginning, it was very challenging and because there were few clinical pharmacists they weren't covering all the teams. They had a big load of patients and so a lot of their intervention was not noticed that much. However, the current situation is quite different and we have a good base of clinical pharmacists and the role of the clinical pharmacist is much more obvious, their role is well-accepted and other healthcare professionals are looking for them (Clinical Pharmacist Participant 1).

Pharmacists in primary care can challenge if their recommendations are not being considered and they have the right to complain using occurrence, variance, and accidents reports:

Now they agree with us to change something. But before they didn't – 'I need this dose and that was the decision ... this is something recent, in the last three month (Primary Care Pharmacist Participant 2).

#### 6.3.2.1.3.4 *Healthcare professionals with Western backgrounds*

Participants noted healthcare professionals in Qatar come from varied multicultural backgrounds and hence have different educational and practice experiences. Most who have a Western background tend to appreciate and value the pharmacists' contributions.

Most of the doctors in my hospital are Canadian, Europeans, and Australians and to be honest I haven't faced any issues with them and feel very much valued, more than you can expect, honestly speaking, yeah (Hospital Pharmacist Participant 2).

Similarly, primary health care pharmacists highlighted that pharmacists with a Western background are better equipped to work in a healthcare team by highlighting an example of a pharmacist who did his doctor of pharmacy training in the United States:

He was pushing everyone to improve what pharmacist does in the medical centres, even he was training students to do care planning and make therapeutic intervention with the doctors and how to deal with patients (Primary Care Pharmacist Participant 4).

#### 6.3.2.1.3.5 *New pharmacy graduates*

Participants recognised the value of incorporating IPE into the different healthcare curricula and appreciated that training with different healthcare students will enhance the student learning experience. They believed the integration of IPE should start early in their training in their professional skills courses and then include it during their internship experience.

During SPEP rotations ... currently we are allowing some students to interact with some physicians in real scenarios ... but I think one of the competency based objectives during the pharmacy student training should include elements of Interprofessional Education (Clinical Pharmacist Participant 2).

Participants agreed that the newer graduates can be agents for change and were optimistic that they will play a role in changing practice.

This is the time for change! if the older graduates didn't change then the newer graduates should change everything (Hospital Pharmacist Participant 2).

### 6.3.2.2 Pharmacists' perceptions of barriers

#### 6.3.2.2.1 *Patients: Negative patient perceptions*

Pharmacists identified patients' negative perceptions as barriers to moving forward with collaborative practice. Participants in the different settings described their frustration with the way patients viewed them as 'vending machine' and reported that patients do not view the interaction they have with pharmacists as they view their interaction with physicians.

I think communication between pharmacists and patients will not be like patient physician relationship. Patients do not value pharmacists' contribution as they do for physicians. This is very challenging and we need to change the perception of the patient about pharmacist before the perception of the doctor or physician (Hospital Pharmacist Participant 1).

Additionally, some pharmacists explained that patients sometimes prefer receiving advice and education from nurses as it happens in a separate room, whereas in pharmacy it is a busy environment with no private consultation area available.

Nurses are educating patients about their medication and patient prefers this because nurses conduct the counselling in comfortable relaxed rooms not like the busy pharmacy we have. Sure, the patient will feel that it's better to take the education from the nurse than from the pharmacist (Hospital Pharmacist Participant 3).

Participants emphasised the lack of appreciation, respect, and trust by patients. Some gave examples highlighting this issue:

Patient trust is an issue. Sometimes they pick the medicine you have dispensed and go back to the doctor asking 'Is it the right medicine?' (Primary Care Pharmacist Participant 3).

He doesn't ask me and he doesn't trust me (Primary Care Pharmacist Participant 2).

Why do you think, like you said the patient doesn't trust me, why do you think they don't trust the pharmacist? (Moderator)

Because the doctors always say to him 'please return back for me to check the medicine' And also, some doctors, excuse me, some doctors insist they are checking behind us (Primary Care Pharmacist Participant 2).

#### 6.3.2.2.2 *Pharmacy profession*

##### 6.3.2.2.2.1 *Lack of organisational support*

This was highlighted as a barrier in the focus group by pharmacists. This lack of support is perceived as the lack of a grade system for hospital pharmacists or the way pharmacists are graded in in the primary care setting makes it challenging for them to move up the career ladder with no formal path for progress.

Like for the pharmacist, you are a pharmacist and then you can be a clinical pharmacist and that's it. You don't have what the doctors have, they start small they will be resident and then fellows and then they will become consultant and you are still the clinical pharmacist... This makes it more difficult for the pharmacist to emphasize on their role (Clinical Pharmacist Participant 1).

This is to the contrary to what is perceived as career progression for nurses:

Nurses have more opportunities than pharmacist and this is due to management supporting them, giving them new roles and responsibilities, they look after them very well, they put them into open new places, new work, this not happening between pharmacists and our management I don't know why? ... I can innovate but the way is blocked for me! (Hospital Pharmacist Participant 1).

Additionally, the primary care the pharmacists' role is mainly concerned with dispensing:

In my primary health care centre, they have thirteen pharmacists. There is one pharmacist in charge but the remaining twelve are mainly dispensing [medications] with six in the morning, and six at the evening (Primary Care Pharmacist Participant 4).

The community pharmacists discussed how their setting is very much business oriented and how they lack the time to meet patients' needs due to the large number of patients they see per day:

Time constraint is a major barrier ... Also, community pharmacy is business oriented. It's not just about being business oriented, pharmacies are always busy ... so many customers ... you wouldn't get enough time to talk to a physician in detail about a particular thing especially when there are three other

customers waiting. It's a part of pressure from, maybe from yourself, a part from the management, a part from the business. You have a bigger role to play in the community pharmacy. Maybe it's all about a prescription but there's another mother waiting there, she is having a baby in hand, plus two babies in the car, waiting without a parking, you are bound to finish off things quickly and yes time is really an issue in community pharmacy (Community Pharmacist Participant 1).

Additionally, community pharmacists expressed concerns about their low salaries in comparison to other pharmacy sectors and that they will not be compensated for working interprofessionally:

Salary, uh, is always, is always an issue, compared to the, salary being paid at Qatar Petroleum or at Hamad. There is a huge gap (Community Pharmacist Participant 1).

#### 6.3.2.2.2.2 *Lack of pharmacist confidence*

Some pharmacists are not confident in their own professional ability and hence will not be confident to interact with other professions. This lack of self-confidence amongst pharmacists is sometimes sensed by the patient.

I know very well a lot of pharmacists and they may be very competent in their knowledge but they lack communication skills to transfer their knowledge even when dealing with physicians ... they may have the right answer – but they (are) shy, okay, to give the real or the right answers ... but as far as I, you know, a lot of pharmacists, they [are] hesitant to ask a doctor if there is a real, error in their prescription. Why? To my point of view because they didn't have such training before. How to communicate with other professions, how to get self- confidence when dealing with others... (Primary Care Pharmacist Participant 1).

Most pharmacists do not have much self-confidence... if they have good knowledge base and they believe in their own knowledge and in their self, they will do it ... When you believe in yourself, others will believe in you. But if you're not, they will not (Primary Care Pharmacist Participant 3).

It was noted that experienced pharmacists, with managerial positions, in both the community and primary care settings had more opportunities to work interprofessionally compared to junior pharmacists and were therefore much more confident.

Ever since I became the pharmacy manager, I've been in constant touch with, almost every day, healthcare professionals from pharmacy managers to clinic managers, hospital managers, gynaecologists, neurologists, specialists, and then dermatologists so I am in constant touch with all those people ... not just about the practice of community pharmacy... but to develop services (Community Pharmacist Participant 1).

Participants attributed the lack of confidence perceived by some pharmacists to limited clinical knowledge and lack of clinical training. Some pharmacists feel less confident in giving drug information advice to healthcare professionals. Additionally, participants noted a lack of continuous professional development and most pharmacists believed they needed training to enhance their communication skills and knowledge to enable them to effectively communicate with other healthcare professionals. However, training opportunities are very rare and acquiring protected time to attend is difficult.

Sometimes I'm getting a call from the doctor but I am not able to use some of the resources available to come up with an answer ... and training the pharmacists to use the available resources may help the pharmacist to be more confident (Primary Care Pharmacist Participant 4).

Continuing education is very important to improve us in doing a good job in our roles and improve our scope. We are challenged to change but getting the time to do training at my workplace is difficult (Hospital Pharmacist Participant 1).

Some participants indicated that the personality of the pharmacist might be the factor:

Some pharmacists do not have the force of negotiation from experience. If he has a strong base and is confident about his skill while he is a student, I think he's going to be strong. In addition, personality plays a strong role — some people themselves are very polite, they don't like to come and clash (unclear), they may understand something is wrong, but he [other profession] is, my friend so I can't ... but if it's for the benefits of the patient, what we are working for. I am not in conflict with you, just in the favour of the patient. Really pharmacists themselves and for a long time, they stay on their benches ... They haven't tried to come in front of the bench and to serve and interact. It is our responsibility to move things forward (Primary Care Pharmacist Participant 1).

Participants agreed that this is changing especially as the College of Pharmacy programme is clinically oriented and there is a significant focus on professional skills and practical experiences so their graduates will be better trained.

#### 6.3.2.2.3 *Current working practices and processes*

##### 6.3.2.2.3.1 *Hierarchy*

It was evident in all the focus groups that hierarchy in the healthcare system was a barrier to implementing collaborative practice and this was frequently discussed. Pharmacists agreed that physicians are usually the leaders in the healthcare team and are the 'maestro of this clinical rotation', (Clinical Pharmacist Participant 2), where they are ones who coordinate the ward round and patient care. In many instances, the word 'interference' was used in describing pharmacists' dealing with physician and pharmacists not wanting to make it worse.

Pharmacists are trying to work according to the needs of the different physicians. We need to communicate with different physicians according to their mind and according to their needs... I think they [physicians] are busy and they need to make some time for us (Hospital Pharmacist Participant 1).

Sometimes you will find that they actually, even a consultant, can appreciate the role of the pharmacist, and the pharmacist fits in well, by his knowledge, by his communication skills. On the other hand, sometimes you will find a resident who does not accept the role of the pharmacist or he does not appreciate what is the pharmacist is doing. So, at the end of the day it's not black or white (Clinical Pharmacist Participant 1).

I want to say there is sometimes a problem between doctors and pharmacists about knowledge every time the doctors believes his knowledge is in higher level than pharmacists. This is a problem. Sometimes we are working together and we make recommendation based on evidence based practice and challenge them on what they have prescribed ... sometimes they'll listen, sometimes no, but the decision is coming from the doctor to the pharmacist (Primary Care Pharmacist Participant 2).

For example, the lab technicians in the centre thought they are better than us, because he is taking blood, making analysis. In their eyes, we are only dispensing medicine ...



Nobody in the health centre of the other departments know what the pharmacists do inside the pharmacy. We are closing the door, nobody, they thought only we dispense the medicine, we do many things, we care about the patient, as they're caring, we are caring also. We are the same, level, with doctor, and with the nurse and all (Primary Care Pharmacist Participant 2).

Community pharmacist participants were concerned that when physicians communicate with them it is merely for stock checking or for a dispensing issue and not pharmacotherapy related queries. They are very cautious in their interaction and feel they need to please the physician and manage their expectations.

Some doctors assume that I only call for business, or for something not available, not for the patient. So when I make a recommendation, some doctors feel I want to take his job I want to make overlay of his rule ... physician feels threatened so when I talk with them, to ease the conversation, I would say: 'I know you know more than me (Community Pharmacist Participant 4).

Moreover, participants feel that some physicians are threatened by the increasing therapeutic role of the pharmacist and would prefer to continue with a more traditional way of practice.

The fear of being threatened leads to acts of stupidity from physician side. As an example, a patient had pain in their knee. I gave them over the counter *Voltaren* tablet. The patient then went to the doctor and the doctor says, 'I don't know why the pharmacist gave you *Voltaren*, I will give you something else' and he writes the same medication but another brand. So this is the extreme of that stupidity as they are threatened that we are interfering into his profession. The doctor goes and write a prescription for the same medicine but some other brand. There are physicians who really appreciate your role. But that's on a general term physician would like to still stick to the tradition of being the diagnoser and the prescriber (Community Pharmacist Participant 1).

All the pharmacists have interests to interact with the doctors but the problem is sometimes doctors they do not want to interact. Some doctors if we call they will not allow to give the substitute for this (Community Pharmacist Participant 2).

So, they wouldn't accept your recommendation? (Moderator).

Ya, ya ... 'I'm the doctor, I know better than you' ... This is the biggest domination because we study only medicines and production side; they study diagnosis and other subjects, compared to us. That's why they [physicians] have a lot of confidence and domination also, what are you telling to me I am telling it to you (Community Pharmacist Participant 2).

#### 6.3.2.2.3.2 *Powerful professions*

It emerged from the focus groups that pharmacists perceived that nurses have a lot of power in the hospital. It was claimed that nurses have lots of support from the hospital administration, giving them more opportunities to advance their profession. Many felt that nurses' numbers in hospital are much more than pharmacists, making them leaders.

The nurses they have the most budget. If you check the hospital budget, you will find forty percent or even fifty percent will go to the nurses, because of their numbers and so they will be the leaders ... As an employee, the largest budget for them, for nurses, so they have more power, to control (laughs) the hospital ... Look at their offices; it's even bigger than the consultants' rooms!... Their grades are more than the pharmacist ... More than physicians ... For me I like working with nurses ... 60% of your job depends on the nurse. You can take everything from the nurse, so don't upset your

nurse. 100% don't upset your nurse. Because if you upset your nurse half of the information will be wrong, your medication will not be taken at the same time and a lot of nurses will be against you and that means a lot of problems for you (Clinical Pharmacist Participant 4).

I think it's related to the power they have ... hospitals are very much nurse dominated ... For example, hospital projects are run by nurses and I would like to see pharmacist going beyond their usual practices and to be involved in running projects at hospital level (Hospital Pharmacist Participant 1).

#### 6.3.2.2.3.3 *Multicultural environment*

Healthcare professionals in Qatar come from a variety of cultures and countries with different backgrounds. This can enrich the practice experience, but participants agreed that this can be one of the challenges. They noted disparities in knowledge, qualifications, attitudes, and experiences between health care professionals with some lacking interprofessional experiences. Being in a multicultural environment with different background means the expectations are different.

The working environment is very multicultural. Healthcare professionals are all from different nationalities, with different cultures. Now, sometimes this will enrich the environment but sometimes it will make it difficult to understand how to approach this doctor or this nurse. Because they come, they all come from different backgrounds, so for me, like how I'm going to communicate with someone who's coming from India or from Philippines or US, UK ... so at the end of the day, these people have different beliefs and different attitudes and different cultures making it really difficult. Also, the expectations from the pharmacist vary according to their background. So, each one is expecting something different (Clinical Pharmacist Participant 1).

#### 6.3.2.2.3.4 *Pharmacists' educational background*

Many pharmacists' educational backgrounds are not clinically-orientated but industry-focused. Therefore, IPE training is non-existent, as many of it is industrial in character.

For example, in India pharmacy degree is industry based rather than focusing on treatment ... so when we go to practise, it is different from what we studied (Community Pharmacist Participant 2).

When you study pharmacy and go to the market to practise, we find it different as it was mainly knowledge base with no focus on the skills ... We study in a way and are expected to practise in a different way! We need to focus more time on the skills and practice. Maybe we have studied the wrong way, practical application is very important. (Community Pharmacist Participant 4)

This was also echoed by a primary care pharmacist:

When you graduated as a pharmacist, you immediately go to practise, no internship, no practice. You graduate from your college with a certificate, you are being held as a pharmacist, go to practice! (Primary Care Pharmacist Participant 1).

#### 6.3.2.2.3.5 *Type of hospital: Chart documentation*

Not all hospitals in Qatar operate in the same way nor provide the same services. For example, multidisciplinary teams do exist in some hospitals. An example highlighted by participants and discussed in length was the writing of notes by pharmacists in the medical notes. In some hospitals, although pharmacists have the right to write in a progress report, many do not due to various reasons including that most physicians are unaware of pharmacist roles and

capabilities in certain hospitals, or there are maybe too many notes by healthcare professionals. Also, there is, maybe, time pressure that stops interaction.

As a pharmacist, progress notes are interprofessional. All healthcare professionals document in the same place. We are learning from each other, sometime when I am not able to see the nephrologist I will write some recommendations in the progress notes. Physicians see our notes; they agree or disagree with our recommendation and usually accept with some kind of modification. But usually we are communicating through the documentations. I think in our hospital doctors are reading the notes, regardless it's from dietician or pharmacist or any other healthcare professional (Clinical Pharmacist Participant 2).

Whereas:

In my hospital, theoretically we have the right to document in progress but we are not doing this ... Physicians are not ready yet to read the progress note of the pharmacist ... because most of that time the physician will not read it because he doesn't know who wrote this, who is the clinical pharmacist. They are not familiar with the role of the clinical pharmacist (Clinical Pharmacist Participant 4)

Another opinion:

They don't read it, not because they don't trust us, because they don't have the time ... Like he said, resident are writing one page and again the dietician, the physiotherapist and then come the clinical pharmacists are also writing. If I'm repeating the same thing, so there is no point of them reading it. And even for us, even when we look at the file, if sometimes we just skip the file and look for the main thing. So I think we shouldn't be very comprehensive we should only write when there is an issue we want to raise or there's something important that we want actually the others to look at it (Clinical Pharmacist Participant 1).

In primary care, there is no access to patient files and it is not in their job description and therefore they are not able to access it:

We are not allowed to search patient files because of policies and regulations and changing this may take some time (Primary Care Pharmacist Participant 3).

#### 6.3.2.2.3.5 *No existence of collaborative practice*

Most pharmacists noted a lack of a collaborative practice. Participants highlighted some emerging examples emerging in some hospitals more than others. It is slowly being introduced to primary care. However, there is no collaborative practice existing in the community pharmacies.

Currently there is nothing like interprofessional working that's going around here. People are more or less very specific about their own professions. Very little interest and there are no movements to link people together in practice ... in a community pharmacy our interaction with physicians or specialists or nurses are a matter of querying prescriptions. This is the only kind of Interprofessional relationship we have but nothing like IPE ... I don't see a scope for a real practical possibility (Community Pharmacist Participant 1).

### 6.3.2.3 Pharmacists' recommendations

#### 6.3.2.3.1 *Patients: Changing the patient perception*

Participants agreed on the importance of changing the patient perceptions concerning the role of the pharmacist. They emphasised the importance of ensuring patient understanding and appreciation of the pharmacists' role and their contribution. It will be challenging and difficult as highlighted in section 6.3.2.2.1 above.

#### 6.3.2.3.2 *Pharmacy profession*

##### 6.3.2.3.2.1 *Training*

The training of pharmacists was explored as a key area needed to increase their knowledge, enhance their skills, and to move IPE and collaborative practice forward. Courses on interprofessional communication, learning with other healthcare professions to understand their perspectives and appreciate their roles and contributions to the team, and keeping up to date were mentioned.

I think it is the basis of interprofessional is to have good communication skills so this is something that some needs improving (Clinical Pharmacist Participant 2).

Many recommended having IPE training courses associated with Continuing Education (CE) hours to encourage pharmacists to attend. Some suggested including some online component to keep pharmacists together and learning.

We need to acquire certain CE hours as part of our licensing process so we would be highly encouraged if IPE training is associated with CE hours (Hospital Pharmacist Participant 2).

Experiential learning has been advocated by primary care pharmacists to enhance their skill as pharmacists with appropriate training.

Pharmacists know the theory but they lack the skills to practise it (Primary Care Pharmacist Participant 1).

Another community pharmacist gave one recent example from his practice about attending immediate life support, which is compulsory for all pharmacists to undertake for license renewal. This training is conducted with other healthcare professionals with an opportunity to share their perspectives with others. Reflecting on this experience, this participant added:

Yeah, there is a lot of work that needs to be done. It's not just about incorporating IPE programme just in the pharmacy profession, also it should be included in the other healthcare professions as well. It is also important to have interprofessional courses, or interprofessional mingling, I would particular say it's more about mingling ... It's a class, you just sit here, you don't talk to each other, the doctors all sit in one place, pharmacists sit in one place, ya, you know we hear the class and we go out, we don't mingle. I'm talking about interprofessional mingling, this is more a better word. (Community Pharmacist Participant 1).

#### 6.3.2.3.2 *Support for the profession*

The requirement for management support was highlighted by the participating pharmacists. Some emphasised the need for more resources to enable pharmacists to explore new opportunities and the need for more innovative leaders to move the pharmacy profession forward.

It's a problem in leaders; it would be good to get more pharmacist as leaders - innovative leaders will make things. If leaders are innovating, or think about the profession, (voices overlap), profession will advance and move forward leading to positive change (Hospital Pharmacist Participant 1).

If your baby needs something, what will they do? They will start nagging, nagging, nagging, okay? He will give you more than two reasons or three reasons to (buy this for him). The clinical pharmacist should be the same .... Really! I have this experience because I worked as a clinical rep for three years. The medical rep depends on nagging. If you have the right and you have the confidence and you know that you are correct nagging is the way! (Clinical Pharmacist Participant 4).

With interprofessional working, there is a chance for pharmacist to establish a strong base for the future, okay? Maybe I have five, ten years maximum to work if I stay alive. But the new generation of pharmacists and to keep this profession in continuous development, really there is a task on our shoulders. We have to create honestly and bravely, because there is a number of obstacles that we will face. You have to jump or you have to remove this from our way (Primary Care Pharmacist Participant 1).

#### 6.3.2.3.3 *Raising awareness about other professions*

A community pharmacist recommended distributing leaflets periodically about the different roles of healthcare professionals

I was possibly thinking about like you know, we can raise awareness about the profession and circulate a brochure that contains questions and answers about a profession every month ... do you know some things about pharmacy, maybe (10 questions) in a month to a physician and to the nursing and to the other healthcare profession and the next month or from the same month, do you know about nursing and so on (Community Pharmacist Participant 1).

## **6.4 Discussion**

This mixed method study is the first comprehensive and explicit assessment of pharmacists' perspectives, from different practice settings, toward IPE and collaborative practice in the State of Qatar and perhaps worldwide. The preponderance of previous research has largely focused on exploring the relationship between community pharmacists and general practitioners (264-268, 271, 325, 326), with some on primary care and inpatient settings (262, 270, 327). In this chapter, the perspectives of practising pharmacists in Qatar towards IPE and collaborative practice has been examined and a valuable insight into the facilitators in terms of current influences and barriers related to these perspectives has been gained with recommendations to promote collaborative practice in Qatar. The results of the survey indicated that practising pharmacists had generally positive attitudes toward engaging in interprofessional learning and collaboration and this is replicated in other studies (265). The follow-up focus groups allowed

exploration of the pharmacists' perceptions in relation to the advantages, barriers, and recommendations to implementing IPE and collaborative practice.

As association between gender and readiness toward interprofessional learning was observed in that female pharmacists had significantly more positive attitudes toward teamwork and collaboration than males had. Previous studies have also shown that female students tend to have more positive view of interprofessional learning and cooperation with other professions than male students had (192, 328). In addition, the ability to identify the correct statement for IPE was associated with a more positive perception towards interprofessional learning. No association between readiness for interprofessional learning and the following has been shown: previous IPE experience, views about barriers to IPC training, interest in IPC training, country of origin, and the country in which the respondents received their highest pharmacy degree.

Findings from this study indicated that IPC had many professional related gains in terms of enhancing interprofessional communication, enriching learning and practice experience, and being appreciated and trusted by other members of the healthcare team, especially physicians. Pharmacists may view IPC as an opportunity to improve their working conditions in the hope of reaching a similar status to their medical colleagues (33), increased professional fulfilment, and improved professional image (263, 264, 266).

Collaborations are affected when there is role conflict and ambiguity and hierarchical difference between healthcare professionals -- especially when, for example, the pharmacist is concerned with appearing incompetent in their dealing with physicians, perceived as encroaching on boundaries of the physician's roles, or feeling the other professional is not interested in collaboration (329). The findings from this study highlighted five principal observations: existence of collaborative practice, negative patient perceptions, pharmacists' lack of confidence, lack of interprofessional awareness, and hierarchy and power play. These will now be discussed in detail.

### **Existence of collaborative practice**

As expected, practising pharmacists most frequently interacted with physicians, followed by nurses, with very limited interactions with other healthcare professionals. This was reflected in the focus group discussions. This is not surprising as pharmacists are mostly associated with the medical profession and most of the published literature explores this relationship to a greater extent, with a minimal exploration of pharmacists' collaboration with other healthcare professionals (Chapter 3). The percentage of respondents who collaborate with other healthcare professionals was less than their level of interaction (65% vs 74%). Furthermore, their knowledge of team stages: "forming," 'storming,' 'norming,' and 'performing' (330) for more than half of the respondents (59%, n=105) was satisfactory or poor.

This study revealed a poor understanding of what IPE and IPC is, with more than one third of the respondents believing IPE is the same as shared learning. Although 56% of the respondents were able to identify the correct statement for interprofessional collaborations, they had poor knowledge of IPC models and research. Respondents rated their knowledge much less than their skill level and this was consistent with observations reported in another study using the same scale (202). Additionally, more than a quarter of the survey respondents rated their skill level for communicating effectively as satisfactory or poor. This can be related to the practising pharmacists' differences in educational backgrounds and lack of exposure to IPE during their undergraduate training, which was highlighted in the focus group discussion. Healthcare professionals in Qatar are heterogeneous in nature with the majority graduating from pharmacy programmes that are neither clinically based or patient oriented, with pharmacy practices not well established (331). This, coupled with the current pharmacy practice infrastructure in Qatar, resulted in just over a quarter (27%, n=36) of respondents reporting that they spend the majority of their time in direct patient care activities (166). These results concur with another study where insufficient opportunities to interact with other healthcare professionals was amongst the top common perceived barriers by pharmacists in Qatar to providing pharmaceutical care (332).

Additionally, although respondents gave their highest ratings to the importance of IPC as it relates to the effectiveness of their work, the results of the survey showed pharmacists were not satisfied with the process of IPC in their work settings. This was confirmed in the focus group, where most pharmacists indicated a lack of a collaborative practice. This is similar to other reports in the literature where pharmacists noted poor communication and limited collaboration existing between them and members of the healthcare team (264, 265). Clear differences exist between the different practice settings with reports of collaboration emerging in some hospitals more than others, slowly being introduced in primary care, but no existence of collaborative practice in the community. This was anticipated and highlighted in the FIP report, where the varying degree of collaboration by pharmacists with other healthcare professionals across the different care settings and within the same healthcare setting was noted (28). It was promising to note that participants who had the opportunity for collaborative practice experiences were satisfied with the collaborations and were positive about the benefits resulting from it.

Time and financial limitations were identified as major barriers preventing pharmacists from learning more about IPC. These have also been reported as barriers for engaging in IPC (264, 265). The low salary, particularly for community pharmacists, and lack of compensation for providing pharmacy services demotivate pharmacists to move from their 'shopkeeper' image to utilising their knowledge and skills to enhance interprofessional working and patient care provision. Additionally, the perceived lack of time could be the result of believing that IPC is an additional task to their current job responsibilities rather than something that can modify their

working practice. Another barrier identified was the diverse educational backgrounds of the healthcare professionals, leading to divergent understandings of roles and responsibilities.

Although many participants were not happy about the current collaborative process in their work settings, practising pharmacists were united in their optimism and were adamant that the future will be different, highlighting a number of current initiatives. Examples of the initiatives reported include Qatar National Vision 2030 (discussed in Chapter 1). The four pillars of this vision include the first pillar, which focuses on human development and is investing in an educated population, a healthy population, and a capable and motivated workforce. Recent advancements for the role of the pharmacists has been observed particularly in the hospital setting (Chapter 1). Additionally, the accreditation from Joint Commission International (JCI) for Hamad Medical Cooperation hospitals and the Canadian accreditation (Qmentum) for primary health care centres to ensure highest standard quality healthcare is being followed.

Implementing an interprofessional culture usually requires a new generation of healthcare professionals (333). Hence, pharmacy students graduating from the College of Pharmacy are hoped to be the drivers for change ensuring the growth of clinically effective pharmacy practice services (105). Similarly, a qualitative study in 2001 investigating the perspectives of professionals working in primary care, identified traditional power structure and professional identities as reasons for the generational conflict affecting collaboration between the professions (333).

As noted, community pharmacy practice in Qatar is still traditionally focused and very much business oriented. However, the Supreme Council of Health, now known as Ministry of Public Health, has set plans in its Qatar National Health Strategy (2011-2016) to establish a community pharmacy network supported by policies and procedures. The network is aimed at increasing the efficiencies of the healthcare system, reducing the burden on hospitals for dispensing prescriptions, enhancing access to community pharmacies, and providing patients with more support to understand their medication (334, 335). This is in line with achieving the Qatar National Vision 2030 goal of a comprehensive world class healthcare system whose services are accessible to the whole population (79). Community pharmacist roles will be strengthened with expanded roles, following mandatory training and development, to support patients including weight management, smoking cessation, medication reviews, and patient education. The goals of the community pharmacy strategy is focusing on providing high quality medication and enhancing the quality of health services provided that are convenient and easily accessible in all community pharmacies (335). Community pharmacists in Qatar have demonstrated their willingness to assume new roles for better patient care, which will enhance the pharmacists' public image (107).



### **Negative patient perceptions**

Pharmacists from the different settings expressed frustration with the negative patient perception towards them and felt undervalued by the public. Factors contributing to this is 'the shopkeeper' image of the pharmacist, lack of space for patient consultation in comparison to other professions, and their belief that physicians are contributing to this negative perception. This aligns with a pilot study exploring the public's attitudes towards community pharmacies in Qatar: just over a third of the respondents (37%) believed that community pharmacists in Qatar were knowledgeable to respond to their queries and provided them with sufficient time to discuss their concerns (336).

The area of patient perception towards pharmacists should be explored further, especially with continuously advocating working toward patient-centred care. Unfortunately, pharmacy practice in Qatar, and in the region -- in particular in the community, primary care, and outpatient hospital pharmacies -- contribute to this shopkeeper image as the practice is dominated by a product focused practice model focused on dispensing and supplying medications (105, 108). This has been highlighted in the literature to have a negative impact on the pharmacist (267, 326).

### **Pharmacist lack of confidence**

In general, pharmacists admitted to lacking confidence in dealing with other healthcare professionals. There were two factors associated with this: their perceived lack of clinical knowledge and their lack of skills in communicating with other healthcare professionals. Again, this is attributed to a lack in their undergraduate training and the limited available opportunities for continuous professional development on this subject. The lack of confidence in dealing with other healthcare professionals, especially physicians, has been reported in other studies (263, 264). Similarly, in a qualitative analysis of pharmacists' reflections, conducted in Australia, after undertaking interprofessional communication training, pharmacists doubted their capability of leading a clinical discussion and reported lacking confidence and expressing anxiety and nervousness at the thought of discussing clinical information with physicians. They attributed this to lack of preparation, uncertainty of their therapeutic knowledge and their own professional competence and fear of losing credibility and unacceptance by others (263). The lack of strong professional identity will lead to role insecurity, as perceived in this study, and may impede readiness for interprofessional working a pharmacists will feel they do not have the capability and the confidence (307). Therefore, it is very important to equip pharmacists, through training and education as an example, with the clinical knowledge and skills to enhance their confidence and skills needed for effective collaboration.

### **Lack of interprofessional awareness**

Limited understanding of the pharmacist's scope of practice by other professionals was highlighted both in the survey and in the focus groups with frequent reference to physicians' lack of awareness. Overall, in the survey, respondents believed they understood other

professionals' scope of practice much more than other professionals understood the pharmacists' scope of practice. As an example, primary care pharmacists highlighted in the focus group how other healthcare professionals in the practice were unaware of pharmacists' scope of practice. This concurs with another study where community pharmacists in Northern Ireland reported with frustration that GPs and healthcare staff undervalued their contribution and were not aware of their role in the healthcare team (267). Similarly, in another study pharmacists and GPs lacked confidence and understanding of other healthcare professionals with a clear disconnect in their needs and expectations of one another, even in terms of patient needs (264). This negative perception could be attributed to healthcare professionals, namely physicians, having limited involvement and interaction with pharmacists and limited knowledge regarding the pharmacists' roles and responsibilities (98, 271, 337). However, it has been shown that existing working relationship between healthcare professionals and previous positive experiences are important ingredients for successful collaboration (337).

### **Hierarchy and power play**

A hierarchical system is apparent in this study's findings. Pharmacists articulated that physicians are the 'maestro of this clinical rotation'; pharmacists not wanting to interfere with the GPs and make matters worse; pharmacists working to meet different physicians' needs to please them and reach their expectations; and physicians believing their knowledge is much higher than the pharmacists. These findings are similar to many Middle Eastern countries where healthcare is mainly physician driven. They are the main decision makers for patient care (9).

Furthermore, these findings may be related to the context of pharmacy practice in Qatar and the limited opportunities to promote collaboration in practice settings. Pharmacists were motivated and positive regarding the need for interprofessional working but they feel limited to expand by those who are perceived higher in the hierarchy (323). In the first national survey in the State of Qatar, which looked at pharmacists' professional satisfaction, 40% of respondents reported being professionally dissatisfied. This was attributed to the lack of professional recognition, limited opportunities available for them to advance in their career, workload, and financial compensation (108). Moreover, in this study, pharmacists observed that some physicians are threatened by the advancing role of the pharmacist and would prefer to continue with the traditional way of practice. This concurs with another study where physicians' lack of engagement in interprofessional learning was attributed to feeling threatened by potential loss of power affecting their professional status (33, 264) or the fear of losing to other professions the power they have held, which is being eroded (333).

Furthermore, observations from the qualitative study reported rich communications taking place between physicians in contrast to rare communications with the rest of the healthcare teams. Suggested reasons for this was that physicians do not place value on expertise beyond their disciplines or the need for collaboration due to their limited awareness of others scope of

practice (338). Additionally, another study conducted in Qatar reported that physicians were not happy about pharmacists informing patient about cost-effective alternatives for prescribed medication or discussing with the physicians drug related problems. In the same study, physicians were not in favour of pharmacists being responsible for resolving drug-related problems (339). In another study conducted in Ireland, GPs questioned the role of the pharmacists in certain activities such as prescribing, which is interpreted as a boundary encroachment (267). Another study highlighted that physicians in Egypt were reluctant to accept the expanding clinical roles of pharmacists and did not see pharmacist as partners in patient care (87). The disconnect between the pharmacists' and physicians' perspective about pharmacists' roles has been shown in another study where physicians recognised pharmacists contribution in term of dispensing with less weight given to their knowledge and cognitive skills in contrast to pharmacists, who were more keen to be involved in decisions relating to medication management (265) .

Another study demonstrated that interprofessional interactions between physicians and other health professionals, including pharmacists, were very brief in contrast to interactions between other healthcare professionals, which were much longer and richer in content (31). Furthermore, in another study, hospital pharmacists were anxious about the effect of reporting medication incidents on their interprofessional working relationships with doctors and nurses (340). With pharmacists' expanded scope of practice, it is important to understand there will be circumstances where roles with other healthcare professionals may either be interchangeable (overlap in roles and responsibilities) or differentiated (distinct responsibilities) and it is necessary to maintain a balance between the two as this will have an impact the effectiveness of collaboration between healthcare members (341).

Unfortunately, there is no pharmacy professional body in Qatar that regulates, represents, or promotes the pharmacy profession (105, 166). This was reflected in the pharmacists' frustration with their current job status where hospital pharmacists reported the lack of a grading system inhibits their ability to advance in their career path; primary care pharmacists expressed concerns that they do not have access to patient files; and community pharmacists expressed dissatisfaction with their low salaries and their perceived image. This is in contrast to nurses, who hospital pharmacists perceived to have immense support from the hospital administration and have many opportunities to advance in their profession.

Lack of strong pharmacy leadership and the limited number of pharmacy leaders were implicit in their comments, with pharmacists expressing feeling of hopelessness in their practice settings, attributing their status to the hierarchal nature of the health system with physicians being the leaders. Pharmacists seem to be adopting an attitude of defensiveness and subordination, and blaming physicians for their status (333). Pharmacists across the country need to join efforts and develop a national body representing them and their profession. The International Pharmaceutical Federation calls for a stepwise approach to the development of

IPC and ensuring the support is given by the government, other healthcare professions, and pharmacy itself (28). The stepwise approach could be based on the conceptual theoretical framework of Collaborative Working Relationships (CWR model), which describes the stages needed for the development of IPC (264, 270). The model was established based on the relationship between pharmacists and physicians but can be applied to interprofessional working with other healthcare professionals.

- ✓ Stage 0: Professional Awareness
- ✓ Stage 1: Professional Recognition
- ✓ Stage 2: Exploration and Trial
- ✓ Stage 3: Professional Relationship Expansion
- ✓ Stage 4: Commitment to collaborative working relationship

Using the CWR model, the first two stages are essential to lay strong foundations for an interprofessional culture in the practice setting. This could be achieved through education and training. In this study, the majority of the pharmacists expressed interest in IPC training opportunities, with a one day IPC training workshop and learning more about IPC being the most favoured opportunities. The need for training was further echoed in the focus groups. Interprofessional CPD training has been shown to be an effective approach to enhance understanding of others' roles and responsibilities, leading to positive attitudes towards interprofessional collaboration, fostering respect between members of the healthcare team, increasing visibility of healthcare professionals, and promoting organisational change (263, 286).

Suggested strategies to incorporate interprofessional relationships include workshops focusing on interprofessional communication and collaboration, interprofessional rounds, journal clubs, research and special interest groups, interprofessional forums, and interprofessional committees (342). To promote collaborative practice in Qatar, additional training (including postgraduate education) and interprofessional continuous professional development on this topic are highly desirable by pharmacists and needed. These trainings could be led by educational institutions and professional organisations in the country. Regulatory bodies such as the Qatar Council for Healthcare Practitioners (Ministry of Public Health), whose main mission is to ensure all licensed healthcare practitioners in Qatar are competent and fit to practise (343), can also play a key role by ensuring healthcare practitioners in the country undergo such training as part of their annual license requirements. This should be in parallel with initiatives of incorporating IPE into undergraduate healthcare curricula.

## **6.5 Strengths and Limitations:**

From the existing literature this is the first mixed method study conducted in Qatar and investigating the perspective of pharmacists practising across different settings towards collaborative practice. Thus the results are relevant for a broad range of pharmacy practice settings. The study had a large sample size and a good response rate of 63% with representations from all the practice settings in Qatar. An ideal response rate for surveys is around 60% (344) and similar studies in Qatar reported response rates ranging from 25 to 60% (165, 204, 332, 345). This adds more to the generalisability of the study findings. The combination of research methods used allowed us to explore the complex nature of collaboration as perceived by the pharmacists. However, there are a number of limitations to this current study. Although the questionnaire was based on a validated RIPLS scale and another non validated scale, the internal consistency of the whole survey is limited. However, the survey was well structured and offered respondents the opportunities of free text responses. In addition, the focus group allowed an in depth perspective of the respondents' perceptions to be explored further. Furthermore, no formal registry for pharmacists practising in Qatar exists (166) so to overcome this problem the College of Pharmacy database was used. Additionally, the survey was only offered in the English language which may have discouraged pharmacists from participating and limited the response rate. However, previous surveys, in similar settings, also used English as a language (108, 332).

## **6.6 Conclusion**

Although collaborative practice is yet to be implemented in pharmacy practice settings in Qatar, pharmacists have already demonstrated a willingness and readiness to develop interprofessional learning and collaborative practice. They perceive anticipated benefits to them as professionals and to the patients. These results are encouraging and should be taken as an opportunity to promote IPC in the different work settings. Barriers have been discussed and these need to be investigated further and overcome before collaborative working can be achieved. Pharmacists and other healthcare professionals need to be educated regarding IPC. The results of this study encourage stakeholders to call for national structured training to promote IPC in practice settings for pharmacists and for the rest of the healthcare team in both postgraduate education and continuing professional development opportunities. These findings can be used to initiate discussions with key stakeholders on how to improve collaboration and promote it within the practice culture. The State of Qatar is taking significant steps towards improving the healthcare delivery system in all settings, yet attention needs to be focused on promoting collaborative practice. With the landscape of health services rapidly changing in Qatar, with everyone working towards Qatar vision 2030, the country requires pharmacists and all healthcare providers to utilise each other's expertise to the maximum and work together towards patient-centred care. Formal channels of communication need to be developed between healthcare professionals not just in Qatar but worldwide.

## Chapter 7: Discussion and Conclusion

This final chapter reviews key findings applicable to pharmacy perspectives on IPE and IPC which are related to the overall aim of this PhD research and the existing body of knowledge on the topic. It also aims to provide insight into the key ingredients needed for an effective implementation of IPE through a recommended model. The chapter also considers the originality of the research and the contribution to knowledge, limitations, and implications arising from this PhD research.

### **7.1 Aims and key findings**

The aim of this research was to explore the pharmacy perspectives towards IPE and collaborative practice from a Middle Eastern perspective and to determine pharmacy key stakeholders readiness to IPE and IPC. These aims emerged from an empirical concern related to the IPE literature: a paucity of literature focusing on pharmacy perspectives and scant evidence existing in the Middle East (Chapter 1). Furthermore, chapter 1 highlighted that assessing readiness to change and the perspective of change recipients is a critical precursor for the implementation of any successful change initiative such as IPE. To begin the process to implement this change the research looked at the readiness and perspective of faculty, students and practising pharmacist toward IPE and IPC. The methodology chapter (chapter 2) informed the researcher's decision to conduct a systematic review and sequential explanatory mixed method research design as a preliminary step to develop and introduce IPE to the pharmacy programme in Qatar. The research was conducted in four phases: a systematic review and three mixed methods studies, one each for pharmacy faculty, students and practising pharmacists.

Initially, the systematic review (Chapter 3) provided an overview of the perspectives, attitudes, views, and experiences of pharmacy students, pharmacy faculty, and practising pharmacists towards IPE and collaborative practice based on 29 studies with only one from the Middle East. The systematic review was unique as it focused on the pharmacy perspectives using various study designs from different settings and in different locations. These three groups valued IPE and collaborative practice. However, they provided many reflections about various logistical and professional challenges to incorporating IPE into the curriculum and promoting a collaborative practice in practice settings. Five themes emerged from the systematic review: inconsistency in reporting IPE research, professional image of the pharmacist, lack of longitudinal follow-up, lack of IPE research on faculty, and lack of mixed method studies. The results from this phase informed and contextualised the focus of the next steps in this research: employing mixed method design to investigate the perspectives of faculty, students and practising pharmacists using the same design explanatory sequential design (quantitative followed by qualitative stage), and the incorporation of faculty perspective in this research.

Key findings for the mixed method studies (phase 2, 3 and 4) exploring the perspectives of faculty (Chapter 4), students (Chapter 5) and practising pharmacists (Chapter 6) towards IPE and collaborative practice demonstrated a willingness and strong readiness to develop interprofessional learning and collaborative practice. Although the results for each chapter have been discussed individually and has been situated within prior research, in this chapter key findings will be discussed in terms of the overall enablers, barriers, and recommendations. The discussion will cover five areas: academic institution, faculty, student, practice, and environment (see Table 64). The enablers, barriers and recommendations were contextualised and grouped together for every area, based on the COM-B model (Capability, Opportunity, or Motivation) which has been used to triangulate the findings and provide evidence for the readiness in each of the five areas (Chapter 1).

Table 64: Key findings Summarised as Enablers, Barriers and Recommendations for Five Key Stages

Stage	Enablers	Barriers	Recommendations
<b>Academics institution</b>	<p>↑ Capability:</p> <ul style="list-style-type: none"> <li>Establishing cross-appointed academic clinicians</li> </ul> <p>↑ Opportunity:</p> <ul style="list-style-type: none"> <li>IPE as an accreditation requirement</li> <li>Support from college administration</li> <li>IPE can put the university in the map of healthcare education and collaboration worldwide</li> </ul> <p>↑ Motivation:</p> <ul style="list-style-type: none"> <li>IPE pilot experiences</li> </ul>	<p>↓ Capability</p> <ul style="list-style-type: none"> <li>No model in the country or in the region to adopt</li> </ul> <p>↓ Opportunity</p> <ul style="list-style-type: none"> <li>Condensed curriculum</li> <li>Commitment from the other professions/institutions</li> </ul> <p>↓ Motivation</p> <ul style="list-style-type: none"> <li>Logistical issues: different academic calendars, different locations, schedules, gender segregated campus</li> <li>Identified challenges from initial IPE experiences: lack of orientation, case studies irrelevant to some professions, unfamiliar topic</li> </ul>	<p>↑ Opportunity:</p> <ul style="list-style-type: none"> <li>Support from the university administration is necessary</li> </ul> <p>↑ Capability:</p> <ul style="list-style-type: none"> <li>Establishing an IPE unit/committee</li> <li>Developing an IPE curriculum</li> </ul> <p>↑ Motivation:</p> <ul style="list-style-type: none"> <li>IPE activities: well-planned icebreakers, IPE opportunities in clinical placement.</li> <li>Extra curricula activities</li> </ul>
<b>Faculty</b>	<p>↑ Capability:</p> <ul style="list-style-type: none"> <li>Cross-appointed faculty clinicians</li> </ul> <p>↑ Motivation:</p> <ul style="list-style-type: none"> <li>Positive attitudes of faculty members</li> <li>Faculty interest: prior experience of working with the other faculty members</li> <li>Faculty flexibility</li> <li>Previous faculty exposure to IPE</li> </ul>	<p>↓ Opportunity</p> <ul style="list-style-type: none"> <li>Faculty workload</li> <li>Lack of familiarity with the others' curriculum</li> </ul> <p>↓ Motivation</p> <ul style="list-style-type: none"> <li>Time consuming as its more complex to plan</li> </ul>	<p>↑ Capability:</p> <ul style="list-style-type: none"> <li>Faculty development workshops</li> </ul> <p>↑ Opportunity:</p> <ul style="list-style-type: none"> <li>Reduction in teaching workload</li> </ul>
<b>Student</b>	<p>↑ Motivation:</p> <ul style="list-style-type: none"> <li>High readiness and enthusiasm</li> <li>Perceived benefits: understanding roles and responsibilities, mutual appreciation and respect, expand</li> </ul>	<p>↓ Motivation</p> <ul style="list-style-type: none"> <li>Negatively influenced by the practice</li> <li>IPE activity: composition of the student groups: different levels, inability to work together, unsure of</li> </ul>	<p>↑ Motivation:</p> <ul style="list-style-type: none"> <li>Students need to be from the same years or same student level</li> </ul>



	<p>their horizon and enhancing the student learning experience</p> <ul style="list-style-type: none"> <li>• Previous exposure to IPE</li> </ul> <p>↑ Capability:</p> <ul style="list-style-type: none"> <li>• New pharmacy graduates, driver for change. Well trained students</li> </ul>	<p>how to contribute, personality issues, lack of confidence and uncertainty</p> <p>↓ Opportunity</p> <ul style="list-style-type: none"> <li>• Cultural barriers: uncomfortable with male students</li> <li>• Perceived negative stereotype</li> </ul>	
<b>Practice</b>	<p>↑ Capability:</p> <ul style="list-style-type: none"> <li>• Pharmacy profession: recent advancement in the role of the pharmacist</li> <li>• Healthcare professionals with Western background experience</li> </ul> <p>↑ Opportunity:</p> <ul style="list-style-type: none"> <li>• Establishment of multidisciplinary teams/committees</li> <li>• Implementation of electronic health records</li> <li>• Accreditation in the hospitals and primary health care clinics</li> </ul> <p>↑ Motivation:</p> <ul style="list-style-type: none"> <li>• Positive attitudes toward the importance of interprofessional collaboration</li> <li>• Perceived benefits: better patient outcomes/care and improved healthcare system, reduction of errors including medication errors, enhanced and eased interprofessional communication</li> <li>• Pharmacist: increase in self-confidence, being valued and improve pharmacist knowledge</li> </ul>	<p>↓ Capability</p> <ul style="list-style-type: none"> <li>• Disparities in knowledge, qualifications and experiences between health care professionals</li> <li>• Lack of continuous professional development</li> <li>• Pharmacists' educational backgrounds are not clinically orientated. They are more science focused</li> </ul> <p>↓ Opportunity</p> <ul style="list-style-type: none"> <li>• Lack of collaborative practice</li> <li>• Hierarchy and power</li> <li>• Physicians the sole decision maker</li> <li>• Policies and procedures: no interprofessional notes, no access to patient files in primary care.</li> <li>• Heterogeneous background of healthcare professionals</li> <li>• Unawareness of pharmacists' capability</li> <li>• Rare training opportunities and difficulty acquiring protected time</li> <li>• Lack of organisational support</li> <li>• Disparity in the practice in different settings</li> </ul> <p>↓ Motivation</p> <ul style="list-style-type: none"> <li>• Pharmacists role and image</li> <li>• Lack of pharmacist confidence</li> </ul>	<p>↑ Capability:</p> <ul style="list-style-type: none"> <li>• Continuing Professionals Development for Pharmacists</li> <li>• IPE training courses associated with CE</li> </ul> <p>↑ Opportunity:</p> <ul style="list-style-type: none"> <li>• Patient centred care and this should be completed collaboratively rather than individually</li> </ul> <p>↑ Motivation:</p> <ul style="list-style-type: none"> <li>• Practitioner need to be role models to students</li> <li>• Changing the patient and public perception about the pharmacy profession</li> <li>• Need to improve the professional image of the pharmacist</li> </ul>

		<ul style="list-style-type: none"> <li>• Low salary for community pharmacists</li> <li>• Healthcare professionals' attitudes toward pharmacist evolving role</li> <li>• need to advance the role of the pharmacists</li> <li>• no formal career progression</li> </ul>	
<b>Environment</b>	<p>↑ Opportunity:</p> <ul style="list-style-type: none"> <li>• Other national initiatives</li> <li>• Qatar National Vision 2022 and national health strategy</li> <li>• Qatar University strategic plan</li> </ul>	<p>↓ Motivation</p> <ul style="list-style-type: none"> <li>• Negative patient perceptions about pharmacists. Lack of appreciation, respect and trust by patients</li> </ul>	<p>↑ Capability:</p> <ul style="list-style-type: none"> <li>• Support from the Ministry of Public Health through the Qatar Council for Healthcare Practitioners could work on imposing IPC as mandatory for the local accreditation of healthcare practitioners and programmes</li> <li>• Ministry of Public Health in Qatar could work on imposing law reinforcing health team accountability rather than individual accountability</li> </ul> <p>↑ Motivation</p> <ul style="list-style-type: none"> <li>• Support for the pharmacy profession</li> <li>• Raising Awareness about other professions</li> <li>• Changing the patient and public perception about the pharmacy profession</li> </ul>

### **7.1.1 Academic institutions**

The positive response by pharmacy faculty in Arabic speaking Middle Eastern countries in the quantitative stage suggests a willingness among staff at the different universities to support the integration of IPE into the curricula. This adds to the evidence of positive perceptions to IPE by faculty members, suggesting a high level of support amongst pharmacy faculty towards IPE (282, 283). The qualitative stage provided a detailed insight of these perspectives from the faculty in Qatar.

Amongst the perceived enablers highlighted were the establishment of cross appointed faculty members working between the college and an assigned clinical setting. Although they are intended to support the supervision and evaluations of their own students during their clinical placements and are able to understand and make the connection between education and practice, they can further facilitate the process of translating IPE principles into practice and ensure students have the opportunity to collaborate with other healthcare professionals (106).

Because implementing IPE is an essential component in CCAPP accreditation standards, it has been a key driver and enabler for the incorporation of IPE at the College of Pharmacy. Another important enabler was the opportunity to build on the informal IPE initiatives that had taken place and reflect on the lessons learnt from organising and implementing these initiatives. These experiences were the foundation for others to collaborate and overcome any potential resistance to change from both faculty and the organisation (346).

The study has identified a number of organisational barriers such as the lack of a regional model to adopt, overloaded curricula, logistical barriers, and challenges identified from the initial IPE experiences. Such challenges include the varying level of experiences and knowledge by the students as well as structural differences between the institutions such as incompatible semester timing. Additionally, despite the leadership taken by the College of Pharmacy to integrate IPE with their curricula, a few healthcare professions remain disengaged or not committed to full implementation. Executive leadership and commitment from the different healthcare schools is essential to the development of IPE. If not all the schools commit equally, academic engagement will vary and resource commitment will be limited (282, 319). Barriers need to be carefully addressed to develop and sustain an effective and sustainable IPE programme. Moreover it needs to be highlighted that it is not an easy process and requires patience, commitment, long term support, and resourcing (49).

### **7.1.2 Faculty**

It is encouraging to see positive attitudes and that respondents are aware of the importance and benefits of IPE. Faculty and practitioners need be role models for the students and need to be able to work with other healthcare faculty and practitioners to learn with, from, and about each other (67). Respondents who had experiences of IPE and were more likely to engage in future IPE events, were more motivated and had positive attitudes to IPE. However this is to

be expected since they had previously perceived the benefits that can be yielded from such opportunities. Additionally, faculty tend to become IPE activists when they experience it and are given the tools to thrive (39). Faculty who carried out the initial IPE experiences were motivated and committed to trying new initiatives and were believers in the value of IPE and collaborative practice. This motivation and commitment leveraged any difficulties faced. However, in these cases sustainability could be threatened if these motivated faculty, or even the IPE champion in an institution, were to move or retire as then the IPE momentum may be reduced or lost (346, 347). Additionally, many may be discouraged if the administration became less supportive of IPE initiatives to continue and are not compensated for their efforts principally by workload reduction or providing other incentives to account for the complexity of designing and delivering IPE initiatives (32, 284). During the implementation stage of IPE, it is important to provide necessary support, incentives, rewards, resources and not over burden members to ensure successful integration of IPE (347).

The faculty discussed in detail recommendations for future IPE delivery including establishing an IPE committee, suggestions for incorporating IPE into the pharmacy curriculum, the need for faculty professional development, and raising awareness about IPE and collaborative practice. The findings in this study should be used as the basis for developing, planning, and leading strategies in the different healthcare institutions to establish, promote, and sustain IPE initiatives and move beyond the traditional healthcare delivery focused on achieving profession specific competencies to achieving shared competencies.

### **7.1.3 Students**

The student respondents demonstrated a strong readiness, and positive perceptions towards IPE and collaborative practice. Junior students were more positive than senior students who were more aware of what happens in the practice setting and the reality of collaborative practice. This needs to be taken into consideration as it may interfere with the development of a collaborative practice environment and lead to negative perceptions (311, 312). Students, when they graduate, need to have an awareness of the complexity of practice and be trained and capable of introducing a change.

The study has highlighted that previous exposure to IPE had a positive effect on the student (71, 193, 308). Therefore, promoting interprofessional interaction is key for successful implementation of IPE and will equip students with the needed competencies required for collaboration (319). Amongst the challenges faced by students is their perceived lack of confidence and uncertainty arising from the initial IPE experiences they have undertaken. Additionally, students expressed frustration and concerns with the current working practices and processes and the status of the pharmacists to the healthcare team.

Another noted challenge is the group dynamic within IPE activities. This is an important factor that needs to be addressed when planning IPE as this may negatively influence their

participation in future activities (319). The composition of the small groups in an IPE activity has been perceived as a challenge to some students. This relates to having students within the groups with varying clinical experiences, different professional years, inclusion of male students, leaders in the team, and personality of the different group members. Students reported being uncomfortable having students with varying levels in the same group. Senior students were much more confident in their knowledge, resulting in junior students demonstrating a more passive role as they felt they had nothing to contribute. This is discussed more fully in chapter 5.

#### **7.1.4 Practice**

Attitudes towards IPE and collaborative practice are generally positive, with a high readiness noted. Although there were individual examples of collaborative practice, unfortunately the current practice settings and lack of a formal or informal IPC appear to be a barrier to fully implementing IPE and collaborative practice.

Collaborative practice in the community and primary care is almost non-existent. Individual examples of collaborative practice may exist in some hospital settings. The lack of collaborative practice for students to experience IPC as taught in the university may interfere with the development of a collaborative practice environment and lead to negative perception which maybe a major obstacle for enhancing the quality of care delivered to patients (178, 192, 311-313). Many factors have been discussed that lead to reduced capability, decreasing opportunities, and lower motivation. These barriers can have significant effect and slow the change process. A practice environment that engenders negative attitudes due to the barriers suggest these barriers need to be addressed. Even a positive attitude with a non-collaborative culture can lead to culture overpowering the attitude.

The practice environment is challenging due to the heterogeneous nature of the practitioners and their attitudes towards IPE. As well, collaborative practice can vary within individual and practice settings. Several other factors, such as a hierarchal system; stereotyping that exists between healthcare professionals, other professionals' limited understanding of the pharmacist's scope of practice, unfamiliarity of how to work together in a team, and the background of the healthcare professionals can hinder the collaborative process. Additionally, there are barriers of process as pharmacists are not able to access medical notes in the community and primary care setting. Within a hospital, while they can access the notes, many are not able to write in the patient medical notes. This lack of document sharing in the current system does not facilitate collaboration between healthcare professionals.

Pharmacy students were frustrated by the weak sense of professional identity pharmacists may have. This is exacerbated by their marginalised contribution, lack of appreciation by others, lack of confidence, and resistance from other healthcare team members - namely physicians- to the evolving role of the pharmacists. Practising pharmacists admitted they

lacked confidence in dealing with other healthcare professionals. A range of factors contribute to this, including limited clinical knowledge, lack of skills in communicating with other healthcare professionals, and absence of support, as demonstrated in Chapter 6. Developing the clinical role of the pharmacist is of crucial importance, as highlighted in the reference paper on collaborative practice and is needed for establishing a strong base for IPC (28).

Promisingly, the healthcare system in Qatar is undergoing significant changes with some of the positive influences noted within the practice setting. This included seeking accreditation in the primary care and hospital setting, which places an emphasis on collaborative practice and is a key driver for promoting IPE and collaborative practice. In addition to the recent advancements for the role of the pharmacists, especially in the hospital sector, with the surge in the number of clinical pharmacists and the employment of healthcare professionals with Western backgrounds who had previous exposure to interprofessional working. These pharmacists would have had a better understanding and appreciation of the expanded role of the pharmacists, which perhaps made them appreciate the valuable contribution of the pharmacists (98).

#### **7.1.5 Environment**

The patient has been perceived as a barrier not just to IPC but even to appreciate the roles and responsibilities of the healthcare professionals beyond the physicians. Pharmacists from the different practice settings and students expressed frustration with the negative patient perception towards them and felt undervalued by the public. One of the main factors contributing to this is 'the shopkeeper' stereotype of the pharmacist, resulting in poor public image and unacceptance of pharmacists as an important member of the healthcare team. They emphasised the need to improve the professional image of the pharmacist and work on changing the patient and public perception of the pharmacy profession. Patients are key stakeholders and their views and opinions need to be elicited. They should be central to the design, implementation, and delivery process of health services initiatives to improve the quality of healthcare (348). Unfortunately, patient voices are often neglected with limited research available on their perspectives (349). This could be attributed to a number of factors: hierarchical culture that already exist where the doctor knows better, leading to professional defensiveness; cultural marginalisation that can potentially inhibit patients from speaking up; and public passivity (350). Favourably, participants from all groups were optimistic with the number of national initiatives taking place, transitioning the culture from traditional physician-centred care to more team-based care. These included Qatar National Vision 2030, the Academic Health System Initiative, the Qatar Simulation Consortium, and the national skill competition for students run by the College of North Atlantic Qatar.

## 7.2 Proposed model for IPE implementation

In a commentary discussing the key factors required to successful IPE planning and implementation, Reeves et al. (2007) identified three key-focused groups: learners, faculty, and organisation, with a seven interconnecting factors, as shown in Figure 22 (319).

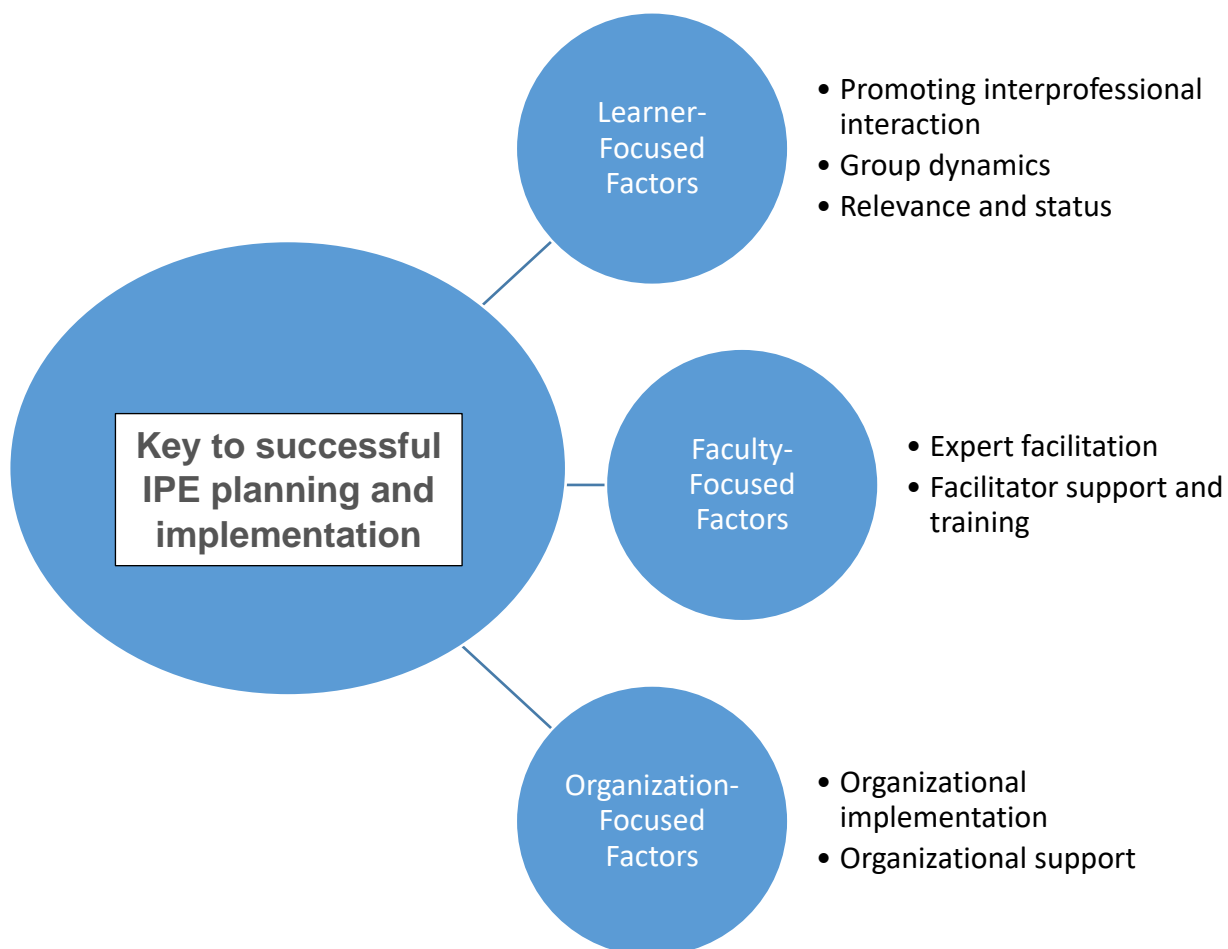


Figure 22. Key to Successful IPE Planning and Implementation Adapted from Reeves et al. (319)

Although Reeves et al. highlight the key stakeholders, they fail to move beyond the educational institutions and there seems to be a disconnect between key stakeholders at the various levels. Additionally, there seems to be a further disconnect between the practice and the academic institutions, each working independently with minimal collaboration, dialogue, and integration (351). It was clear in this research that there is little coordination happening between the academic institutions and the practice setting. The focus should not be on individual factors and well defined change only, but readiness should be expanded beyond that to organisation and leaders at various settings for more complete understanding (134).

Using a number of sources change management theories and models discussed in chapter 1, Reeves et al.'s discussion on the key to successful IPE planning and implementation, literature on organisational change (115, 123, 124, 140, 319), and mixed method results from this thesis, the researcher presents a new model for the development of IPE (El-Awaisi 2017) based on collective input, efforts, and readiness in five key areas: academic institution, faculty, student,

practice, and environment (Figure 23). These realms should be taken into consideration when planning and implementing an interprofessional programme. The model was devised by analysing the enablers, barriers, and recommendations highlighted separately by students, pharmacy faculty, and practising pharmacists (Table 65). They were subsequently categorised according to the different component and presented as the model below. The model is illustrated as a stacked Venn diagram to emphasise the close interlinks between the different components with academic institution as the base and the outer layers dependent on the base. Additionally, each layer is dependent on the layer inside it. Within each component, physiological and structural factors, referred to in chapter 1, need to be taken into consideration as these may promote or inhibit the implementation process (124, 134). The description of what each component refers to is shown below.

*Table 65: Description of the components of El-Awaisi 2017 Model*

<b>Component</b>		<b>Description</b>
<b>Academic institutions</b>	Base	Institutions that provide healthcare programmes which include institution culture, leadership, institutional resources, structure, policies and procedures.
<b>Faculty</b>	Provider	Faculty involved in teaching healthcare programmes. This component includes faculty attributes, knowledge, skills, attitudes, experiences, preparedness, commitment and readiness for the change. In addition to any internal (i.e. workload) and external factors (i.e. cultural and personal) that can have an influence on them.
<b>Students</b>	User	Students of all levels undertaking a healthcare professional degree. It constitutes student knowledge, skills, attitudes, experiences, preparedness and readiness.
<b>Practice</b>	Receiver	This includes all the practice settings in which any type of healthcare is being delivered. It constitutes of practitioners' attributes, knowledge, skills, attitudes, experiences, preparedness, commitment and readiness for the change. In addition to the practice leadership, culture, resources, policies and procedures.
<b>Environment</b>	Context	Overall end users who are the patients and to the collective commitment from government, governors, regulatory bodies and policies taking into consideration political, economic, and cultural factors. The environment ensures the implementation is adapted to the local context where change is occurring.



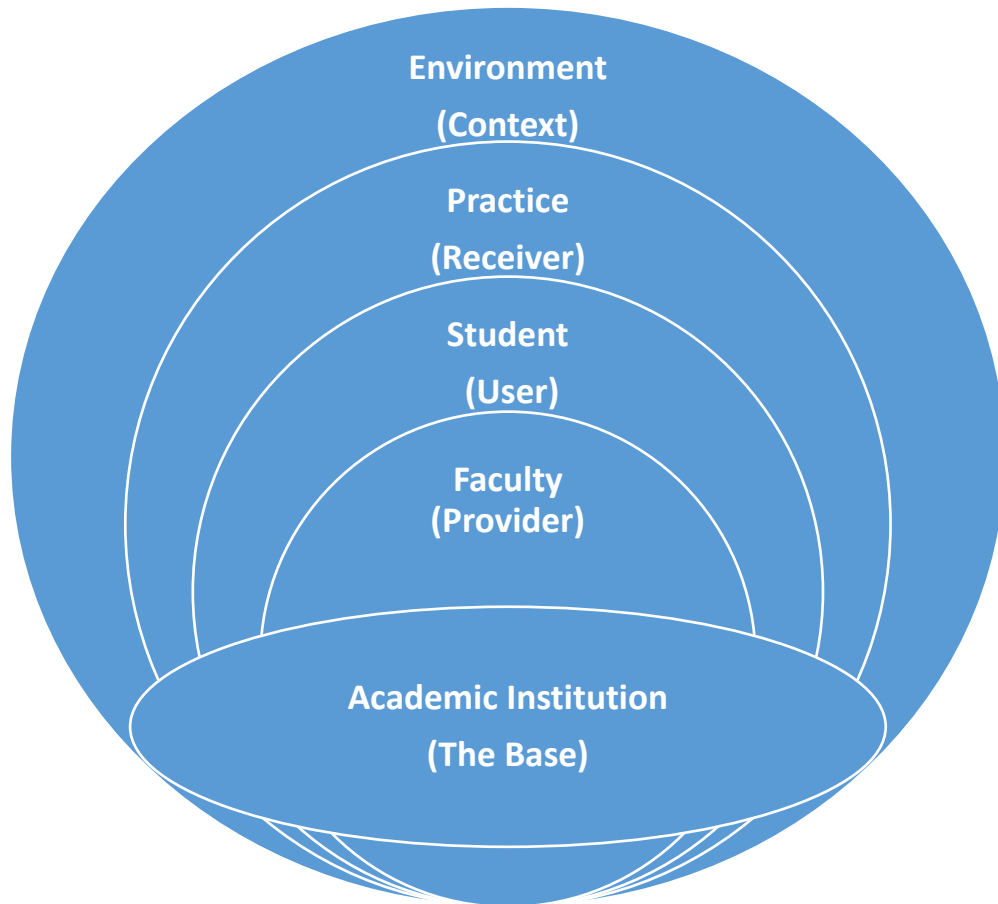


Figure 23. A Stacked Venn Model of the Five Areas Needed for Successful Implementation of IPE (El-Awaisi 2017)

The model moves beyond the individual components associated with single changes and expands to consider the complexity of linking the components together to focus on a more comprehensive and holistic implementation. Successful implementation of IPE is a complex process that requires readiness and changes aligned to the same vision in all the different components for it to be effective. The change needs to be adopted in all components from academic institution to the environment to ensure alignment and cohesiveness during the implementation process. These components are closely interlinked to ensure any change is adopted, implemented, and sustained. The components can overlap, but each has its own unique emphasis. Within every component, individuals need to exhibit readiness to change as changes cannot occur if the recipients are not ready (121). Readiness to change results in a positive attitude toward the change, which is translated into willingness to actively participate and support the change initiative (121).

The institution is **the base** (Figure 23) and the initial powerful and critical step for transforming healthcare curricula and practice (9, 115, 352). The infrastructure of an IPE programme needs to be well thought out from the early stages of establishing an IPE programme. Muller et al. (353) discussed five key principles needed for integrating IPE into the curricula: 1) support from the dean's office and institution administration; 2) involvement of other healthcare courses; 3) offering protected time for faculty; 4) sharing experiences and curricula between faculty members sustaining the programmes; and 5) addressing system issues and challenges

(282, 353). A focus on these key principles will address the challenges identified to successfully implementing IPE.

To overcome many of the organisational barriers highlighted above requires time and commitment from the different healthcare institutions and organisations to allow IPE to develop, whilst realising that changes are difficult and not always successful (353). Additionally, academic institutions need to invest in opportunities for faculty development in IPE, which is an essential component for providing IPE training for students and practitioners alike (352). Faculty, referred to as **the provider** (Figure 23), will be effective in creating, developing and facilitating IPE opportunities for students. The first two components are essential to lay strong foundations for an interprofessional culture within the academic setting and this could be achieved through education, raising awareness, and training. As such, academic institutions promoting and supporting IPE will have an influence on faculty, who will then be equipped with the tools to succeed in providing IPE experiences to students.

Students, referred to as **the user** (Figure 23), will experience IPE opportunities within their education and at the point of graduation will be collaborative practice-ready (8). Practice settings, referred to as **the receiver** (Figure 23), need to promote the principles of collaborative practice and provide an environment for students to practise interprofessionally (354). The practice will be a hub for practitioners to work collaboratively with each other and eventually create an environment, referred to as **the context** (Figure 23), advocating for better patient care and quality practice. Context can vary and it is important this model is built within the context of the organisation (116, 120).

Within every component, it is crucial to identify the enablers, barriers, and recommendations (as shown in Table 65). Strategies need to emphasise the facilitators, address the barriers to overcome them, and implement recommendations. Lewin's force field model (chapter 1) can be utilised to address strategies for successful implementation. The focus is on two main driving forces: driving forces (enablers) and restraining forces (barriers) (127, 355). Lewin proposed the following guidance when addressing enablers and barriers (355) p 190:

- Increasing the driving forces results in an increase in the resisting forces; the current equilibrium does not change but is maintained under increased tension.
- Reducing resisting forces is preferable because it allows movement towards the desired state, without increasing tension.
- Group norms are an important force in resisting and shaping organisational change.

Implementation success is contingent on collective and coordinated action between the different components where each contributes differently depending on the component they are in. In such situations, belief in collective capabilities from the different components would provide more robust evidence of readiness than individual belief on own capability (134).

Close coordination needs to be implemented between the different components to ensure a holistic and comprehensive programme is developed that is achievable and sustainable. Initiatives need to happen in parallel and be aligned with the needs arising from every component. Implementing this complex process requires collective actions and a shared belief by many individuals at the different components working collectively as teams with each contributing something unique in the implementation process to produce tangible benefits in addition to effective teamwork at an organisational level (115, 119). Problems can arise when individuals in the different components have different levels of commitment and beliefs (115). This has been highlighted in this study when we saw students who initially had high expectations about interprofessional began working in practice settings. Realising what happens in practice and the virtual nonexistence of collaborative practice can result in negative attitudes and negates enthusiasm toward IPE (311, 312). Similarly, an academic institution filled with motivated faculty, enthusiastic about implementing IPE but who are not equipped with the skills and tools to deliver IPE or not provided with support from their academic institution, will not cultivate sustainable initiatives.

Dialogue and mutual understanding of the need for practice redesign and healthcare curricula transformation is crucial (351, 354). Support from the key stakeholders at every component, from academic administrators to policy makers in the community, are critical for successful implementation of IPE. Five main ingredients are needed: leadership, vision, dialogue, incentive, and mutual performance expectation from every component in EI-Awaisi's 2017 model (351). Individuals and leaders need to be mindful of the different components in this model and the need for close cohesion between the components to ensure successful implementation of a sustainable IPE programme. This model aligns with the WHO framework where it calls for 'policy-makers, decision makers, educators, health workers, community leaders and global health advocates' to take action to promote and integrate IPE and collaborative practice at their designated settings (8) p 11.

Across the various components, the knowledge and skills needs to be enhanced to maximise the individual and organisational readiness to make members more positive and ready for change (Figure 24), leading to effective implementation. These could be maximised, according to a literature review by Choi, by developing and adopting policies supporting the change, developing trust in colleagues and leaders, active participation in the change, commitment from the organization for the change, job satisfaction, and perceived self-competency in implementing the change (121, 126).

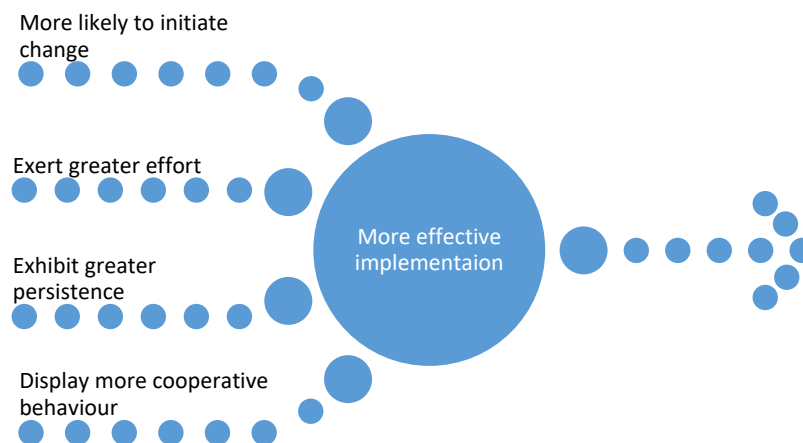


Figure 24. Outcome from Stakeholders When Organisational Readiness for Change is High (adapted from Weiner (115)).

Although acquiring the knowledge and skill is important, it has been argued that a significant change in habit is needed from each individual to ensure improvement will be their focus albeit of their place in the whole system. As mentioned by Batalden and Davidoff ‘healthcare will not realise its full potential unless change making becomes an intrinsic part of everyone’s job, every day, in all parts of the system’ (356). Figure 4 outlines the five core habits (associated each with three sub-habits) that need to be found in every component of the proposed EI-Awaisi model. These are: learning, influencing, resilience, creativity and system thinking (357).



Figure 25: The Five dimensions of improvement cited from Lucas Figure on the Habits of Improver (357)

These habits could be instilled from an early stage in the student psyche especially as the students, in this research, believed they are to be the agents for change.

Finally it is important to bear in mind that the proposed model Figure 23 needs to be tested and validated. The model is flexible in that each stakeholder group, in the different components, maybe the base and can play a key role in transforming healthcare curricula and practice.

### **7.3 Originality and contribution to knowledge**

This study is a unique contribution to the literature and it is original because of its methodological approach, a Middle Eastern geographical insight of IPE, and the development of a multi-level model for future innovative interprofessional practice informed by IPE. These aspects of originality will be discussed separately

#### **7.3.1 The methodological approach**

This study adopted both a systematic review and a sequential explanatory mixed method design to explore the pharmacists' perspectives toward IPE and collaborative practice from a Middle Eastern perspective especially as there is limited literature on this topic. The systematic review findings informed the direction for the design of this study, followed by a quantitative stage which informed the focus for the qualitative stage. The combination of research methods allowed the researcher to explore the complex nature of collaboration and provided a broader multifaceted understanding about the pharmacy perspectives, enriching the data obtained. This comprehensive and explicit assessment of the pharmacy perspectives is first of its kind and has not been completed in any country before. It also has targeted three key stakeholders: students, faculty, and practising pharmacists. Additionally, within each group, further subgroups were targeted to allow for comparison between the subgroups: junior and senior students; faculty and academic administrators; and community and primary care and hospital practising pharmacists.

#### **7.3.2 A Middle Eastern geographical insight of IPE**

Another contribution of this study is that it sheds light on a geographical region not previously investigated in any depth in IPE literature. The first phase of the mixed method for faculty provided an original piece of work exploring the insight of faculty perspectives in fourteen Arabic Speaking Middle Eastern countries towards IPE and collaborative practice. Then it focused on pharmacy faculty in Qatar in the qualitative stage. This was of crucial importance in identifying where Qatar can be placed for IPE and generated a body of knowledge regarding the status of IPE in pharmacy education in the Middle East.

#### **7.3.3 The development of a multi-level model for future innovative practice**

Another facet of originality is the transferability of the model developed to other contexts. The theoretical framework adopted at the beginning of the study, using a mixed method has led to the development of a robust model that could be used not only within the area of IPE but could be expanded to areas linking healthcare education with practice settings and future curriculum development. The large amount of data identified in this research demonstrate the importance of this approach in identifying enablers, barriers, and recommendations as perceived by key stakeholders across different stages prior to implementation. The model offered in this study treats the implementation of IPE as a combination of collective efforts by individuals during different stages that are closely coordinated and linked to one another, providing a

comprehensive picture of what is needed and required. It is specific to IPE and adds to the body of literature on this topic by introducing a model (Elawaisi 2017) to be considered and tested in the implementation process.

#### **7.4 Limitations**

Although the study has generated rich data and adds to the current body of IPE literature, there were a few limitations to this study that should be borne in mind when interpreting the findings. This study relied on voluntary participation and hence the study sample cannot be representative of respondents in the area. Those who participated may have been more positive about IPE than those who declined. Moreover, it was clear that the concept of IPE and IPC may have been interpreted differently by respondents and needs to be borne in mind for future research. The results are self-reported attitudes of respondents and hence interpretation of results need to be considered within this context. The study sample for the survey stage for the pharmacy faculty from Arabic speaking Middle East included only faculty members who had publicly available email addresses and the focus group focused only on pharmacy faculty from Qatar.

Although the survey was based on a validated RIPLS scale and another non-validated scale, the internal consistency of the whole survey is limited. However, the survey was well-structured, tested, piloted and offered respondents the opportunities of free text responses. In addition, conducting the focus groups offered deeper insights into the respondents' perceptions. Additionally, the survey was only offered in the English language, which may have discouraged respondents from participating and limited the response rate. However, previous surveys also used the English Language which is considered to be the *lingua franca* in Qatar and other gulf countries (108, 165-167, 332).

While data saturation was obtained for the sample (7 focus groups, 51 participants), it may not have been achieved for the different groups as only one focus group was conducted for every subgroup. The principal researcher was unable to conduct a second focus group for each subgroup group due to time constraints and difficulty recruiting participants such as practising pharmacists and the small number of potential participants from the College of Pharmacy faculty who were invited to participate. Additionally, some of the focus groups had a small number of participants that may have limited the breadth of perspectives. However, the richness of the data collected, duration of each focus groups (2 hours each), and sampling methods used to ensure wide range of perspectives from various settings are captured. Evidence of many of the same enablers and barriers across the groups suggest the study had reached data saturation. Additionally, in mixed method research, the concept of the representativeness/saturation trade-off exists (203). Therefore, in sequential explanatory design, there is a greater emphasis on the quantitative stage, which is traded off with reaching saturation in qualitative data. In other words, saturation of the qualitative data were not as

relevant as it is based on the quantitative findings (142, 203). Furthermore, the qualitative stages provided deeper insights into the research questions posed.

A complex concept has been investigated based on the perspectives of one profession and it was beyond the scope of this thesis to investigate the perspectives of other health care professionals towards IPE and IPC. This more comprehensive perspective would be important to provide a more holistic picture of education and practice to enable the development of IPE activities that are relevant, integrated and unique.

Furthermore, the study was conducted over a single period of time and hence the results reflects the perception of participants at that particular point. These perceptions may have been different if carried out at another time. Another limitation is not gaining the patients' perspectives and it is very important to see how patients perceive pharmacists' roles and their contribution to the healthcare team as the ultimate aim of IPE is to enhance the quality of patient care. Exploring the patient perspective was beyond this research scope and objective. However, this has been suggested for future research projects.

The general response rate varied according to the group investigated and ranged from 35% for pharmacy faculty in Arabic speaking Middle East countries, 66% for practising pharmacists, to 77% for pharmacy students. An ideal response rate for surveys is around 60% (344). Yet there were representations for all the participating groups and it did provide an insight into the different groups' attitudes with some significant results. Additionally, response rates ranging from 25 to 60% have been reported in other similar studies (165, 204, 332, 345). Unfortunately, it was beyond the remit of this research to identify the characteristics of non-responders and the reason for their non-response. As it was self-reported, the possibility of social desirability bias cannot be excluded in this survey. The same is true for the focus group participants in that those who participated may have a keen interest in the topic. However, this did not seem to influence their views and was evident by the range of enablers and barriers reported.

Although the results overall are limited to the context of Qatar and cannot be generalised to other areas in the region, the transferability of findings is feasible if readers consider their situation is similar and are confident in transferring the findings to their own situations. This is possible as sufficient description of the details have been provided to allow this to be determined (358). Additionally, transferability of the methodology may apply to other professions. Healthcare researchers may take this approach and explore their own specific professions perspectives towards IPE. They could evaluate their own profession's readiness at multiple levels and use the proposed model to initiate changes.

## **7.5 Implications**

This section highlights several implications arising from this PhD research and will be discussed in relation to the:

- Development and implementation of IPE in academic institutions;
- Promotion and implementation of IPC in practice settings;
- Policies and governmental vision.

### **7.5.1 Development and implementation of IPE in academic institutions**

Implementation of IPE activities at the College of Pharmacy in Qatar University and across the healthcare schools in Qatar is anticipated to help improve healthcare delivery in Qatar and it has set examples for others in the region to follow (57). The College of Pharmacy is consistently going through positive change to graduate competent pharmacists to meet the complexity of the healthcare system today and to achieve excellence. In this respect, the College of Pharmacy in Qatar University is leading the way for developing and integrating IPE within its curriculum and will help the College of Pharmacy with its vision in 'advancing healthcare in Qatar and the world through excellence and innovation in pharmacy education, research and service' (365). Academic institutions and faculty members involved or keen to be involved in the development and implementation of IPE need to be aware of the current facilitators and challenges and work on overcoming barriers to ensure development and implementation of IPE activities that are meaningful, comprehensive, unique, and sustainable. It is important to ensure IPE activities are of clinical relevance, locally relevant, and match with national priorities. The implementation of IPE into the curriculum will create opportunities for pharmacy and healthcare schools to work with each other to effectively prepare them to their future collaborative role as key members in the healthcare team to improve the quality of care delivered to the patient.

The data collection for this PhD research took place prior to formal introduction of IPE into the pharmacy curriculum at the College of Pharmacy and the findings from this research have had significant implications for the development of IPE. They have been very valuable in advancing IPE in Qatar and the region (Figure 26).



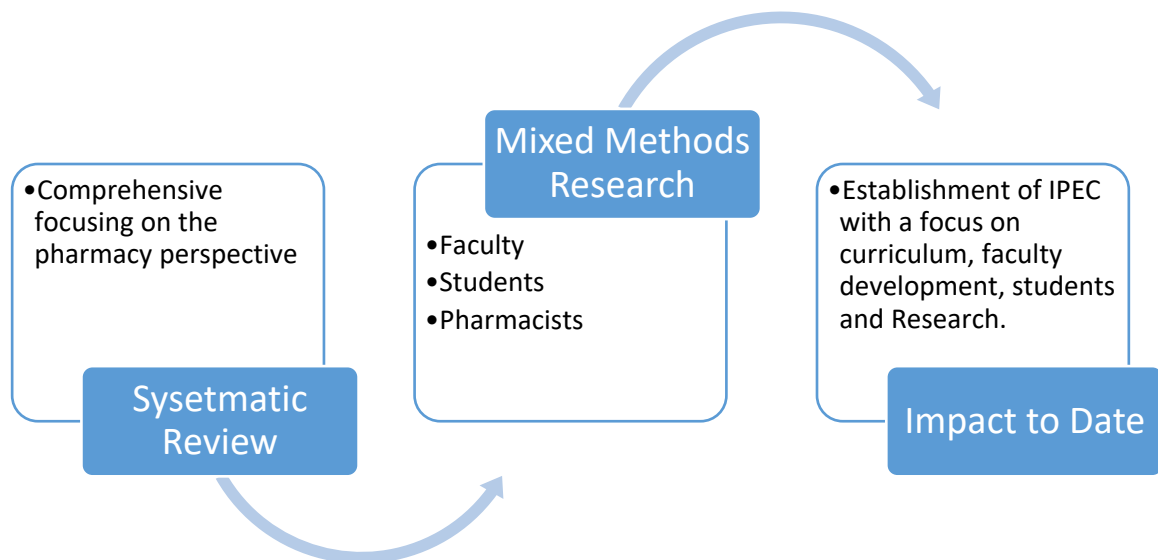


Figure 26. Summary of Research Process and Impact to Date

The impact made to date was guided by the urgency to integrate IPE into the pharmacy curriculum to achieve accreditation standards as per the first stage in Kotter's framework (chapter 1) and the high readiness perceived by both faculty and students.

#### *Establishment of the Interprofessional Education Committee*

Interprofessional education is one of the standards stipulated in the CCAPP accreditation and has been identified as important for education and research at the College of Pharmacy in Qatar University. Meeting the accreditation standards generated a sense of urgency to integrate IPE into the pharmacy curriculum. This accompanied with many of the recommendations, perspectives, findings from this research and support from the college administration, meant that the college established an interprofessional education committee (IPEC), in April 2014, to provide guidance and support in implementing IPE. Not only did this affect the pharmacy curriculum at the College of Pharmacy in Qatar University but also other healthcare programmes in Qatar, including medicine, nursing, and health sciences. This research and the implementation that has taken place to date will help Qatar University College of Pharmacy in achieving the CCAPP requirement with regard to IPE.

The committee is dedicated to facilitating awareness and understanding of IPE for IPC for students and faculty members (359). The committee was established and chaired by the principal researcher and includes representatives from all the healthcare schools in Qatar as nominated by the respective deans based on their academic portfolio and familiarity with their respective curriculum. In addition, to creating enthusiasm and motivation for planned IPE activities (302), engaging stakeholders in IPE planning steering committees and measuring their readiness for IPE was an opportunity to improve and ensure that planned IPE initiatives work best in the context of their institutions. Overall, the process provided opportunities for key stakeholders to plan IPE activities that are effective and relevant to our students. It can be used as catalyst to incorporate more IPE into their curriculum and to better prepare our students to engage with others in a collaborative practice environment. This is evident in that

the college has been successful in integrating IPE into their curriculum and these IPE activities have gained positive attention from all the stakeholders with all activities incorporated in the four professional years of pharmacy and sustained for the last three years (57) (See Appendix 20 as well). A link to the IPE committee website can be viewed at the following link:

[http://www.qu.edu.qa/pharmacy/academics/ipec\\_welcome.php](http://www.qu.edu.qa/pharmacy/academics/ipec_welcome.php)

#### *Faculty development initiatives*

Faculty IPE development and facilitator training with effective preparation and orientation are critical for effective implementation of IPE, especially as many in this study have little or no experience in IPE (289, 319). These initiatives are key drivers to overcoming barriers, facilitating a positive culture change in academic institutions, and encouraging faculty short and long term commitment (52). These sessions need to focus on familiarising faculty with the different healthcare professions roles and responsibilities, current challenges to collaboration in the practice setting, familiarity with the interprofessional learning programme, and the skills needed for effective collaboration (354). These sessions need to be ongoing and offered to faculty on a regular basis with opportunities to reflect and learn from any IPE experiences they have undertaken. These are also opportunities to promote IPE, recruit faculty members, and network with each other.

The College of Pharmacy at Qatar University led the first IPE symposium for academic healthcare faculty in Qatar, in February 2015, to equip over 50 faculty members with the knowledge to develop IPE content and skills to impart curricular change for IPE implementation (56, 57). This was followed with the First Middle Eastern Conference on IPE, in December 2015, which attracted more than 300 participants, faculty, and practitioners from 13 countries: Australia, Bahrain, Canada, Egypt, Iraq, Kuwait, Lebanon, Oman, Saudi Arabia, the United Arab Emirates, Turkey, the United Kingdom and the United States. Attendance exceeded the organiser expectation and was a strong indicator of the need for such conferences in the region. Some of the attendees were novice to the concept of IPE and hence had the opportunity to learn and explore strategies for how interprofessional education can be integrated into their institutions. For others, it was an opportunity for them to reflect on how they can improve the delivery of IPE in their institutions. During the 3-day conference, there were six different workshops, 37 oral presentations, and 40 posters displayed (56, 57). The principal researcher was the chair of the conference scientific and organising committee. Further information about the conference can be found at <http://www.qu.edu.qa/IPE2015/>

As a result of the conference, a set of actions have been proposed, by the conference advisory committee, to strengthen and support IPE in the region. These include promoting an interprofessional culture at both educational and healthcare institutions with the intent of (56, 360):

- promoting new frontiers in healthcare education;
- leading the way in establishing a Middle Eastern network in collaboration with other countries in the Middle East as there is no current Middle Eastern representation at the World Coordinating Committee for IPE (the global IPE network). Discussion has started to create an IPE group in this region that works collaboratively to foster partnerships and enable the opportunities to share experiences and contribute to the global perspectives on IPE and collaborative practice. There will be similarities and differences between the university partnerships in each country and their strengths and weaknesses can be drawn upon to improve future practices. The College of Pharmacy can lead the way in creating opportunities for IPE initiatives in the region;
- becoming a forum for discussing key issues relating to IPE and IPC relating to the region;
- meeting the need to increase related research productivity;
- assessing and evaluating the effectiveness of IPE to reach best practices applicable for this region; and
- collaborating and working closely with the World Coordinating Committee for IPE and other IPE organisations such as CAIPE to learn from their experiences and to develop models for networking across regions. The principal researcher has been invited to be a keynote speaker on IPE and the Middle East at CAIPE upcoming Annual General Meeting which is an indication that CAIPE sees the importance of IPE in the Middle East.

#### *Student leadership*

As shown, the results from the mixed method study exploring the student perspectives (Chapter 4) demonstrated a strong readiness and positive perception by pharmacy students toward IPE and collaborative practice. It is important to engage students in IPE initiatives and consequently a student representative was selected, by IPEC members, from a group of interested students to serve on the IPE committee. The students were tasked to form an IPE student society and assume, with a student executive committee, leadership roles in promoting IPE amongst students from the different healthcare disciplines. The society executive committee included student representations from all undergraduate healthcare programmes in Qatar. The principal researcher is the faculty mentor for this society. Amongst their events is the annual research day for healthcare students and the recent interprofessional outreach event on smoking cessation. Three of the college of pharmacy students have also participated in the international healthcare and social care team challenge held in Oxford during the 8th International Conference on Interprofessional Practice and Education (All Together Better Health) in September 2016. Further information about the society can be accessed in the following link: <http://ipestudent-qatar.weebly.com>

### *University organisational support*

Academic institutions need to facilitate and support the integration of IPE into healthcare programmes and direct resources to IPE for it to thrive. Although with the initial IPE experiences faculty were motivated and enthusiastic, this may be inhibited as subsequently, if they do not feel supported by their leaders and rewarded for their efforts (32). A notable positive move is that Qatar University has recently established a health cluster bringing the three health related colleges of Qatar University -- Colleges of Health Sciences, College of Medicine, and College of Pharmacy -- under one administrative organisation umbrella to work together and maximise efficiencies. The vision of the health cluster is to: 'be recognised regionally for excellence in interprofessional health education and interdisciplinary health research; a first choice for students and scholars, and a national catalyst for innovation in the field'(361). Therefore, the Health Cluster will serve as a catalyst for IPE, facilitating and strengthening IPE initiatives suited for the Qatari and Middle Eastern context and meeting the highest standard of excellence in the field.

Due to the principal researcher's leadership in establishing IPEC and her research expertise, she led the IPE taskforce, which included representation from the other health colleges, to formulate a proposal for a detailed action plan and organisational structure for IPE. The taskforce recommendations were to establish a dedicated academic office called Office of IPE at a cluster level that will replace the currently operating College of Pharmacy IPE Committee to ensure the programme will thrive and be sustainable.

The IPE office at the cluster level will build on the success of the College of Pharmacy IPE committee that was able to develop a leadership role in IPE in Qatar within a short period since its establishment. The creation of the health cluster provides a unique opportunity for Qatar University to further develop and become a leader of IPE in the region. The formation of a dedicated office will work towards expanding IPEC initiatives and planning activities according to evidence, best practice and contemporary models of healthcare. This is consistent with the health cluster vision. The office could work on building coalition and partnership between key stakeholders across the different stages as per the El-Awaisi 2017 model proposed above.

### *Research and grant funding*

Eight peer-reviewed articles have been published, by IPEC members to date regarding IPE in Qatar and the Middle East (56, 57, 59, 60, 69, 72, 159, 362, 363). In addition, two successful grant funding have been awarded for this PhD research as shown below:

- Qatar University Internal Grant:
  - Interprofessional Education at Pharmacy Schools in Arabic-Speaking Middle Eastern Countries: An Investigative study. Approved (QR 88250~24238.48USD) April 2014-April 2015.

- Qatar University Internal Grant
  - An Exploration of Views, Attitudes and Perceptions of Pharmacists and Pharmacy students in Qatar to interprofessional education and multidisciplinary working. Approved (QR40000~10986.05USD) April 2013-April 2014.

These projects were in alignment with Qatar National Vision 2030 which is investing in an educated population, a healthy population, and a capable and motivated workforce. This research contributes to the growth of a skilled national healthcare workforce working towards providing quality patient-centred care and promoting a collaborative practice environment in line with Qatar's National Health Strategy (80). It is also exploring an important topic that has not been investigated before.

*Continuing professional development (CPD) for healthcare professionals*

In addition to faculty development, healthcare professional training through continuing professional development, participating in interprofessional committees, interprofessional ward rounds, interprofessional meetings, participating in research, and journal clubs is of paramount importance and are effective strategies for promoting IPC between healthcare team members (263, 286, 342). The College of Pharmacy's continuing professional development programme is accredited by the Qatar Council for Health Practitioners for providing CPD to all healthcare professionals. The programme attracts healthcare professionals from different fields and is a requirement when designing these activities to demonstrate principles of IPE (364).

**7.5.2 Promotion and implementation of IPC in practice settings**

So far, the focus has been on integrating IPE within the curriculum but, as perceived, there are many challenges and barriers in the practice setting. Aligning efforts of academic institutions with practice is of crucial importance and has the potential to enhance the anticipated value and quality of experience for patients, their families, communities, and the learners (27, 351). Unfortunately, practice is confronted with numerous barriers and challenges that need to be explored and addressed as highlighted in this study (Chapter 6). The transformation to an environment where interprofessional working and collaborative practice is fostered and promoted will be challenging and disrupt the longstanding hierarchical structure within the team by levelling status among the members (114, 323). The process will be facilitated if organisational leaders dedicate resources, advocate for this change, and raise awareness and understanding about the contributions of every member of the healthcare team and the importance of interprofessional working (323). These measures, combined with evaluation and feedback, are important to convey the importance of IPC, assist healthcare professionals toward achieving IPC in their settings, and motivate changes toward successful implementation (114).

There is a need to build on the established success to date. Students need to be provided with learning opportunities to implement what they are taught. Practice settings need to be collaborative environments with positive role models where students are educated and trained (39). Institutional support, working culture, and environment are all important factors contributing to the effectiveness of collaborative practice in healthcare settings (8). Practitioners and leaders in practice should consider the key issues raised from this research, in particular the proposed model for effective implementation of IPE and the interface between the different stages. Careful 'needs assessment' to improve IPC in the practice setting is required to identify the facilitators and challenges from multiple perspectives to create an action plan for implementation. It is important to note changing the existing culture will be a complex and lengthy process and many unidentified barriers might appear in the process.

Hospitals, primary care centres, and even the Ministry of Public Health needs to raise awareness and send positive messages that convey respect and trust to the healthcare providers about the importance of collaboration, its link to better patient outcomes and the unique contribution each brings to the healthcare team. Creating a positive collaborative environment will negate the stereotype and barriers that may arise from the lack of understanding of the contribution each healthcare professional make to the interprofessional team (342).

### **7.5.3 Policies and governmental vision**

Reforming healthcare curricula to eventually better healthcare outcomes and improve quality care for the patient will require a cultural change at all stages with an emphasis on linking IPE experiences with the practice (39). In addition to this, institutional and public policies need to promote and support the reform in both healthcare curricula and healthcare delivery system (39). Governments and healthcare institutions play a critical role in initiating and sustaining IPE and IPC initiatives (52). This research reflects Qatar's National Health Strategy, which aims to graduate skilled pharmacists who can join the health workforce and be an integral part of providing effective safe care to the patients. However, IPC needs to be more transparent at the heart of these important documents. Regulatory bodies have been identified as having an important impact on facilitating collaboration between healthcare professionals (366). The Ministry of Public Health can play a key role but needs to accelerate the promotion and implementation of IPE and collaborative practice. As an example, the Qatar Council for Healthcare Practitioners, the regulatory body for all healthcare practitioners working in both governmental and private healthcare sectors in Qatar (364), could play a key role by mandating and promoting IPE and collaborative practice as part of its accreditation standards to create a culture that promotes interprofessional collaboration. This is similar to an example from the Australian Health Practitioner Regulation Agency, which oversees the registration and accreditation of healthcare professionals across Australia in collaboration with fourteen

national boards. They are currently working on ensuring accreditation standards effectively support interprofessional learning, developing a continuum of interprofessionalism from education to practice (367).

Despite the evolving role of pharmacists, their role is very much undervalued. They need to raise awareness about their role and their unique contribution to patient care. Unfortunately, there is no pharmacy professional body in Qatar that represents, or promotes the pharmacy profession and the establishment of a professional body for pharmacists, in the form of a society or association, would be highly desirable (105, 166). Therefore, the Qatar Council for Healthcare Practitioners will be the regulatory body and the society will be the professional body similar to General pharmaceutical Council and the Royal Pharmaceutical Society in the UK. Pharmacists need to take a proactive role, at an individual level, to raise awareness about their profession, develop working relationships with healthcare professionals based on mutual trust and respect, and offer services beyond traditional boundaries (87, 98, 99). Awareness about the importance of IPC between the members in the healthcare team and between the key stakeholders from academic institutions to professional organisations needs to be made more explicit (342).

Additionally, national and internal funding agencies such as NPRP need to fund development and provide opportunities for IPE and collaborative practice to be researched and included within their priorities. This would be an excellent strategy to recruit and engage faculty and practitioners into such initiatives to provide a sustainable programme from IPE to IPC (352).

## **7.6 Future research**

The principal researcher envisages that this research and any subsequent research on the topic will establish a strong model for global IPE. Ongoing development of evidence-based IPE as a result of this research is anticipated. There are several avenues for future research that can be considered and are highlighted below:

- The study provided a unique exploration of the pharmacy perspectives towards IPE and collaborative practice from a Middle Eastern context. Readiness assessment is recommended as a precursor to change implementation using the mixed method approach. Further work is needed to explore the perspectives of other healthcare professions' attitudes and readiness toward IPE and collaborative practice to ensure a comprehensive understanding of readiness of healthcare professionals to IPE and IPC. A similar sequential explanatory mixed method design can be replicated and utilised to allow for a comparison later on between the different healthcare perspectives.
- The attitude and readiness of individuals at the different stages in the proposed model, such as healthcare practitioners, leaders and policy makers, are also important in considering the best strategies to develop and implement IPE with special emphasis on

exploring the practice settings. A consensus methodology such as Delphi would be important in identifying strategies for implementing IPE by key stakeholders.

- The area of patient perception towards healthcare professionals in general and pharmacists should be explored further, in the context of continuously working toward patient-centred care. A pragmatic approach utilising exploratory sequential mixed method design starting with a qualitative stage (semi structured interviews) followed by quantitative stage (survey based on the semi structured interviews data).
- The hierarchical culture prominent in this region, reinforces the idea that the physician is always at the top of the organisational structure, and this is usually instilled in the mindset of healthcare students. It would be useful to investigate how this is instilled, how it affects interprofessional working, and how to manage the behavioural change needed. This could be investigated qualitatively using a uniprofessional focus groups approach to explore the research question further.
- Validation of the proposed model using mixed method research and assessing the interrelationship between the different stages. This can be conducted using multiphase mixed methods. This approach has been defined by Creswell as 'an approach to mixed methods research in which the researchers conduct several mixed methods projects, sometimes including mixed methods convergent or sequential approaches, sometimes including only quantitative or qualitative designs in a longitudinal study with a focus on a common objective for the multiple projects' (147).
- Further development of a validated and reliable tool for measuring attitudes and perspectives toward IPE and IPC is highly needed. An exploration of the existing instruments and their limitations followed by the development of a new scale based on the literature and an expert panel group. The survey will then need to be validated and tested.
- In this research, a systematic review exploring the pharmacy perspectives towards IPE and collaborative practice was conducted. It would be useful to conduct similar systematic reviews exploring the uniprofessional perspectives of other healthcare professionals towards IPE and collaborative practice. It would also be useful to conduct another systematic review to investigate how other healthcare professions view pharmacists.
- With the integration of IPE into the healthcare curricula in Qatar, it would be important to evaluate the longitudinal impact of IPE on collaboration and quality of care delivered to patients. A convergent parallel mixed methods design where the researcher collects both quantitative (pre-post intervention survey administered before, during and after integration of IPE) and qualitative data (focus group) at the same time and then merge the results to analyse the data and provide an overall interpretation of the results.



## **7.7 Conclusion**

This PhD research is a unique exploration of the pharmacy perspectives toward IPE and IPC, using mixed method approaches and from a Middle Eastern context. The need to incorporate IPE as part of any healthcare profession curricula is accelerating in an effort to prepare a collaborative practice-ready workforce. Pharmacy students need to be equipped with the necessary competencies and skills to practise interprofessionally commensurate with the expanding and evolving role of the pharmacist that has been witnessed since the early 1990s. A variety of perspectives have been investigated highlighting the enablers and barriers to determine the strengths and challenges for each group with recommendations on how to overcome the challenges. These are important to formulate and inform strategies for implementation and enhancement of IPE and IPC. The findings have had significant implications already on the development of IPE in Qatar and the region with the establishment of the interprofessional education committee with a focus on IPE curriculum integration into the healthcare programs in Qatar, faculty development and hosting the first Middle East conference on interprofessional education in the region, research and student led initiatives through the IPE student society. However, aligning efforts of academic institutions with practice is of crucial importance and hence the model proposed in this research raises important questions on how all can work together to support IPE and IPC in the promotion of an interprofessional collaborative culture. Coordinated approaches across the different stages in the model, geared towards promotion of IPE and IPC, have the potential to improve quality of care, patient outcomes, and a healthy collaborative environment. Reforming the culture within the practice will not be easy but a tremendous amount of work has occurred already with many positive changes. However, the onus lies on the Ministry of Public Health and leaders from both academic and practice settings to transform working culture, as it is a needed to drive a successful implementation of IPE and IPC. Overall, this study not only provided a Middle Eastern context for IPE and IPC which is important and significant but also it has identified that faculty, students, and practising pharmacists, in Qatar, are ready to pursue IPE and collaborative practice.

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# Appendices

Appendix 1: First Qatar University grant award.

**ALLA EL-AWAISI (0500697)**

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**From:** Alla El-Awaisi <elawaisi@qu.edu.qa>  
**Sent:** Thursday, April 17, 2014 10:38 PM  
**To:** ALLA EL-AWAISI (0500697)  
**Subject:** CPH University Grant Approval 2012/2013

**From:** Reem Mohammed M Q Hizam  
**Sent:** Sunday, March 24, 2013 2:33 PM  
**To:** Maguy ElHajj  
**Cc:** Mohamed Izham Bin Moham Ibrahim; Moumen Omar O A Hasnah  
**Subject:** CPH University Grant Approval 2012/2013

Dear Dr. Maguy,

Greetings from Office of Academic Research (OAR).

I am pleased to inform you that your University Grant Application entitled: " **an exploration of views, attitudes and perceptions pf pharmacists and pharmacy students in Qatar to interprofessional education and multidisciplinary working** " has been approved for a total amount of **QR 40,000**. Congratulations!

Kindly, be aware of the following (If Applicable):

- Priority for hiring RA is given to QU graduates with a salary up to 9,000 QR. But, OAR will not provide housing.
- OAR does not support the purchase of PC equipments (I Pad, notebook, laptop).
- Travelling is approved case by case with providing strong Justification, but attending conferences/workshop/ training are not supported by OAR.

**Project funds** will be available starting from **April 1<sup>st</sup>, 2013** and is **valid until March 31, 2014**. You may use **QUUG-CPH-CPH-12/13-2** as a reference to your project. Kindly note that all requests should be submitted to OAR for approval and processing.

Should you have any questions please do not hesitate to contact us.

Best Regards,

**Office of Academic Research** is a place where faculty members should receive the full support

**Reem Mohammed**

Research Grant Coordinator

Tel: (+974) 4403-3923

E-mail: [reem.m@qu.edu.qa](mailto:reem.m@qu.edu.qa)

رؤيتنا: أن تصبح جامعة قطر نموذجا للجامعة الوطنية في المنطقة، تتميز بنوعية التعليم والأبحاث، وبدورها الرائد في التنمية الاقتصادية والاجتماعية.

**Our Vision:** Qatar University shall be a model national university in the region, recognized for high quality education and research, and for being a leader of economic and social development.

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Appendix 2: Second Qatar University grant award.

**Alla El-Awaisi**

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**From:** Alla El-Awaisi  
**Sent:** 05 April 2017 10:11  
**To:** Alla El-Awaisi  
**Subject:** RE: CPH- University Grant Approval Notification for 2013/2014

**From:** Reem Mohammed M Q Hizam  
**Sent:** Sunday, April 20, 2014 11:10 AM  
**To:** Maguy ElHajj  
**Cc:** Feras Qasem Alali; Nouf Abdulla I M Al-Ansari  
**Subject:** RE: CPH- University Grant Approval Notification for 2013/2014

Dear Dr. Maguy,

Greetings from Office of Academic Research (OAR).

I am pleased to inform you that your University Grant Application entitled: "**Interprofessional Education at Pharmacy Schools in Arabic-Speaking Middle Eastern Countries: An Investigative study**" has been approved for a total amount of **QR 88,250**. Congratulations!

Kindly, be aware of the following (If Applicable):

- Priority for hiring RA is given to QU graduates with a monthly payment of 8,000QR up to 15,000 QR.
- OAR will not support the purchase of PC equipments (I Pad, notebook, laptop, tablet).
- Attending conferences/workshop/ training is not covered by Internal Grants.

**Project funds** will be available starting from **20/4/2014** and is **valid until March 31<sup>st</sup>, 2015**. You may use **QUUG-CPH-CPH-13/14-5** as a reference to your project. Kindly note that all requests should be submitted to OAR for approval and processing.

***Note: please make sure to submit the final report of the previous UG 2012/2013 before April 30<sup>th</sup>, 2014.***

Should you have any questions please do not hesitate to contact us.

Regards,

***QU Research...Pointing To The Future***

Reem Mohammed  
Internal Grants Coordinator  
Office of Academic Research (OAR)  
Tel: +974 4403 3923  
P.O. Box: 2713  
Email: [reem.m@qu.edu.qa](mailto:reem.m@qu.edu.qa)

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## Interprofessional Education Survey for Pharmacy Academics

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Name of Researcher(s): Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Welcome to the interprofessional education Survey for Pharmacy Academics. The purpose of this survey is to examine pharmacy academics attitudes towards interprofessional education. The survey is part of a larger collaborative PhD project being conducted by Qatar University and Robert Gordon University entitled Pharmacy's Perspectives of interprofessional education and Collaborative Practice: An Investigative Study in Qatar & the Middle East. The results of this survey will be used to assist in the design of future activities aimed at exploring the views, attitudes and perceptions of the discipline. As a pharmacy academic, your opinions are important to us. Would you please take the 15-20 minutes required to complete all questions on the survey. Please return the completed survey on or before 10 October, 2013.

Please click [here](#), to read further information about this study. Your informed consent is implied when you proceed with the survey and submit your completed responses.

Thank you very much for your participation, it is greatly appreciated. If you have any questions, please feel free to contact me at the telephone number or email listed below.

Best regards,

Alla El-Awaisi, MPharm, MRPharmS, MSc  
PhD candidate, School of Pharmacy and Life Sciences, Robert Gordon University, Aberdeen,  
UK  
Clinical Lecturer  
College of Pharmacy, Qatar University  
Doha, Qatar  
Tel: + 974 4403 5599  
Fax: +974 4403 5551  
Email: elawaisi@qu.edu.qa

## Participant Characteristics

Let us start with some basic information about you. All information will be grouped together and no individual information will be released. Would you please answer the following questions to help us better interpret the survey responses.

1. Gender:

- Male  
 Female

2. What is your age group?

- 18-24  
 25-33  
 34-44  
 45-54  
 54-65  
 66 and older

3. What best describes your academic discipline?

- Clinical pharmacy  
 Pharmaceutical science  
 Other

If Other, Please describe your academic discipline below

4. What is your primary academic role?

- Teaching Assistant  
 Lecturer  
 Assistant Professor  
 Associate Professor  
 Full Professor  
 Other

If Other, Please describe your role below

5. How many years have you been working in higher education/ academic sector?

- <1  
 1 - 5  
 6 - 10  
 11 - 15  
 >15

6. How many years have you been working in the College of pharmacy at Qatar University?

- <1  
 1 - 5  
 6 - 10  
 11 - 15  
 > 15



7. If you are or were a licensed pharmacist, how many years have you practised?

- < 1
- 1 - 5
- 6 - 10
- 11 - 15
- >15
- Have never been a practising pharmacist
- I am not a pharmacist

### **Interprofessional Education:**

**Now we are interested in your opinions and experiences of interprofessional education. Would you please answer the following questions?**

8. Which statement do you feel best describes interprofessional education (IPE)?

Please select one answer

- Interprofessional education is when different professions come together and one profession describes itself to others
- Interprofessional education is when two or more professions come together to learn with from and about each other
- Interprofessional education is when different professions come together to learn about a common topic
- Not sure

9. How important is interprofessional education in your opinion?

- Not at all important
- Low importance
- Neutral
- Moderately important
- Very important

10. How many years of experience do you have with interprofessional education?

- None
- < 1
- 1 -5
- 6 -10
- 11 -15
- > 15

11. How many years of experience do you have with interprofessional healthcare teams?

- None
- < 1
- 1 - 5
- 6 -10
- 11 - 15
- > 15

12. How important in your opinion is interprofessional education for your students as part of their education?

- Not at all important
- Low Importance
- Neutral
- Moderately Important
- Very Important

13. How would you describe your ability to deliver interprofessional education?

- No ability
- Some ability
- Moderate ability
- Able
- Very able

14. From the list of topics below grade their importance to interprofessional education:

	<i>Not Important/1</i>	<i>Low Importance /2</i>	<i>Neutral/3</i>	<i>Moderately Important/4</i>	<i>Very Important/5</i>
Communication skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional Team Roles, Responsibilities, and Professionalism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Values, Beliefs and Ethics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality Assurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient Safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medication safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public Health (including nutrition, health promotion and disease prevention)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contemporary Health Care Systems (including the economics of health and medicine)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural Awareness and International Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emergency Preparedness (including natural disasters, cardiopulmonary resuscitation (CPR))	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evidence-based Medicine (including clinical research methods, biostatistics, literature evaluation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elements and Dynamics of Patient Management (including electronic/informatics)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adherence and Persistence (including behavioral modification and medication therapy)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Special Patient Populations (e.g., patients with disabilities, underserved populations, palliative care, rural populations, patients with HIV/AIDS, and mental illness)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. From the list below grade the importance of interprofessional education on the following

	<i>Not Important/1</i>	<i>Low Importance /2</i>	<i>Neutral/3</i>	<i>Moderately Important/4</i>	<i>Very Important/5</i>
Improves the quality of care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Focuses on the needs of service users and carers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Involves service users and carers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Encourages professions to learn with, from and about each other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Respects the integrity and contribution of each profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhances practice within professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increases professional satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. Does your pharmacy program offer optional/ required educational sessions that bring together students from different health professions programs (for example, medicine, nursing, allied health)?

- Yes
- No

If Yes, please explain your answer

17. How likely are you to engage in, or to continue to engage in, interprofessional education within the next three years?

- Not at all likely
- Unlikely
- Not sure
- Likely
- Very likely

18. How would you envisage interprofessional education within your pharmacy program for the next five years?

Please select ALL that apply

- Not taught
- More of the same
- Increased amount of interprofessional education
- New and innovative curriculum design for interprofessional education ( e.g. Simulation education)
- An interprofessional education lead for the course
- Have regular interprofessional education events
- interprofessional education concepts implemented in clinical rotations

**19. What are the learning outcomes you would like students to possess having experienced interprofessional education within their pharmacy program?**

Please select ALL that apply

- Able to describe one's roles and responsibilities clearly to other professions*
- Able to recognize and observe the constraints of one's role, responsibilities and competence, yet perceive needs in a wider framework*
- Able to recognize and respect the roles, responsibilities and competence of other professions in relation to one's own*
- Able to work with other professions to effect change and resolve conflict in the provision of care and treatment.*
- Able to work with others to assess, plan, provide and review care for individual patients*
- Able to tolerate differences, misunderstandings and shortcomings in other professions*
- Able to facilitate interprofessional case conferences, team meetings, etc*
- Able to enter into interdependent relations with other professions*
- Other*

If other, please describe

**20. What are the educator attributes, do you feel, an instructor implementing interprofessional education within their course should possess?**

Please select ALL that apply

- Group facilitation experience*
- Team teaching experience*
- Pragmatic expectations of interprofessional learning*
- Skilled in helping groups through conflict*
- Expertise in the competencies needed for practice in the setting*
- Capable of helping learners connect theory to practice*
- Practiced in helping student overcome miscommunication that may arise from different professions' perspectives*
- At ease with the technology and learning methods being used (e.g. problem based learning, active learning)*
- Accomplished in developing targeted assessments and providing specific and sensitive feedback*
- Engages in critical reflection on interprofessional teaching and implements changes in the process*
- Other*

If other, please describe

21. **What barriers have you encountered or do you feel you may encounter while trying to implement interprofessional education?**

Please select ALL that apply

- Limited resources*
- Communication issues*
- Lack of conceptual support*
- Cultural challenges for each profession*
- Scheduling common courses and activities*
- Insufficient classroom space*
- Time and resources needed*
- Subsequent course and content ownership*
- Unique pedagogical approaches among each profession*
- Lack of consistency with which students are prepared to enter professional degree programs*
- Corresponding baseline knowledge and abilities*
- Lack of infrastructure to reward faculty members for engaging in interprofessional education approaches*
- Faculty development*
- Geographic separation of the different health care profession*
- Insufficient interdisciplinary faculty*
- Leadership and administrative support*
- Logistics*
- Student resistance to interprofessional education*
- Faculty resistance to interprofessional education*
- Time commitment*
- Other*

Please specify

**22. In what form would you like to see interprofessional education embedded in your pharmacy program?**

Please select ALL that apply

- Part of certain courses in the curriculum
- Workshops
- Online learning module
- Online simulation
- Online case study
- Classroom simulations
- Interprofessional education placement
- Interprofessional education events
- Elective course
- Extracurricular activities
- Others

Please specify

**23. What health care professions would you like your students to have an interprofessional education experience with?**

Please select ALL that apply

- Medicine
- Dentistry
- Nursing
- Health Sciences
- Other

Please specify

**24. Do you think it's important to assess the students for their interprofessional education activity?**

Yes

No

Please choose the response that best reflects your extent of agreement in the following statements

25. Attitudes toward Interprofessional Health Care Teams

	<i>Strongly Disagree/1</i>	<i>Disagree/2</i>	<i>Undecided /3</i>	<i>Agree/4</i>	<i>Strongly Agree/5</i>
Patients receiving interprofessional care are more likely than others to be treated as whole persons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing an interprofessional patient care plan is excessively time-consuming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning should be a goal of this college	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The interprofessional approach makes the delivery of care more efficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing a patient care plan with other team members avoids errors in delivering care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working in an interprofessional manner unnecessarily complicates things most of the time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working in an interprofessional environment keeps most professionals enthusiastic and interested in their jobs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The interprofessional approach improves the quality of care to patients/clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In most instances, the time required for interprofessional consultations could be better spent in other ways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The interprofessional approach permits health professionals to meet the needs of family caregivers as well as patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having to report observations to a team helps team members better understand the work of other health professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hospital patients who receive interprofessional team care are better prepared for discharge than other patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Team meetings foster communication among members from different professions or disciplines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25. Attitudes towards interprofessional education

	<i>Strongly Disagree/1</i>	<i>Disagree/2</i>	<i>Undecided /3</i>	<i>Agree/4</i>	<i>Strongly Agree/5</i>
Interprofessional learning will help students think positively about other health care professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clinical problem solving can only be learned effectively when students are taught within their individual department/school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning before qualification will help health professional students to become better team-workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients would ultimately benefit if health care students worked together to solve patient problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students in my professional group would benefit from working on small-group projects with other health care workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communications skills should be learned with integrated classes of health care students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning will help to clarify the nature of patient problems for students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is not necessary for undergraduate health care students to learn together	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning with students in other health professional schools helps undergraduates to become more effective members of a health care team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning among health care students will increase their ability to understand clinical problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning will help students to understand their own professional limitations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For small-group learning to work, students need to trust and respect each other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning among health professional students will help them to communicate better with patients and other professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Team-working skills are essential for all health care students to learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning between health care students before qualification would improve working relationships after qualification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



25. **Attitudes towards interprofessional learning in the academic setting**

	<i>Strongly Disagree/1</i>	<i>Disagree/2</i>	<i>Undecided /3</i>	<i>Agree/4</i>	<i>Strongly Agree/5</i>
Interprofessional learning better utilizes resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important for academic health center campuses to provide interprofessional learning opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning should be a goal of this campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students like courses taught by faculty from other academic departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students like courses that include students from other academic departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty should be encouraged to participate in interprofessional courses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty like teaching to students in other academic departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty like teaching with faculty from other academic departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional efforts weaken course content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional efforts require support from campus administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional courses are logistically difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty should be rewarded for participation in interprofessional courses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accreditation requirements limit interprofessional efforts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. **What are the POSITIVE factors that have influenced/would influence you to become involved in interprofessional education?**

27. **What are the NEGATIVE factors that have prevented/would prevent you from becoming involved in interprofessional education?**

28. **Do you have any additional comments about interprofessional education?**

29. Are you willing to participate in a subsequent focus group to explore interprofessional education and collaborative practice further?

- Yes
- No

*If said YES to Q29, please provide your name and contact information in the box below.*

**Question 25** has been validated in its original form. Adapted with permission from the RIPLS for students as created by: Curran, V. R., Sharpe, D. & Forristall, J. (2007). Attitudes of health sciences faculty members towards interprofessional teamwork and education. *Medical Education*, 41(9), 892-896.

**Thank you very much for you contribution in this survey.**



## Interprofessional Education Survey in Pharmacy schools in Arabic-speaking Middle Eastern Countries

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Name of Researchers: Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Welcome to the Interprofessional Education Survey for Pharmacy Schools in Arabic-speaking Middle Eastern Countries. The survey is part of a larger collaborative PhD project being conducted by Qatar University and Robert Gordon University entitled Pharmacy's Perspectives of Interprofessional Education and Collaborative Practice: An Investigative Study in Qatar & the Middle East. The results of this survey will be used to assist in the design of future activities aimed at exploring the views, attitudes and perceptions of the discipline. As a pharmacy academic, your opinions are important to us. Would you please take the 15-20 minutes required to complete all questions on the survey. Please return the completed survey on or before 1 November, 2014.

Please click [here](#), to read further information about this study. Your informed consent is implied when you proceed with the survey and submit your completed responses.

As a thank you for completing this survey you have the chance to be entered into a prize draw for an UpToDate guidelines software: evidence-based clinical decision support resource. To enter the prize draw, entrants must complete the survey and provide their name and contact information at the end of the survey at the end.

Thank you very much for your participation, it is greatly appreciated. If you have any questions, please feel free to contact me at the telephone number or email listed below.

Best regards,

Alla El-Awaisi, MPharm, MRPharmS, MSc  
PhD candidate, School of Pharmacy and Life Sciences, Robert Gordon University, Aberdeen,  
UK  
Clinical Lecturer  
College of Pharmacy, Qatar University  
Doha, Qatar  
Tel: + 974 4403 5599  
Fax: +974 4403 5551  
Email: elawaisi@qu.edu.qa

## Participant Characteristics

Let us start with some basic information about you. All information will be grouped together and no individual information will be released. Would you please answer the following questions to help us better interpret the survey responses.

1. **Gender:**  *Male*  *Female*
  
2. **What is your age group?**
  - 18-24*
  - 25-33*
  - 34-44*
  - 45-54*
  - 54-65*
  - 66 or older*
  
3. **What is the Name of your University and in what country?**
  
4. **What Pharmacy degrees do you offer in both the undergraduate and postgraduate level at your university?**
  
5. **What other health care professional programs is offered in your university?**  
Please select all that apply:
  - Medicine*
  - Dentistry*
  - Nursing*
  - Health Sciences*
  - Pharmacy Technician*
  - Other**Other, Please specify*
  
6. **What best describes your academic discipline?**
  - Clinical pharmacy*
  - Pharmaceutical science*
  - Other**Other, Please describe your academic discipline*

7. How many years have you been working in higher education/ academic sector?

- < 1
- 1 - 5
- 6 - 10
- 11 - 15
- > 15

8. What is your primary academic role?

- Lecturer
- Assistant Professor
- Associate Professor
- Full Professor
- Other

Other, please describe your role

9. If you have current administration responsibilities, please specify what it is?

- Head of Department/Chair
- Assistant Dean
- Associate Dean
- Dean
- No administration responsibilities
- Other

Other, please describe your role

### Interprofessional Education:

Now we are interested in your opinions and experiences of interprofessional education.

Please answer the following questions:

10. Have you heard of the term interprofessional education (IPE)?

- Yes
- No

11. Which statement do you feel best describes interprofessional education?

Please select one answer

- Interprofessional education is when different professions come together to learn about a common topic
- Interprofessional education is when different professions come together and one profession describes itself to others
- Interprofessional education is when two or more professions come together to learn with from and about each other
- Not sure

12. Does your pharmacy school/ college offer optional or required education sessions that bring together students from different health professions programs (for example, medicine, nursing, allied health)?

- Yes  
 No

If yes, please explain your answer

13. How important is interprofessional education in your opinion?

- Not at all important  
 Low importance  
 Neutral  
 Moderately important  
 Very Important

14. How many years of experience does your pharmacy school have with interprofessional education?

- None  
 < 1  
 1 - 5  
 6 - 10  
 11 - 15  
 > 15

15. How important in your opinion is interprofessional education for your students as part of their education?

- Not at all important  
 Low importance  
 Neutral  
 Moderately important  
 Very important

16. How would you describe your school's ability to deliver interprofessional education?

- No ability  
 Some ability  
 Moderate ability  
 Able  
 Very able

17. From the list of topics below grade their importance for Interprofessional Education:

	<i>Not at all important/1</i>	<i>Low Importance /2</i>	<i>Neutral/3</i>	<i>Moderately important/4</i>	<i>Very Important/5</i>
Communication skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional Team Roles, Responsibilities, and Professionalism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Values, Beliefs and Ethics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality Assurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient Safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medication safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prescribing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public Health (including nutrition, health promotion and disease prevention)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emergency Preparedness (including natural disasters, cardiopulmonary resuscitation (CPR))	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evidence-based Medicine (including clinical research methods, biostatistics, literature evaluation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contemporary Health Care Systems (including the economics of health and medicine)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural Awareness and International Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elements and Dynamics of Patient Management (including electronic/informatics)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adherence and Persistence (including behavioral modification and medication therapy)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Special Patient Populations (e.g., patients with disabilities, underserved populations, palliative care, rural populations, patients with HIV/AIDS, and mental illness)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. From the list below grade the importance of Interprofessional Education on the following:

	<i>Not at all important/1</i>	<i>Low importance /2</i>	<i>Neutral/3</i>	<i>Moderately important/4</i>	<i>Very important/5</i>
Improves the quality of care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Focuses on the needs of service users and carers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Involves service users and carers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Encourages professions to learn with, from and about each other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Respects the integrity and contribution of each profession	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhances practice within professions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increases professional satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. In your opinion, does your pharmacy program provide students with an adequate proportion of interprofessional education?

- Yes*
- No*
- Maybe*

Please explain your answer

20. How likely are you to engage in, or to continue to engage in, interprofessional education within the next three years

- Not at all likely*
- Unlikely*
- Not Sure*
- Likely*
- Very likely*



**21. How would you envisage interprofessional education within your pharmacy program for the next five years?**

Please select ALL that apply

- Not taught*
- More of the same*
- Increased amount of interprofessional education*
- New and innovative curriculum design for interprofessional education (e.g. Simulation education)*
- An interprofessional education lead for the course*
- Have regular interprofessional education events*
- Interprofessional education concepts Implemented in clinical rotations*

**22. What are the learning outcomes you would like students to possess having experienced interprofessional education within their pharmacy program?**

Please select ALL that apply

- Able to describe one's roles and responsibilities clearly to other professions*
- Able to recognize and observe the constraints of one's role, responsibilities and competence, yet perceive needs in a wider framework*
- Able to recognize and respect the roles, responsibilities and competence of other professions in relation to one's own*
- Able to work with other professions to effect change and resolve conflict in the provision of care and treatment.*
- Able to work with others to assess, plan, provide and review care for individual patients*
- Able to tolerate differences, misunderstandings and shortcomings in other professions*
- Able to facilitate interprofessional case conferences, team meetings, etc*
- Able to enter into interdependent relations with other professions*
- 

*Other*

Please describe

**23. What are the educator attributes, do you feel, an instructor implementing interprofessional education within their course should possess?**

Please select ALL that apply

- Group facilitation experience*
- Team teaching experience*
- Pragmatic expectations of interprofessional learning*
- Skilled in helping groups through conflict*
- Expertise in the competencies needed for practice in the setting*
- Capable of helping learners connect theory to practice*
- Practiced in helping student overcome miscommunication that may arise from different professions' perspectives*
- At ease with the technology and learning methods being used (e.g. problem based learning, active learning)*
- Accomplished in developing targeted assessments and providing specific and sensitive feedback*
- Engages in critical reflection on interprofessional teaching and implements changes in the process*
- Other*

Please describe

**24. What barriers have you encountered or do you feel you may encounter while trying to implement interprofessional education?**

Please select ALL that apply

- Limited resources*
- Communication issues*
- Lack of conceptual support*
- Cultural challenges for each profession*
- Scheduling common courses and activities*
- Insufficient classroom space*
- Time and resources needed*
- Subsequent course and content ownership*
- Unique pedagogical approaches among each profession*
- Lack of consistency with which students are prepared to enter professional degree programs*
- Corresponding baseline knowledge and abilities*
- Lack of infrastructure to reward faculty members for engaging in interprofessional education approaches*
- Faculty development*
- Geographic separation of the different health care profession*
- Insufficient interdisciplinary faculty*
- Leadership and administrative support*
- Logistics*
- Student resistance to interprofessional education*
- Faculty resistance to interprofessional education*
- Time commitment*
- Other*

Please specify

**25. In your institution, is interprofessional education part of your educational program?**

Yes

No

**26. In what form is interprofessional education embedded in your curriculum?**

Please select ALL that apply

- Not embedded at the moment*
- Part of certain courses in the curriculum*
- Workshops*
- Online learning module*
- Online simulation*
- Online case study*
- Classroom simulations*
- Interprofessional education placement*
- Interprofessional education events*
- Elective course*
- Extracurricular activities*
- Other*

Please specify

**27. What health care profession/s would you like your students to have an interprofessional education experience with?**

Please select all that apply

- Medicine*
- Dentistry*
- Nursing*
- Health Sciences*
- Other*

Please specify

**28. Do you think it's important to assess the students for their interprofessional education activity?**

*Yes*

*No*

**Please choose the response that best reflect your beliefs in the following statements**

**29. Attitudes toward Interprofessional Health Care Teams**

	<i>Strongly Disagree/1</i>	<i>Disagree/2</i>	<i>Undecided /3</i>	<i>Agree/4</i>	<i>Strongly Agree/5</i>
Patients receiving interprofessional care are more likely than others to be treated as whole persons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing an interprofessional patient care plan is excessively time-consuming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning should be a goal of this college	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The interprofessional approach makes the delivery of care more efficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing a patient care plan with other team members avoids errors in delivering care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working in an interprofessional manner unnecessarily complicates things most of the time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working in an interprofessional environment keeps most professionals enthusiastic and interested in their jobs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The interprofessional approach improves the quality of care to patients/clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In most instances, the time required for interprofessional consultations could be better spent in other ways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The interprofessional approach permits health professionals to meet the needs of family caregivers as well as patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having to report observations to a team helps team members better understand the work of other health professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hospital patients who receive interprofessional team care are better prepared for discharge than other patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Team meetings foster communication among members from different professions or disciplines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

29. Attitudes towards interprofessional education

	<i>Strongly Disagree/1</i>	<i>Disagree/2</i>	<i>Undecided /3</i>	<i>Agree/4</i>	<i>Strongly Agree/5</i>
Interprofessional learning will help students think positively about other health care professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clinical problem solving can only be learned effectively when students are taught within their individual department/school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning before qualification will help health professional students to become better team-workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients would ultimately benefit if health care students worked together to solve patient problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students in my professional group would benefit from working on small-group projects with other health care workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communications skills should be learned with integrated classes of health care students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning will help to clarify the nature of patient problems for students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is not necessary for undergraduate health care students to learn together	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning with students in other health professional schools helps undergraduates to become more effective members of a health care team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning among health care students will increase their ability to understand clinical problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning will help students to understand their own professional limitations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For small-group learning to work, students need to trust and respect each other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning among health professional students will help them to communicate better with patients and other professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Team-working skills are essential for all health care students to learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning between health care students before qualification would improve working relationships after qualification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**29. Attitudes towards interprofessional learning in the academic setting**

	<i>Strongly Disagree/1</i>	<i>Disagree/2</i>	<i>Undecided /3</i>	<i>Agree/4</i>	<i>Strongly Agree/5</i>
Interprofessional learning better utilizes resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important for academic health center campuses to provide interprofessional learning opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional learning should be a goal of this campus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students like courses taught by faculty from other academic departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students like courses that include students from other academic departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty should be encouraged to participate in interprofessional courses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty like teaching to students in other academic departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty like teaching with faculty from other academic departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional efforts weaken course content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional efforts require support from campus administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interprofessional courses are logistically difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty should be rewarded for participation in interprofessional courses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accreditation requirements limit interprofessional efforts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

30. What are the POSITIVE factors that have influenced/would influence you to become involved in interprofessional education?

31. What are the NEGATIVE factors that have prevented/would prevent you from becoming involved in interprofessional education?

32. Do you have any additional comments about interprofessional education?

**Question 29** has been validated in its original form. Adapted with permission from the RIPLS for students as created by: Curran, V. R., Sharpe, D. & Forristall, J. (2007). Attitudes of health sciences faculty members towards interprofessional teamwork and education. Medical Education, 41(9), 892-896.

33. Are you willing for us to contact you to explore interprofessional education and collaborative practice further?

- Yes
- No

*If YES, please provide your name and contact information in the box below*

*If you would like your name to be entered into the drawing for UpToDate guidelines software: evidence-based clinical decision support resource then please provide your name and contact information at the end of the survey.(i.e Name:, Email Address:, Phone Number:)*

**Thank you for taking part in this survey.**





## Readiness for Interprofessional Learning Scale (RIPLS) Survey for Pharmacy Students

Name of Researchers: Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Welcome to the Readiness for Interprofessional Learning Scale (RIPLS) Survey. The purpose of this survey is to examine pharmacy students' attitudes towards interprofessional education. The survey is part of a larger collaborative PhD project being conducted by Qatar University and Robert Gordon University entitled Pharmacy's Perspectives of Interprofessional Education and Collaborative Practice: An Investigative Study in Qatar & the Middle East. The results of this survey will be used to assist in the design of future activities aimed at exploring the views, attitudes and perceptions of the discipline. As a pharmacy student, your opinions are important to us. Would you please take the 15 minutes required to complete all questions on the survey. Please return the completed survey on or before 10 October, 2013. Please click [here](#), to read further information about this study. Your informed consent is implied when you proceed with the survey and submit your completed responses.

As a thank you for completing this survey you have the chance to be entered into a prize draw for *Drug Information Handbook*. To enter the prize draw, entrants must complete the survey and provide their name and contact information at the end of the survey at the end.

Thank you very much for your participation, it is greatly appreciated. If you have any questions, please feel free to contact me at the telephone number or email listed below.

Best regards,

Alla El-Awaisi, MPharm, MRPharmS, MSc  
PhD candidate, School of Pharmacy and Life Sciences, Robert Gordon University, Aberdeen, UK  
Clinical Lecturer  
College of Pharmacy, Qatar University  
Doha, Qatar  
Tel: + 974 4403 5599  
Fax: +974 4403 5551  
Email: [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa)

## Participant Characteristics

Let us start with some basic information about you. All information will be grouped together and no individual information will be released. Would you please answer the following questions to help us better interpret the survey responses.

1. **Gender:**

- Male  
 Female

2. **What is your age group?:**

- < 20  
 20 - 24  
 25 - 29  
 30 - 40  
 > 40

3. **Year of Study:**

- Year 1 Pharmacy  
 Year 2 Pharmacy  
 Year 3 Pharmacy  
 Year 4 Pharmacy  
 Full Time PharmD  
 Part Time PharmD (year 1)  
 Part Time PharmD (year 2)  
 Part Time PharmD (year 3)  
 MSc Pharmaceutical science (year 1)  
 MSc Pharmaceutical science (year 2)  
 Other

If other, please specify

4. **Nationality:**

- Qatar
- Egyptian
- Sudanese
- Palestinian
- Jordanian
- Syrian
- Iranian
- Other

If other, please specify

5. **What is your current marital status?**

- Single
- Married
- Separated
- Divorced
- Widowed

**Interprofessional Education:**

Now we are interested in in your opinions of interprofessional education. To help you with your responses to the following questions a definition of shared learning and interprofessional education is provided below.

**Shared Learning** refers to healthcare professional students learning together in a variety of situations with the objective of cultivating collaborative practice.

**Interprofessional Education** is defined as two or more professional groups learning with, from and about each other at the same learning events, with a view to improving collaboration and the quality of care.

Please answer the following questions:

6. **Have you completed the Readiness for Interprofessional Learning Scale (RIPLS) before?**

- Yes                       No

7. **Have you had previous experience of interprofessional education?**

- Yes                       No

8. **If you answered yes to the previous question please give a very brief statement of what this interprofessional education activity was and any impact it may have had.**

9. For each of the following statements, please indicate your views for each statement

	<i>Strongly disagree</i> /1	<i>Disagree</i> /2	<i>Undecided</i> /3	<i>Agree</i> /4	<i>Strongly agree</i> /5
1. Learning with other students will help me become a more effective member of a health care team	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Shared learning will help me to understand my own limitations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Shared learning with other health care students will increase my ability to understand clinical problems	<input type="radio"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Learning with health care students before qualification would improve relationships after qualification	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Communication skills should be learned with other health care students	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Shared learning will help me to think positively about other professionals	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Shared learning with other health care students will help me to communicate better with patients and other professionals	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I would welcome the opportunity to work on small- group projects with other health care students	<input type="radio"/> <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Shared learning will help to clarify the nature of patient problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> <input type="checkbox"/>
10. Shared learning before qualification will help me become a better team worker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I don't want to waste my time learning with other health care students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. It is not beneficial for undergraduate health care students to learn together	<input type="radio"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> <input type="checkbox"/>

13. Clinical problem-solving skills should only be learned with students from my own discipline
14. The function of nurses and therapists is mainly to provide support for doctors
15. There is little overlap between my future role and that of other healthcare professionals
16. I like to understand the patient's side of the problem
17. Establishing trust with my patients is important to me
18. I try to communicate compassion to my patients
19. Thinking about the patient as a person is important in getting treatment right
20. In my profession you need skills in interacting and cooperating with patients



**10. In what form would you like to see interprofessional education embedded in your pharmacy program?**

Please select all that apply:

- Part of certain courses in the curriculum*
- Workshops*
- Online learning module*
- Online simulation*
- Online case study*
- Classroom simulations*
- Interprofessional education placement*
- Interprofessional education events*
- Elective course*
- Extracurricular activities*
- Others*

*If other, please specify*

**11. What health care professions would you like to have an interprofessional education experience with?**

Please select all that apply:

- Medicine*
- Dentistry*
- Nursing*
- Health sciences*
- Other*

*If other, please specify*

**12. Do you think it's important to be assessed for your interprofessional education activity?**

- Yes*
- No*

**13. What type of learning activities would you be interested in participating with other healthcare students?**

14. Do you have any additional comments about interprofessional education?

15. Are you willing to participate in a subsequent focus group to explore interprofessional education and collaborative practice further?

Yes

No

*If YES, please provide your name and contact information in the box below.*

Prize draw:

*If you would like your name to be entered into the drawing for Drug Information Handbook please provide your name and contact information at the end of the survey.(i.e Name:, Email Address:, Phone Number:)*

**REFERENCES**

EL-ZUBEIR, M., RIZK, D.E.E. and AL-KHALIL, R., 2006. Are senior UAE medical and nursing students ready for interprofessional learning? Validating the RIPL scale in a Middle Eastern context. Journal Of Interprofessional Care, 20(6), pp. 619-632.

PARSEL, G., and BLIGH, J. (1999). "The development of a questionnaire to assess the readiness for health care students for interprofessional learning (RIPLS)." Medical Education, 33, 95 - 100.

**Thank you for taking part in this survey.**



## Interprofessional Education Survey for Practising Pharmacists

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**Name of Researchers:** Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Welcome to the Interprofessional Education Survey for Practising Pharmacists. The purpose of this survey is to examine practising pharmacists' attitudes towards interprofessional education. The survey is part of a larger collaborative PhD project being conducted by Qatar University and Robert Gordon University entitled Pharmacy's Perspectives of Interprofessional Education and Collaborative Practice: An Investigative Study in Qatar & the Middle East. The results of this survey will be used to assist in the design of future activities aimed at exploring the views, attitudes and perceptions of the discipline. As a practising pharmacist in Qatar, your opinions are important to us. Would you please take the 20-25 minutes required to complete all questions on the survey. Please return the completed survey on or before 1 November, 2013.

Please click [here](#), to read further information about this study. Your informed consent is implied when you proceed with the survey and submit your completed responses.

As a thank you for completing this survey you have the chance to be entered into a prize draw for a mini iPad. To enter the prize draw, entrants must complete the survey and provide their name and contact information at the end.

Thank you very much for your participation, it is greatly appreciated. If you have any questions, please feel free to contact me at the telephone number or email listed below.

Best regards,

Alla El-Awaisi, MPharm, MRPharmS, MSc  
PhD candidate, School of Pharmacy and Life Sciences, Robert Gordon University, Aberdeen,  
UK  
Clinical Lecturer  
College of Pharmacy, Qatar University  
Doha, Qatar  
Tel: + 974 4403 5599  
Fax: +974 4403 5551  
Email: elawaisi@qu.edu.qa



## Participant Characteristics

Let us start with some basic information about you. All information will be grouped together and no individual information will be released. Would you please answer the following questions to help us better interpret the survey responses.

**1. Gender:**

- Male*
- Female*

**2. What is your age group?**

- 18-24*
- 25-33*
- 34-44*
- 45-54*
- 54-65*
- 66 and older*

**3. What is your place of work (choose one from the list)?**

- Chain community pharmacy*
- Independent community pharmacy*
- Public primary health care center*
- Private primary health care center*
- Public hospital pharmacy*
- Private hospital pharmacy*
- Other*

*If Other, please describe*

**4. For how many years have you practised as a pharmacist?**

- < 1*
- 1 - 5*
- 6 - 10*
- 11 - 15*
- 16 - 20*
- > 20*
- Have never been a practising pharmacist*

**5. How many years have you been practising pharmacy in Qatar?**

- < 1
- 1-5
- 6-10
- 11-15
- 16-20
- > 20
- Have never practised pharmacy in Qatar*

**6. What is your country of origin?**

- Qatar*
- Egypt*
- India*
- Jordan*
- Palestine*
- Philippines*
- Sudan*
- Other*

*If Other, please specify*

**7. Where did you receive your highest pharmacy degree?**

- Qatar*
- Egypt*
- India*
- Jordan*
- Palestine*
- Philippines*
- Sudan*
- Qatar*
- Other*

*If other, please specify*

8. How many years ago did you graduate with your highest pharmacy degree?

- < 1
- 1 - 5
- 6 -10
- 11 -15
- 16 - 20
- > 20

**Interprofessional Education and Collaborative Practice:**

Now we are interested in your opinions of interprofessional education and collaborative practice. Would you please answer the following questions?

9. How often do you interact (deal) with other health care professionals?

- Never
- Seldom
- Sometimes
- Often
- Almost always

10. How often do you collaborate (work with) with other health care professionals?

- Never
- Seldom
- Sometimes
- Often
- Almost always

11. Please indicate the healthcare professionals you interact with?

You may chose more than one:

- Physician
- Pharmacist
- Nurse
- Physiotherapist
- Other

If Other, please specify

12. Have you heard of the term interprofessional education?  Yes  No

**13. Which statement do you feel best describes interprofessional education?**

Please select one answer and put a tick in the box provided.

*Not sure*

*Interprofessional education is when two or more professions come together to learn with from and about each other*

*Interprofessional education is when different professions come together and one profession describes itself to others*

*Interprofessional education is when different professions come together to learn about a common topic*

**14. Have you had previous experience of interprofessional education?**

*Yes*

*No*

*Not sure*

**15. If you answered Yes to the previous question please give a very brief statement of what this interprofessional education was and any impact it may have had**

**16. Which statement do you feel best describes Interprofessional collaboration?**

Please select one answer and put a tick in the box provided

*Not sure*

*Interprofessional collaboration is when two or more professions come together to learn about a common topic to help them deliver the highest quality of care*

*Interprofessional collaboration is when two or more professions work together with patients, families, carers, and communities to deliver the highest quality of care*

*Other*

*If other, please describe*

Please choose the response that best reflect your beliefs in the following statements

17.

	<i>Not at all/1</i>	<i>A little/2</i>	<i>Somewhat /3</i>	<i>Much/4</i>	<i>Very much/5</i>
How much do other professionals understand the scope of your practice?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much do you understand other professionals' scope of practice?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much do issues of confidentiality limit interprofessional collaboration?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How important is interprofessional collaboration to the effectiveness of your work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much administrative support is there for interprofessional collaboration in your work setting?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much do your students/clients/patients expect you to collaborate with professionals from other disciplines?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much are you satisfied with the process of interprofessional collaboration in your work setting?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18.

	<i>Not applicable /1</i>	<i>Poor/2</i>	<i>Satisfactor y/3</i>	<i>Good/4</i>	<i>Excellent/5</i>
Please rate your personal knowledge of interprofessional collaboration models and research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please rate your personal knowledge of team stages.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please rate your personal knowledge of leadership styles.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please rate your personal skill level for communicating effectively.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please rate your personal skill level for building rapport.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please rate your personal skill level for leadership skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please rate your personal skill level for managing conflict.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**19. Please rate your likelihood of participating in the following:**

	<i>Extremely unlikely/1</i>	<i>Unlikely/2</i>	<i>Neutral/3</i>	<i>Likely/4</i>	<i>Extremely likely/5</i>
Learning more about interprofessional collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training opportunity such as a 1-day workshop on interprofessional collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training opportunity such as a two-day workshop on interprofessional collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training opportunity such as Web-based (online) modules on interprofessional collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training opportunity such as a 3-credit (one semester) university course on interprofessional collaboration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**20. If you are interested in other training opportunities, please identify and explain.**

**21.**

	<i>Not at all/1</i>	<i>A little/2</i>	<i>Somewhat /3</i>	<i>Much/4</i>	<i>Very Much/5</i>
How much would a lack of administrative support prevent you from learning more about interprofessional collaboration?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much would travel limitations prevent you from learning more about interprofessional collaboration?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much would financial limitations prevent you from learning more about interprofessional collaboration?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much would time limitations prevent you from learning more about interprofessional collaboration?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please choose the response that best reflects the extent of your agreement of the following statements

22. Teamwork and Collaboration

	<i>Strongly Disagree/1</i>	<i>Disagree/2</i>	<i>Undecided /3</i>	<i>Agree/4</i>	<i>Strongly Agree/5</i>
1 Learning with other health care professionals will help me be a more effective member of a health care team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2 For small group learning to work, health care professionals need to trust and respect each other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3 Team-working skills are essential for all health care professionals to learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4 Shared learning will help me understand my own limitations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5 Patients ultimately benefit if health care professionals work together to solve patient problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6 Shared learning with other health care professionals will increase my ability to understand clinical problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 Learning with health care students from other disciplines before qualification would improve relationships after qualification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8 Communication skills should be learned with other health care professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9 Shared learning will help me to think positively about other health care professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10 Shared learning with other health care professionals will help me to communicate better with patients and other professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11 I would welcome the opportunity to work on small-group projects with other health care professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12 Shared learning helps to clarify the nature of patient problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13 Shared learning before qualification would help health care professionals become better team workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**22. Sense of Professional Identity**

		<i>Strongly Disagree/1</i>	<i>Disagree/2</i>	<i>Undecided /3</i>	<i>Agree/4</i>	<i>Strongly Agree/5</i>
14	Clinical problem-solving skills should only be learned with professionals from my own discipline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	The function of nurses and therapists is mainly to provide support for doctors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	There is little overlap between my role and that of other health care professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	I would feel uncomfortable if another health care professional knew more about a topic than I did	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	I have to acquire much more knowledge and skills than other health care professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**22. Patient Centeredness**

		<i>Strongly Disagree/1</i>	<i>Disagree/2</i>	<i>Undecided /3</i>	<i>Agree/4</i>	<i>Strongly Agree/5</i>
19	I like to understand the patient's side of the problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20	Establishing trust with my patients is important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21	I try to communicate compassion to my patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22	Thinking about the patient as a person is important in getting treatment right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23	In my profession one needs skills in interacting and co-operating with patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**23. Do you have any additional comments about interprofessional education and collaborative practice?**



24. **Are you willing to participate in in a subsequent focus group to explore points that were raised in the questionnaire?**

*Yes*

*No*

*If YES, please provide your name and contact information in the box below.*

**Prize draw:**

*If you would like your name to be entered into the prize draw for mini iPad please provide your name and contact information at the end of the survey.(i.e Name:, Email Address:, Phone Number:)*

**Reference:**

Reid, R., Bruce, D., Allstaff, K. and McLernon, D., 2006. Validating the Readiness for Interprofessional Learning Scale (RIPLS) in the postgraduate context: are health care professionals ready for IPL? *Medical education*, 40(5), pp. 415-422.

Baerg, K., Lake, D., & Paslawski, T. (2012). Survey of interprofessional collaboration learning needs and training interest in health professionals, teachers, and students: An exploratory study. *Journal of Research in Interprofessional Practice and Education*, 2(2), 187-204.

**Thank you for taking part in this survey.**



## Readiness for Interprofessional Learning Scale (RIPLS) Survey for Pharmacy Students

Name of Researchers: Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Dear Participant,

I would like to invite you to participate in a study to explore your views, attitudes and perceptions towards interprofessional education and collaborative practice in Qatar. The survey is part of a larger collaborative PhD project being conducted by Qatar University and Robert Gordon University entitled Pharmacy's Perspectives of Interprofessional Education and Collaborative Practice: An Investigative Study in Qatar & the Middle East. Before you decide whether or not to take part, please read through this leaflet to understand why the research is being undertaken and what it will involve if you agree to participate. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you like more information

### Background

Interprofessional education is a valuable educational approach for preparing students in different health care disciplines to provide patient care in a collaborative team atmosphere. Despite the availability of evidence that supports interprofessional education in the education of health professions' students and its effectiveness there is minimal published research on the topic especially in the Arab countries. We are keen to investigate pharmacy's perspectives of interprofessional education and collaborative practice by exploring the views, attitudes and perceptions of pharmacy students, pharmacists and pharmacy academics in Qatar to interprofessional education and collaborative practice.

### What is the purpose of the study?

The purpose of this study is to examine the attitudes of pharmacy students, practising pharmacists and pharmacy academics to interprofessional education and is part of the larger interprofessional PhD project in Qatar University looking at pharmacy's perspectives of interprofessional education and collaborative practice: An Investigative Study in Qatar & the Middle East.

### Why have I been chosen?

We are interested in the opinions of pharmacy students, practising pharmacists and pharmacy academics in Qatar. As a member of the profession you have been selected for participation.

### Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect your relationship with the College of Pharmacy.

### What will happen to me if I take part?

If you are willing to take part, then please complete the enclosed survey which should take around 10-15 minutes. Please return the completed survey on or before 10 October, 2013. At the end of the survey you have been given the option of discussing some of the issues raised from this survey with the researcher in a focus group. The focus group will take place at a time convenient to you. You do not have to do this. You can choose to complete the survey and not participate in the focus group.

**What are the possible benefits of taking part?**

There will be no direct benefit for you from participation in this study. However, it is likely that findings from this study will be of relevance to implementing interprofessional education in the State of Qatar.

**Am I guaranteed confidentiality?**

All information which is collected and provided by you during the course of the research will be kept strictly confidential. No findings that could identify you will be reported or published. You will be identified only by a code on the transcripts. All data generated from the study will be stored for 5 years in a locked filing cabinet and/or password-protected computer files that can only be accessed by the researchers. Data will be destroyed 5 years after the completion of the project.

**What will happen to the results of the research study?**

Results of this study will be disseminated at conferences and submitted for publication in a health care journal. You may request a copy of the publication or report by contacting Alla El-Awaisi (PhD research student) on [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa).

**Who is organizing and funding the research?**

The project is being organized by the School of Pharmacy and Life Sciences, The Robert Gordon University, Aberdeen (UK) and the College of Pharmacy, Qatar University, Qatar. Funding was provided by the Office of Academic Research, Qatar University.

**Who has approved this study?**

This study has been approved by The Robert Gordon University and the Qatar University's Institutional Review Boards.

**Who do I contact for further information?**

If you have any questions or wish to obtain further information about this study, you may contact: Alla El-Awaisi (PhD Research Student)  
Email: [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa). Telephone: (00974-4403-5599)

**Thank you for reading this Information Sheet and considering taking part in this study.**

Alla El-Awaisi  
PhD Research Student



## Interprofessional Education Survey for Pharmacy Academics

Name of Researchers: Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Dear Participant,

I would like to invite you to participate in a study to explore your views, attitudes and perceptions towards interprofessional education and collaborative practice in Qatar. The survey is part of a larger collaborative PhD project being conducted by Qatar University and Robert Gordon University entitled Pharmacy's Perspectives of Interprofessional Education and Collaborative Practice: An Investigative Study in Qatar & the Middle East. Before you decide whether or not to take part, please read through to understand why the research is being undertaken and what it will involve if you agree to participate. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you like more information.

### Background

Interprofessional education is a valuable educational approach for preparing students in different health care disciplines to provide patient care in a collaborative team atmosphere. Despite the availability of evidence that supports interprofessional education in the education of health professions' students and its effectiveness there is minimal published research on the topic especially in the Arab countries. We are keen to investigate pharmacy's perspectives of interprofessional education and collaborative practice by exploring the views, attitudes and perceptions of pharmacy students, pharmacists and pharmacy academics in Qatar to interprofessional education and collaborative practice.

### What is the purpose of the study?

The purpose of this study is to examine the attitudes of pharmacy students, practising pharmacists and pharmacy academics to interprofessional education and is part of the larger interprofessional PhD project in Qatar University looking at pharmacy's perspectives of interprofessional education and collaborative practice: An Investigative Study in Qatar & the Middle East.

### Why have I been chosen?

We are interested in the opinions of pharmacy students, practising pharmacists and pharmacy academics in Qatar. As a member of the profession you have been selected for participation.

### Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect your relationship with the College of Pharmacy.

### What will happen to me if I take part?

If you are willing to take part, then please complete the enclosed survey which should take around 15-20 minutes. Please return the completed survey on or before 10 October, 2013. At the end of the survey you have been given the option of discussing some of the issues raised from this survey with the researcher in a focus group. The focus group will take place at a time convenient to you. You do not have to do this. You can choose to complete the survey and not participate in the focus group.

### What are the possible benefits of taking part?

There will be no direct benefit for you from participation in this study. However, it is likely that findings from this study will be of relevance to implementing interprofessional education in the State of Qatar.

**Am I guaranteed confidentiality?**

All information which is collected and provided by you during the course of the research will be kept strictly confidential. No findings that could identify you will be reported or published. You will be identified only by a code on the transcripts. All data generated from the study will be stored for 5 years in a locked filing cabinet and/or password-protected computer files that can only be accessed by the researchers. Data will be destroyed 5 years after the completion of the project.

**What will happen to the results of the research study?**

Results of this study will be disseminated at conferences and submitted for publication in a health care journal. You may request a copy of the publication or report by contacting Alla El-Awaisi (PhD research student) on [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa).

**Who is organizing and funding the research?**

The project is being organized by the School of Pharmacy and Life Sciences, the Robert Gordon University, Aberdeen (UK) and the College of Pharmacy, Qatar University, Qatar. Funding was provided by the Office of Academic Research, Qatar University.

**Who has approved this study?**

This study has been approved by The Robert Gordon University and the Qatar University's Institutional Review Boards.

**Who do I contact for further information?**

If you have any questions or wish to obtain further information about this study, you may contact: Alla El-Awaisi (PhD Research Student)

Email: [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa). Telephone: (00974-4403-5599)

**Thank you for reading this Information Sheet and considering taking part in this study.**

Alla El-Awaisi  
PhD Research Student



## Interprofessional Education Survey for Practising Pharmacists

Name of Researchers: Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Dear Participant,

I would like to invite you to participate in a study to explore your views, attitudes and perceptions towards interprofessional education and collaborative practice in Qatar. The survey is part of a larger collaborative PhD project being conducted by Qatar University and Robert Gordon University entitled Pharmacy's Perspectives of Interprofessional Education and Collaborative Practice: An Investigative Study in Qatar & the Middle East. Before you decide whether or not to take part, please read through this leaflet to understand why the research is being undertaken and what it will involve if you agree to participate. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you like more information.

### Background

Interprofessional education is a valuable educational approach for preparing students in different health care disciplines to provide patient care in a collaborative team atmosphere. Despite the availability of evidence that supports interprofessional education in the education of health professions' students and its effectiveness there is minimal published research on the topic especially in the Arab countries. We are keen to investigate Pharmacy's Perspectives of interprofessional education and interprofessional collaboration by exploring the views, attitudes and perceptions of pharmacy students, pharmacists and pharmacy academics in Qatar to interprofessional education and collaborative practice.

### What is the purpose of the study?

The purpose of this study is to examine the attitude of pharmacy students, practising pharmacists and pharmacy academics to interprofessional education and is part of the larger interprofessional PhD project in Qatar University looking at pharmacy's perspectives of interprofessional education and collaborative practice: an investigative study in Qatar & the Middle East.

### Why have I been chosen?

We are interested in the opinions of pharmacy students, practising and academic pharmacists in Qatar. As a member of the profession you have been selected for participation.

### Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect your relationship with the College of Pharmacy.

### What will happen to me if I take part?

If you are willing to take part, then please complete the enclosed survey which should take around 20-25 minutes. Please return the completed survey on or before 1 November, 2013. At the end of the survey you have been given the option of discussing some of the issues raised from this survey with the researcher in a focus group. The focus group will take place at a time convenient to you. You do not have to do this. You can choose to complete the survey and not participate in the focus group.

### What are the possible benefits of taking part?

There will be no direct benefit for you from participation in this study. However, it is likely that findings from this study will be of relevance to implementing interprofessional education in the State of Qatar.

**Am I guaranteed confidentiality?**

All information which is collected and provided by you during the course of the research will be kept strictly confidential. No findings that could identify you will be reported or published. You will be identified only by a code on the transcripts. All data generated from the study will be stored for 5 years in a locked filing cabinet and/or password-protected computer files that can only be accessed by the researchers. Data will be destroyed 5 years after the completion of the project..

**What will happen to the results of the research study?**

Results of this study will be disseminated at conferences and submitted for publication in a health care journal. You may request a copy of the publication or report by contacting Alla El-Awaisi (PhD research student) on [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa).

**Who is organizing and funding the research?**

The project is being organized by the School of Pharmacy and Life Sciences, The Robert Gordon University, Aberdeen (UK) and the College of Pharmacy, Qatar University, Qatar. Funding was provided by the Office of Academic Research, Qatar University.

**Who has approved this study?**

This study has been approved by The Robert Gordon University and the Qatar University's Institutional Review Boards.

**Who do I contact for further information?**

If you have any questions or wish to obtain further information about this study, you may contact: Alla El-Awaisi (PhD Research Student)

Email: [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa). Telephone: (00974-4403-5599)

**Thank you for reading this Information Sheet and considering taking part in this study.**

Alla El-Awaisi  
PhD Research Student



## Pharmacy's Perspectives of Interprofessional Education and Collaboration: An Investigative Study In Qatar & The Middle East

### Part 1: Questionnaire

Name of Researcher(s): Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Dear Participant,

I would like to invite you to participate in a study to explore your views, attitudes and perceptions towards interprofessional education and interprofessional collaboration in Qatar. The study is being conducted as part of a PhD project in Pharmacy practice at Robert Gordon University in Aberdeen, United Kingdom. Before you decide whether or not to take part, please read through this leaflet to understand why the research is being undertaken and what it will involve if you agree to participate. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

#### Background

Interprofessional education is a valuable educational approach for preparing students in different health care disciplines to provide patient care in a collaborative team atmosphere. Despite the availability of evidence that supports Interprofessional Education in the education of health professions' students and its effectiveness there is minimal published research on the topic especially in the Arab countries. We are keen to investigate Pharmacy's Perspectives of Interprofessional Education and Collaboration by exploring the views, attitudes and perceptions of pharmacy students, pharmacists and faculty in Qatar to interprofessional education and interprofessional collaboration.

#### What is the purpose of the study?

The purpose of this study is to examine the attitude of pharmacy students, practicing pharmacist and pharmacists faculty to interprofessional learning and is part of the larger interprofessional PhD project in Qatar University looking at Pharmacy's Perspectives of Interprofessional Education and Collaboration: An Investigative Study In Qatar & The Middle East.

#### Why have I been chosen?

We are studying all Pharmacy students, practicing pharmacist and academic pharmacists in Qatar and hence you have been selected.



**Do I have to take part?**

It is up to you to decide whether or not to take part. If you do decide to take part the researcher will ensure you have read the information leaflet. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect your relationship with the college of Pharmacy.

**What will happen to me if I take part?**

If you are willing to take part, then please complete the enclosed questionnaire which should take around 10-15 minutes. At the end of the questionnaire you have been given the option of discussing some of the issues with the researcher in a focus group. The focus group will take place at a time convenient to you. You do not have to do this. You can choose to complete the questionnaire and not participate in the focus group. Please return the completed questionnaire on or before 1<sup>st</sup> September, 2013.

**What are the possible benefits of taking part?**

There will be no direct benefit for you from participation in this study. However, it is likely that findings from this study will be of relevance to implementing interprofessional education in the state of Qatar.

**Am I guaranteed confidentiality?**

All information which is collected and provided by you during the course of the research will be kept strictly confidential and no finding that could identify you will be reported or published. You will be identified only by a code on the transcripts. All data generated from the study will be stored for 5 years in locked filing cabinet and/or password-protected computer files that can only be accessed by the researchers. On completion of the study, all your contact details and other records will be destroyed.

**What will happen to the results of the research study?**

Results of this study will be disseminated at conferences and submitted for publication in health care journal. You may request a copy of the publication or report by contacting Alla El-Awaisi (principal investigator) on [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa).

**Who is organizing and funding the research?**

The project is being organized by the School of Pharmacy and Life Sciences, The Robert Gordon University, Aberdeen (UK) and College of Pharmacy, Qatar University, Qatar. Funding was provided by the Office of Academic Research, Qatar University.

**Who has approved this study?**

This study has been approved by The Robert Gordon University, Aberdeen, UK and Qatar University's Institutional Review Board (QU-IRB).

If you have any questions or wish to obtain further information about this study, you may contact: Alla El-Awaisi (PhD Research Student): [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa) (4403-5599)

**Thank you for reading this Information Sheet and considering taking part in this study.**

Alla El-Awaisi  
PhD Research Student



## Pharmacy's Perspectives of Interprofessional Education and Collaborative Practice: An Investigative Study In Qatar & The Middle East

### Part 2: Focus Group

Name of Researcher(s): Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Dear Participant,

In responding to my earlier survey exploring your views, attitudes and perceptions towards interprofessional education and interprofessional collaboration in Qatar, you are invited to participate in a subsequent focus group to explore in details points that were raised in the survey. The focus group phase is a continuation of my PhD project in Pharmacy practice at Robert Gordon University in Aberdeen, United Kingdom. Information in this leaflet is to help you understand why the research is being undertaken and what it will involve if you agree to participate. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

#### Background

Interprofessional education is a valuable educational approach for preparing students in different health care disciplines to provide patient care in a collaborative team atmosphere. Despite the availability of evidence that supports Interprofessional Education in the education of health professions' students and its effectiveness there is minimal published research on the topic especially in the Arab countries. We are keen to investigate Pharmacy's Perspectives of Interprofessional Education and Collaboration by exploring the views, attitudes and perceptions of pharmacy students, pharmacists and faculty in Qatar.

#### What is the purpose of the study?

The focus group stage will explore in depth your views, attitudes and perceptions towards interprofessional education and interprofessional collaboration in Qatar. The focus group guide will have two main sections covering the following general headings:

- Clarifying factors influencing their views, attitudes and perceptions of Interprofessional Education and interprofessional collaboration.
- Future development of Interprofessional Education and collaborative practice in Qatar and the Middle East.

**Why have I been chosen?**

The research covers all Pharmacy students, practicing pharmacist and academic pharmacists in Qatar. However, you have been chosen for this focus group phase based on your response to my earlier survey and your willingness to help in exploring in details, issues raised in the survey.

**Do I have to take part?**

Participation in the focus group is voluntary and your decision to participate will not influence your relationship with the College of Pharmacy at Qatar University or any of the research team.

**What will happen to me if I take part?**

You will then be contacted to schedule a focus group meeting time. The focus group will be digitally audio recorded if you agree and then transcribed for analysis.

**What are the possible benefits of taking part?**

There will be no direct benefit for you from participation in this study. However, it is likely that findings from this study will be of relevance to implementing interprofessional education in the state of Qatar.

**Am I guaranteed confidentiality?**

All information which is collected and provided by you during the course of the research will be kept strictly confidential and no finding that could identify you will be reported or published. You will be identified only by a code on the transcripts. All data generated from the study will be stored for 3 years in locked filing cabinet and/or password-protected computer files that can only be accessed by the researchers. Data will be destroyed 3 years after the end of the project.

**What will happen to the results of the research study?**

Results of this study will be disseminated at conferences and submitted for publication in appropriate health care journal. You may request a copy of the publication or report by contacting Alla El-Awaisi (PhD research student) on [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa).

**Who is organizing and funding the research?**

The project is being organized by the School of Pharmacy and Life Sciences, The Robert Gordon University, Aberdeen (UK) and College of Pharmacy, Qatar University, Qatar. Funding was provided by the Office of Academic Research, Qatar University.

**Who has approved this study?**

This study has been approved by The Robert Gordon University, Aberdeen, UK and Qatar University's Institutional Review Board (QU-IRB).

If you have any questions or wish to obtain further information about this study, you may contact: Alla El-Awaisi (PhD Research Student): [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa) (4403-5599)

**Thank you for reading this Information Sheet and considering taking part in this study.**

Alla El-Awaisi (PhD Research Student)

## IPE Focus Moderator Guide

Name of Researcher(s): Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

**Introduction:** Hello and Welcome to this group discussion. My name is **Alla El-Awaisi** and I am here working as the facilitator/moderator. I will ask questions, keep track of time to get through all the issues we want to cover. Also I will try to be sure everyone is heard and time distributed somewhat evenly.

Dr Lesley Diack and Dr Maguy El-Hajj will be observing this focus group and will be asking questions toward the end of the focus group. Today date is 23/02/14 and we are in room E105 at the College of Pharmacy in Qatar University. Thank you so much in responding to my earlier survey exploring your views, attitudes and perceptions towards interprofessional education and interprofessional collaboration in Qatar, the aim of this focus group is to explore in details points that were raised in the survey. The focus group phase is a continuation of my PhD project in Pharmacy practice at Robert Gordon University in Aberdeen, United Kingdom. My role is to help get a conversation going and to make sure we cover a number of important topics that they would like your input on.

### Introductions

**Purpose:** First of all, I would like to thank you all for taking time out of your day to come here and discuss your ideas. The overall goal is to hear your thoughts and views about **interprofessional education and collaborative practice**.

We are asking you because you are:

- You are the experts and we are here to learn from you
- This is strictly voluntary
- I will be taking some notes later on. **[if applicable: but we would also like to audio tape/ video tape what you say so that we don't miss anything important and so that we can go back and revisit the information if we need to].**

### Housekeeping:

- The total length of time of the focus group meeting is expected to be about **two hours although we don't expect it to take that long**.

As far as the focus groups are concerned, there are a few "ground rules"

- There are no right or wrong answers, not seeking group consensus.
- Interested in your opinions -- and getting varied, different ideas. Please speak up whether you agree or disagree.
- We ask you to be respectful of one another -- disagree with ideas, but respectfully.
- I might move you along in conversation. Since we have limited time, I'll ask that questions or comments off the topic be answered after the focus group session.
- I'd like to hear everyone speak so I might ask people who have not spoken up to comment.

- We'd like to stress that we want to keep the sessions confidential so we ask that you not use names or anything directly identifying when you talk about your personal experiences. We also ask that you not discuss other participants' responses outside of the discussion.
- It is important for us to hear all sides of an issue – both the positive and the negative
- Please talk one at a time and in a clear voice, avoid side conversations. It is distracting to the group and I don't want to miss any of your comments.
- Exchange points of view with each other – you don't need to address all answers to me.
- WE WILL BE TAPE RECORDING THE GROUP. We want to capture everything you have to say. We don't identify anyone by name in our report. You will remain anonymous.
- Please turn off all mobile phones.
- Does anyone have any questions before we begin?

We would like to be clear what we are talking about interprofessional education. I would like to tell you about the CAIPE definition (Centre for the Advancement of Interprofessional Education): *"Interprofessional Education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care"*. This mean people are learning with, from and about each other. That mean if people are sitting together and are all say pharmacist and a nurse comes to talk about her role that is not IPE. If you all go and interact with different disciplines but you are all learning same topic that is not IPE.

#### **DO YOU HAVE ANY QUESTIONS SO FAR?**

Again your participation here today is totally voluntary. So if you are okay with moving forward, we would like to get your consent.

I think we've come to the end of our questions. Let me be the first to say thank you for your honest opinions – you were tremendously helpful at this very early, but very important stage.

Again, thank you very much for your participation today. We really appreciate your help.

Appendix 10: Focus Group Questions.

### IPE Focus Group for Pharmacy Academics

Name of Researcher(s): Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Topics	Questions
<b>Introduction</b>	1. Can you introduce yourself and how long have you been working in the College Of Pharmacy?
<b>Importance</b>	2. IPE is considered important for students as part of their education, can you say little about your students and how you might say that?
<b>Implementation and opportunities</b>	3. Have you tried to incorporate IPE in your courses, how did that go? a. What were the advantages and barriers? 4. What would be an ideal IPE program at the College Of Pharmacy? a. Online module/ simulation b. Workshops c. Extracurricular activities d. IPE clinical placements 5. In which courses would you incorporate IPE in the curriculum? a. Year 1-4, PharmD, MSc b. How much IPE should we have?
<b>Implementation and Barriers</b>	6. Can you identify the type of barriers people might come across when trying to implement IPE? a. What do think the curriculum of the other health care professionals schools is like, how are they are trained? 7. Would there be circumstances when your students would feel uncomfortable to be with other health care students during an IPE session? a. Male health care students
<b>Resources</b>	8. What support is needed to help faculty implement IPE in the pharmacy curriculum? a. Do they need support from faculty, from course administrators, from administration b. How would you describe your/ faculty ability to deliver interprofessional education? 9. What do you suggest to overcome these barriers and challenges? a. How can we make it better?
<b>Practice</b>	10. What do you think the students experience will be once they graduate in relation to collaborative practice? a. What do you think practice will be like for student once they graduate
<b>Scenario</b>	Jasim is a 52-year-old Qatari man, was seen in the primary care clinic for regular checkup of his hypertension, for which he had been treated for the past 8 years. His only medication was Amlodipine mg/day. He had a family history for hypertension, type 2 diabetes, and coronary artery disease. Jasim reported a 15 kg weight gain over the past year, along with a sedentary lifestyle with no regular exercise routine. He tells you he think he has diabetes. 11. Identify which professionals would best meet the needs of this patient in the case? Can you tell me what they might do in the scenario? How will the professions work together? a. Can you elaborate on what you think they might do? Are you really patient centered or are you only interested in their own disciplines views.

## IPE Focus Group for Pharmacy Students

Name of Researcher(s): Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Topics	Questions
<b>Introduction</b>	1. Can you introduce yourself, which pharmacy year are you in and why did you choose pharmacy?
<b>Importance</b>	2. IPE is considered important for students as part of their education, how do you feel about that?
<b>Implementation and opportunities</b>	3. Have you had IPE sessions in your courses, how did that go? <ol style="list-style-type: none"> <li>a. What were the advantages and barriers?</li> <li>b. Did they enjoy the session because it was interesting and fun?</li> <li>c. Did you learn from the session?</li> <li>d. What was about the session they liked or disliked?</li> </ol> 4. What would be an ideal IPE program at the College Of Pharmacy? <ol style="list-style-type: none"> <li>a. Online module/ simulation</li> <li>b. Workshops</li> <li>c. Extracurricular activities</li> <li>d. IPE clinical placements</li> </ol> 5. Where would you like to see IPE incorporated in the curriculum? <ol style="list-style-type: none"> <li>a. Year 1-4, PharmD, MSc</li> </ol>
<b>Implementation and Barriers</b>	6. What do you think you may find challenging if IPE was implemented within the pharmacy program? 7. Would there be circumstances when you or your classmates would find it difficult to share information with each other or feel uncomfortable to be with other health care students during an IPE session? <ol style="list-style-type: none"> <li>a. Is that because your course is predominately female? Male health care students/ superiority or inferiority</li> </ol>
<b>Practice</b>	8. Have you experienced clinical placement yet, if so what were your experiences? Or those who haven't what do you anticipate your experience might be for collaborative working? <ol style="list-style-type: none"> <li>a. Ask about placements, have they had placements where there has been collaborative working.</li> </ol> 9. When you graduate, do you think you will be able to practice collaboratively?
<b>Scenario</b>	<p>Jasim is a 52-year-old Qatari man, was seen in the primary care clinic for regular checkup of his hypertension, for which he had been treated for the past 8 years. His only medication was Amlodipine mg/day. He had a family history for hypertension, type 2 diabetes, and coronary artery disease. Jasim reported a 15 kg weight gain over the past year, along with a sedentary lifestyle with no regular exercise routine. He tells you he think he has diabetes.</p> 10. Identify which professionals would best meet the needs of this patient in the case? Can you tell me what they might do in the scenario? How will the professions work together?

## IPE Focus Group for Practising Pharmacists

Name of Researcher(s): Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Topics	Questions
<b>Introduction</b>	1. Can you introduce yourself, your workplace and how long have you been practising in Qatar?
<b>Importance</b>	2. IPE is considered important for students as part of their education, as practising pharmacist how do you feel about this?
<b>Implementation and opportunities</b>	3. What would be an ideal IPE program at the College Of Pharmacy? Where do you think IPE should be incorporated in the curriculum? 4. What are the opportunities in working interprofessionally in your practice?
<b>Implementation and Barriers Practice</b>	5. Can you identify barriers people can come across when trying to practice interprofessional working? 6. In you work practice; can you give us examples of working with other health care professionals? a. Most of these were interacting ( <i>basic: pharmacist phone a doctor</i> ) more than collaborate ( <i>intensive decision making: phone them up, discuss a case, comes up with discussion and take it from there</i> ); can you give us examples of collaboration? b. What are your thoughts on interprofessional collaboration in your work setting? What is it like? 7. Those of you who are part of the interprofessional team, how do you feel that works for you? For those who don't work in interprofessional team, what do you think the benefits might there be if you were working in a team environment? 8. Once the pharmacy student graduate, do you think they will find a collaborative practice? 9. In order to practice interprofessionally, what do you feel you need? a. Resources b. Time/ training 10. Is there a perception that you are required to be confident in your own profession before working with other disciplines. What do you think about that, is this true for you?
<b>Scenario</b>	Jasim is a 52-year-old Qatari man, was seen in the primary care clinic for regular checkup of his hypertension, for which he had been treated for the past 8 years. His only medication was Amlodipine mg/day. He had a family history for hypertension, type 2 diabetes, and coronary artery disease. Jasim reported a 15 kg weight gain over the past year, along with a sedentary lifestyle with no regular exercise routine. He tells you he think he has diabetes. 11. Identify which professionals would best meet the needs of this patient in the case? Can you tell me what they might do in the scenario? How will the professions work together?





## IPE Focus Consent Form

Name of Researcher(s): Ms. Alla El-Awaisi, Dr Lesley Diack, Dr Sundari Joseph and Dr Maguy El Hajj

Please initial box

1. I confirm that I have read and understood the information sheet dated 10<sup>th</sup> May 2013 (version 2) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without any medical care or legal rights being affected.
3. I understand that data collected for this study may be used to help develop new research or teaching and that data protection regulations will be observed and strict confidentiality maintained.
4. I agree to take part in the above study.

Name of participant	Date	Signature
_____	_____	_____
Name of Principal Researcher	Date	Signature
Alla El-Awaisi	_____	_____



**School of Pharmacy and Life Sciences  
Research Ethics Committee**

**COMPLETED**

**6 June 2013**

**PROJECT:**

**Investigating IPE in Pharmacy in Qatar**

Dear Alla,

We have reviewed your ethics application (title above) and it has been approved with no changes. The panel recommends that it is of sufficient standard for you to proceed.

If there are any questions please do not hesitate to get in touch.

Regards

A handwritten signature in black ink that reads 'Lesley Diack'.

Dr Lesley Diack  
Chair of the School Ethics Review Panel



**School of Pharmacy and Life Sciences  
Research Ethics Committee**

**COMPLETED**

**17 June 2014**

<b>Research Project Title</b>	<b>Pharmacy's Perspectives of Interprofessional Education and Collaborative Practice in Arabic-Speaking Middle Eastern Countries.</b>
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Dear Alla,

We have reviewed your ethics application (Title above). The panel recommends that there are no ethical issues with your project and you are able to proceed with your research and any further ethics applications. We wish you well with your project.

If there are any questions please do not hesitate to get in touch.

Regards

A handwritten signature in black ink that reads 'Lesley Diack'.

Dr Lesley Diack  
Chair of the School Ethics Review Panel



Qatar University Institutional Review Board  
QU-IRB

July 9, 2013

Alla E. Al-Awaisi  
College of Pharmacy  
Qatar University  
Tel.: 4403-5599  
Email: [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa)

Dear Dr. Alla El-Awaisi,

**Sub.: Research Ethics Review Exemption / QUUG-CPH-CPH-12/13-2**  
**Ref.: Project titled, "Pharmacy's Perspectives of Interprofessional Education and Collaboration: An Investigative Study In Qatar & The Middle East"**

We would like to inform you that your application along with the supporting documents provided for the above proposal, is reviewed and having met all the requirements, has been exempted from the full ethics review.

Please note that any changes/modification or additions to the original submitted protocol should be reported to the committee to seek approval prior to continuation.

Your Research Ethics Approval No. is: **QU-IRB 228-E/13**  
Kindly refer to this number in all your future correspondence pertaining to this project.

Best wishes,

Dr. Khalid Al-Ali  
Chairperson, QU-IRB





Qatar University Institutional Review Board  
**QU-IRB**

July 9, 2014

Alla El-Awaisi  
College of Pharmacy  
Qatar University  
Tel.: 4403-5599  
Email: [elawaisi@qu.edu.qa](mailto:elawaisi@qu.edu.qa)

Dear Dr. Alla El-Awaisi,

**Sub.: Research Ethics Review Exemption**  
**Ref.: Project titled, "Pharmacy's Perspectives of Inter-professional Education and Collaborative Practice in Arabic Speaking Middle Eastern Countries"**

We would like to inform you that your application along with the supporting documents provided for the above proposal, is reviewed and having met all the requirements, has been exempted from the full ethics review.

Please note that any changes/modification or additions to the original submitted protocol should be reported to the committee to seek approval prior to continuation.

Your Research Ethics Approval No. is: **QU-IRB 349-E/14**  
Kindly refer to this number in all your future correspondence pertaining to this project.

Best wishes,

*K. Alali*

Dr. Khalid Al-Ali  
Chairperson, QU-IRB





Mixed Methods Appraisal Tool (MMAT) – Version 2011

For dissemination, application, and feedback: Please contact [pierre.pluye@mcgill.ca](mailto:pierre.pluye@mcgill.ca), Department of Family Medicine, McGill University, Canada.

The MMAT is comprised of two parts (see below): criteria (Part I) and tutorial (Part II). While the content validity and the reliability of the pilot version of the MMAT have been examined, this critical appraisal tool is still in development. Thus, the MMAT must be used with caution, and users' feedback is appreciated. Cite the present version as follows.

Pluye, P., Robert, E., Cargo, M., Bartlett, G., O'Cathain, A., Griffiths, F., Boardman, F., Gagnon, M.P., & Rousseau, M.C. (2011). *Proposal: A mixed methods appraisal tool for systematic mixed studies reviews*. Retrieved on [date] from <http://mixedmethodsappraisaltoolpublic.pbworks.com>. Archived by WebCite® at <http://www.webcitation.org/5UTRtc9yJ>

**Purpose:** The MMAT has been designed for the appraisal stage of complex systematic literature reviews that include qualitative, quantitative and mixed methods studies (mixed studies reviews). The MMAT permits to concomitantly appraise and describe the methodological quality for three methodological domains: mixed, qualitative and quantitative (subdivided into three sub-domains: randomized controlled, non-randomized, and descriptive). Therefore, using the MMAT requires experience or training in these domains. E.g., MMAT users may be helped by a colleague with specific expertise when needed. The MMAT allows the appraisal of most common types of study methodology and design. For appraising a qualitative study, use section 1 of the MMAT. For a quantitative study, use section 2 or 3 or 4, for randomized controlled, non-randomized, and descriptive studies, respectively. For a mixed methods study, use section 1 for appraising the qualitative component, the appropriate section for the quantitative component (2 or 3 or 4), and section 5 for the mixed methods component. For each relevant study selected for a systematic mixed studies review, the methodological quality can then be described using the corresponding criteria. This may lead to exclude studies with lowest quality from the synthesis, or to consider the quality of studies for contrasting their results (e.g., low quality vs. high).

**Scoring metrics:** For each retained study, an overall quality score may be not informative (in comparison to a descriptive summary using MMAT criteria), but might be calculated using the MMAT. Since there are only a few criteria for each domain, the score can be presented using descriptors such as \*, \*\*, \*\*\*, and \*\*\*\*. For qualitative and quantitative studies, this score can be the number of criteria met divided by four (scores varying from 25% (\*) –one criterion met- to 100% (\*\*\*\*) –all criteria met-). For mixed methods research studies, the premise is that the overall quality of a combination cannot exceed the quality of its weakest component. Thus, the overall quality score is the lowest score of the study components. The score is 25% (\*) when  $QUAL=1$  or  $QUAN=1$  or  $MM=0$ ; it is 50% (\*\*) when  $QUAL=2$  or  $QUAN=2$  or  $MM=1$ ; it is 75% (\*\*\*) when  $QUAL=3$  or  $QUAN=3$  or  $MM=2$ ; and it is 100% (\*\*\*\*) when  $QUAL=4$  and  $QUAN=4$  and  $MM=3$  (QUAL being the score of the qualitative component; QUAN the score of the quantitative component; and MM the score of the mixed methods component).

**Rationale:** There are general criteria for planning, designing and reporting mixed methods research (Creswell and Plano Clark, 2010), but there is no consensus on key specific criteria for appraising the methodological quality of mixed methods studies (O'Cathain, Murphy and Nicholl, 2008). Based on a critical examination of 17 health-related systematic mixed studies reviews, an initial 15-criteria version of MMAT was proposed (Pluye, Gagnon, Griffiths and Johnson-Lafleur, 2009). This was pilot tested in 2009. Two raters assessed 29 studies using the pilot MMAT criteria and tutorial (Pace, Pluye, Bartlett, Macaulay et al., 2010). Based on this pilot exercise, it is anticipated that applying MMAT may take on average 15 minutes per study (hence efficient), and that the Intra-Class Correlation might be around 0.8 (hence reliable). The present 2011 revision is based on feedback from four workshops, and a comprehensive framework for assessing the quality of mixed methods research (O'Cathain, 2010).

**Conclusion:** The MMAT has been designed to appraise the *methodological quality* of the studies retained for a systematic mixed studies review, not the quality of their *reporting* (writing). This distinction is important, as good research may not be 'well' reported. If reviewers want to genuinely assess the former, companion papers and research reports should be collected when some criteria are not met, and authors of the corresponding publications should be contacted for additional information. Collecting additional data is usually necessary to appraise *qualitative research and mixed methods studies*, as there are no uniform standards for reporting study characteristics in these domains ([www.equator-network.org](http://www.equator-network.org)), in contrast, e.g., to the CONSORT statement for reporting randomized controlled trials ([www.consort-statement.org](http://www.consort-statement.org)).

**Authors and contributors:** Pierre Pluye<sup>1</sup>, Marie-Pierre Gagnon<sup>2</sup>, Frances Griffiths<sup>3</sup> and Janique Johnson-Lafleur<sup>1</sup> proposed an initial version of MMAT criteria (Pluye et al., 2009). Romina Pace<sup>1</sup> and Pierre Pluye<sup>1</sup> led the pilot test. Gillian Bartlett<sup>1</sup>, Belinda Nicolau<sup>4</sup>, Robbyn Seller<sup>1</sup>, Justin Jagosh<sup>1</sup>, Jon Salsberg<sup>1</sup>, Ann Macaulay<sup>1</sup> contributed to the pilot work (Pace et al., 2010). Pierre Pluye<sup>1</sup>, Emilie Robert<sup>5</sup>, Margaret Cargo<sup>6</sup>, Alicia O'Cathain<sup>1</sup>, Frances Griffiths<sup>3</sup>, Felicity Boardman<sup>3</sup>, Marie-Pierre Gagnon<sup>2</sup>, Gillian Bartlett<sup>1</sup>, and Marie-Claude Rousseau<sup>1</sup> contributed to the present 2011 version.

**Affiliations:** 1. Department of Family Medicine, McGill University, Canada; 2. Faculté des sciences infirmières, Université Laval, Canada; 3. Warwick Medical School, University of Warwick, UK; 4. Faculty of Dentistry, McGill University, Canada; 5. Centre de recherche du CHUM, Université de Montréal, Canada; 6. School of Health Sciences, University of South Australia, Australia; 7. Medical Care Research Unit, SCHARR, University of Sheffield, UK; 8. INRS-Institut Armand Frappier, Laval, Canada.

**PART I. MMAT criteria & one-page template (to be included in appraisal forms)**

Types of mixed methods study components or primary studies	Methodological quality criteria (see tutorial for definitions and examples)	Responses		
		Yes	No	Can't tell
<b>Screening questions (for all types)</b>	<ul style="list-style-type: none"> <li>Are there clear qualitative and quantitative research questions (or objectives*), or a clear mixed methods question (or objective*)?</li> <li>Do the collected data allow address the research question (objective)? E.g., consider whether the follow-up period is long enough for the outcome to occur (for longitudinal studies or study components).</li> </ul>			
	<b>Further appraisal may be not feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.</b>			
<b>1. Qualitative</b>	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?			
	1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?			
	1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected?			
	1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants?			
<b>2. Quantitative randomized controlled (trials)</b>	2.1. Is there a clear description of the randomization (or an appropriate sequence generation)?			
	2.2. Is there a clear description of the allocation concealment (or blinding when applicable)?			
	2.3. Are there complete outcome data (80% or above)?			
	2.4. Is there low withdrawal/drop-out (below 20%)?			
<b>3. Quantitative non-randomized</b>	3.1. Are participants (organizations) recruited in a way that minimizes selection bias?			
	3.2. Are measurements appropriate (clear origin, or validity known, or standard instrument; and absence of contamination between groups when appropriate) regarding the exposure/intervention and outcomes?			
	3.3. In the groups being compared (exposed vs. non-exposed; with intervention vs. without; cases vs. controls), are the participants comparable, or do researchers take into account (control for) the difference between these groups?			
	3.4. Are there complete outcome data (80% or above), and, when applicable, an acceptable response rate (60% or above), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?			
<b>4. Quantitative descriptive</b>	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?			
	4.2. Is the sample representative of the population under study?			
	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?			
	4.4. Is there an acceptable response rate (60% or above)?			
<b>5. Mixed methods</b>	5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?			
	5.2. Is the integration of qualitative and quantitative data (or results*) relevant to address the research question (objective)?			
	5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results*) in a triangulation design?			

*Criteria for the qualitative component (1.1 to 1.4), and appropriate criteria for the quantitative component (2.1 to 2.4, or 3.1 to 3.4, or 4.1 to 4.4), must be also applied.*  
 \*These two items are not considered as double-barreled items since in mixed methods research, (1) there may be research questions (quantitative research) or research objectives (qualitative research), and (2) data may be integrated, and/or qualitative findings and quantitative results can be integrated.

**PART II. MMAT tutorial**

Types of mixed methods study components or primary studies	Methodological quality criteria
<p><b>I. Qualitative</b></p> <p>Common types of qualitative research methodology include:</p> <p>A. Ethnography The aim of the study is to describe and interpret the shared cultural behaviour of a group of individuals.</p> <p>B. Phenomenology The study focuses on the subjective experiences and interpretations of a phenomenon encountered by individuals.</p> <p>C. Narrative The study analyzes life experiences of an individual or a group.</p> <p>D. Grounded theory Generation of theory from data in the process of conducting research (data collection occurs first).</p> <p>E. Case study In-depth exploration and/or explanation of issues intrinsic to a particular case. A case can be anything from a decision-making process, to a person, an organization, or a country.</p> <p>F. Qualitative description There is no specific methodology, but a qualitative data collection and analysis, e.g., in-depth interviews or focus groups, and hybrid thematic analysis (inductive and deductive).</p> <p>Key references: Creswell, 1998; Schwandt, 2001; Sandelowski, 2010.</p>	<p><b>1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?</b></p> <p>E.g., consider whether (a) the selection of the participants is clear, and appropriate to collect relevant and rich data; and (b) reasons why certain potential participants chose not to participate are explained.</p> <p><b>1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?</b></p> <p>E.g., consider whether (a) the method of data collection is clear (in depth interviews and/or group interviews, and/or observations and/or documentary sources); (b) the form of the data is clear (tape recording, video material, and/or field notes for instance); (c) changes are explained when methods are altered during the study; and (d) the qualitative data analysis addresses the question.</p> <p><b>1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected? *</b></p> <p>E.g., consider whether the study context and how findings relate to the context or characteristics of the context are explained (how findings are influenced by or influence the context). "For example, a researcher wishing to observe care in an acute hospital around the clock may not be able to study more than one hospital. (...) Here, it is essential to take care to describe the context and particulars of the case [the hospital] and to flag up for the reader the similarities and differences between the case and other settings of the same type" (Mays &amp; Pope, 1995).</p> <p>The notion of context may be conceived in different ways depending on the approach (methodology) tradition.</p> <p><b>1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants? *</b></p> <p>E.g., consider whether (a) researchers critically explain how findings relate to their perspective, role, and interactions with participants (how the research process is influenced by or influences the researcher); (b) researcher's role is influential at all stages (formulation of a research question, data collection, data analysis and interpretation of findings); and (c) researchers explain their reaction to critical events that occurred during the study.</p> <p>The notion of reflexivity may be conceived in different ways depending on the approach (methodology) tradition. E.g., "at a minimum, researchers employing a generic approach [qualitative description] must explicitly identify their disciplinary affiliation, what brought them to the question, and the assumptions they make about the topic of interest" (Caelli, Ray &amp; Mill, 2003, p. 5).</p>

\*See suggestion on the MMAT wiki homepage (under '2011 version'): Independent reviewers can establish a common understanding of these two items prior to beginning the critical appraisal.



Types of mixed methods study components or primary studies	Methodological quality criteria
<p><b>2. Quantitative randomized controlled (trials)</b></p> <p>Randomized controlled clinical trial: A clinical study in which individual participants are allocated to intervention or control groups by randomization (intervention assigned by researchers).</p> <p>Key references: Higgins &amp; Green, 2008; Porta, 2008; Oxford Center for Evidence based medicine, 2009.</p>	<p><b>2.1. Is there a clear description of the randomization (or an appropriate sequence generation)?</b></p> <p>In a randomized controlled trial, the allocation of a participant (or a data collection unit, e.g., a school) into the intervention or control group is based solely on chance, and researchers describe how the randomization schedule is generated. "A simple statement such as 'we randomly allocated' or 'using a randomized design' is insufficient".</p> <p><i>Simple randomization:</i> Allocation of participants to groups by chance by following a predetermined plan/sequence. "Usually it is achieved by referring to a published list of random numbers, or to a list of random assignments generated by a computer".</p> <p><i>Sequence generation:</i> "The rule for allocating interventions to participants must be specified, based on some chance (random) process". Researchers provide sufficient detail to allow a readers' appraisal of whether it produces comparable groups. E.g., blocked randomization (to ensure particular allocation ratios to the intervention groups), or stratified randomization (randomization performed separately within strata), or minimization (to make small groups closely similar with respect to several characteristics).</p>
	<p><b>2.2. Is there a clear description of the allocation concealment (or blinding when applicable)?</b></p> <p><i>The allocation concealment protects assignment sequence until allocation.</i> E.g., researchers and participants are unaware of the assignment sequence up to the point of allocation. E.g., group assignment is concealed in opaque envelopes until allocation.</p> <p><i>The blinding protects assignment sequence after allocation.</i> E.g., researchers and/or participants are unaware of the group a participant is allocated to during the course of the study.</p>
	<p><b>2.3. Are there complete outcome data (80% or above)?</b></p> <p>E.g., almost all the participants contributed to almost all measures.</p>
	<p><b>2.4. Is there low withdrawal/drop-out (below 20%)?</b></p> <p>E.g., almost all the participants completed the study.</p>

Types of mixed methods study components or primary studies	Methodological quality criteria
<p><b>3. Quantitative non-randomized</b></p> <p>Common types of design include (A) non-randomized controlled trials, and (B-C-D) observational analytic study or component where the intervention/exposure is defined/assessed, but not assigned by researchers.</p> <p>A. Non-randomized controlled trials The intervention is assigned by researchers, but there is no randomization, e.g., a pseudo-randomization. A non-random method of allocation is not reliable in producing alone similar groups.</p> <p>B. Cohort study Subsets of a defined population are assessed as exposed, not exposed, or exposed at different degrees to factors of interest. Participants are followed over time to determine if an outcome occurs (prospective longitudinal).</p> <p>C. Case-control study Cases, e.g., patients, associated with a certain outcome are selected, alongside a corresponding group of controls. Data is collected on whether cases and controls were exposed to the factor under study (retrospective).</p> <p>D. Cross-sectional analytic study At one particular time, the relationship between health-related characteristics (outcome) and other factors (intervention/exposure) is examined. E.g., the frequency of outcomes is compared in different population sub-groups according to the presence/absence (or level) of the intervention/exposure.</p> <p>Key references for observational analytic studies: Higgins &amp; Green, 2008; Wells, Shea, O'Connell, Peterson, et al., 2009.</p>	<p><b>3.1. Are participants (organizations) recruited in a way that minimizes selection bias?</b></p> <p>At recruitment stage: For cohort studies, e.g., consider whether the exposed (or with intervention) and non-exposed (or without intervention) groups are recruited from the same population. For case-control studies, e.g., consider whether same inclusion and exclusion criteria were applied to cases and controls, and whether recruitment was done independently of the intervention or exposure status. For cross-sectional analytic studies, e.g., consider whether the sample is representative of the population.</p> <p><b>3.2. Are measurements appropriate (clear origin, or validity known, or standard instrument; and absence of contamination between groups when appropriate) regarding the exposure/intervention and outcomes?</b></p> <p>At data collection stage: E.g., consider whether (a) the variables are clearly defined and accurately measured; (b) the measurements are justified and appropriate for answering the research question; and (c) the measurements reflect what they are supposed to measure. For non-randomized controlled trials, the intervention is assigned by researchers, and so consider whether there was absence/presence of a contamination. E.g., the control group may be indirectly exposed to the intervention through family or community relationships.</p> <p><b>3.3. In the groups being compared (exposed vs. non-exposed; with intervention vs. without; cases vs. controls), are the participants comparable, or do researchers take into account (control for) the difference between these groups?</b></p> <p>At data analysis stage: For cohort, case-control and cross-sectional, e.g., consider whether (a) the most important factors are taken into account in the analysis; (b) a table lists key demographic information comparing both groups, and there are no obvious dissimilarities between groups that may account for any differences in outcomes, or dissimilarities are taken into account in the analysis.</p> <p><b>3.4. Are there complete outcome data (80% or above), and, when applicable, an acceptable response rate (60% or above), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?</b></p>

Types of mixed methods study components or primary studies	Methodological quality criteria
<p><b>4. Quantitative descriptive studies</b></p> <p>Common types of design include single-group studies:</p> <p>A. Incidence or prevalence study without comparison group In a defined population at one particular time, what is happening in a population, e.g., frequencies of factors (importance of problems), is described (portrayed).</p> <p>B. Case series A collection of individuals with similar characteristics are used to describe an outcome.</p> <p>C. Case report An individual or a group with a unique/unusual outcome is described in details.</p> <p>Key references: Critical Appraisal Skills Programme, 2009; Draugalis, Coons &amp; Plaza, 2008.</p>	<p><b>4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?</b></p> <p>E.g., consider whether (a) the source of sample is relevant to the population under study; (b) when appropriate, there is a standard procedure for sampling, and the sample size is justified (using power calculation for instance).</p> <p><b>4.2. Is the sample representative of the population under study?</b></p> <p>E.g., consider whether (a) inclusion and exclusion criteria are explained; and (b) reasons why certain eligible individuals chose not to participate are explained.</p> <p><b>4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?</b></p> <p>E.g., consider whether (a) the variables are clearly defined and accurately measured; (b) measurements are justified and appropriate for answering the research question; and (c) the measurements reflect what they are supposed to measure.</p> <p><b>4.4. Is there an acceptable response rate (60% or above)?</b></p> <p>The response rate is not pertinent for case series and case report. E.g., there is no expectation that a case series would include all patients in a similar situation.</p>

Types of mixed methods study components or primary studies	Methodological quality criteria
<p><b>5. Mixed methods</b></p> <p>Common types of design include:</p> <p>A. Sequential explanatory design The quantitative component is followed by the qualitative. The purpose is to explain quantitative results using qualitative findings. E.g., the quantitative results guide the selection of qualitative data sources and data collection, and the qualitative findings contribute to the interpretation of quantitative results.</p> <p>B. Sequential exploratory design The qualitative component is followed by the quantitative. The purpose is to explore, develop and test an instrument (or taxonomy), or a conceptual framework (or theoretical model). E.g., the qualitative findings inform the quantitative data collection, and the quantitative results allow a generalization of the qualitative findings.</p> <p>C. Triangulation design The qualitative and quantitative components are concomitant. The purpose is to examine the same phenomenon by interpreting qualitative and quantitative results (bringing data analysis together at the interpretation stage), or by integrating qualitative and quantitative datasets (e.g., data on same cases), or by transforming data (e.g., quantization of qualitative data).</p> <p>D. Embedded design The qualitative and quantitative components are concomitant. The purpose is to support a qualitative study with a quantitative sub-study (measures), or to better understand a specific issue of a quantitative study using a qualitative sub-study, e.g., the efficacy or the implementation of an intervention based on the views of participants.</p> <p>Key references: Creswell &amp; Plano Clark, 2007; O’Cathain, 2010.</p>	<p><b>5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?</b></p> <p>E.g., the rationale for integrating qualitative and quantitative methods to answer the research question is explained.</p> <p><b>5.2. Is the integration of qualitative and quantitative data (or results) relevant to address the research question (objective)?</b></p> <p>E.g., there is evidence that data gathered by both research methods was brought together to form a complete picture, and answer the research question; authors explain when integration occurred (during the data collection-analysis or/and during the interpretation of qualitative and quantitative results); they explain how integration occurred and who participated in this integration.</p> <p><b>5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results)?</b></p>

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Appendix 17: Permission from Original Authors to incorporate Faculty Attitudinal Scales.

## RE: Readiness for Interprofessional Learning Scale for faculty

vcurran@mun.ca

Wed 26/06/2013 12:55

To: ALLA EL-AWAISI (0500697) <a.el-awaisi@rgu.ac.uk>;

Cc: annh@mun.ca <annh@mun.ca>; Adam.Reid@med.mun.ca <Adam.Reid@med.mun.ca>;

📎 2 attachments (224 KB)

IP Attitudes Scales Scoring Sheets.docx; IECPCP Faculty Survey (Final Administration).pdf;

Copy of instrument attached. Good luck with your study.

Vernon Curran, PhD  
Director of Academic Research and Development  
Professor of Medical Education  
Room # 2901  
Faculty of Medicine  
Memorial University  
St. John's, NL  
A1B 3V6

Fax: (709) 777-6576

Tel: (709) 777-7542

---

**From:** ALLA EL-AWAISI (0500697) [mailto:a.el-awaisi@rgu.ac.uk]

**Sent:** June-26-13 4:23 AM

**To:** Curran, Vernon

**Cc:** Hollett, Ann

**Subject:** Readiness for Interprofessional Learning Scale for faculty

Dear Dr Curran,

I am a PhD student at the Robert Gordon university in Scotland conducting research on interprofessional education in Qatar. I read with interest your and your colleagues article: Curran, V. R., Sharpe, D. & Forristall, J. (2007). Attitudes of health sciences faculty members towards interprofessional teamwork and education. *Medical Education*, 41(9), 892-896. and would like to use this scale in my research where I will be conducting a faculty survey of attitudes toward interprofessional education. Hope you are ok with this.

I look forward to hearing from you.

Best Regards,

Alla

Alla El-Awaisi, *MPharm, MRPharmS, MSc*

PhD candidate

School of Pharmacy and Life Sciences

Robert Gordon University, Aberdeen, UK

Appendix 18: Permission from Original Authors to incorporate Student Attitudinal Scale.

## Re: Validated RIPL scale in a Middle Eastern context

M Elzubeir <elzubeir44@yahoo.com>

Thu 05/09/2013 11:39

To: ALLA EL-AWAISI (0500697) <a.el-awaisi@rgu.ac.uk>;

Dear Alla

thank you for your email and sorry for delay in responding. Yes, I am agreeable that you use the scale. As you will discerned from the article, some items on the original scale had higher factor loadings than others and you may wish to take this into consideration when deciding which items to include in your instrument.

Good luck with your research.

Kind regards

Margaret Elzubeir

Sent from my iPad

On 5 Sep 2013, at 10:35, "ALLA EL-AWAISI (0500697)" <[a.el-awaisi@rgu.ac.uk](mailto:a.el-awaisi@rgu.ac.uk)> wrote:

Dear Professor El Zubeir,

Hope you are well and have had a nice summer vacation.

I have sent you the email below back in June and haven't heard your response. If I don't hear from you, I will assume that you are happy for me to use the scale.

Best regards,

Alla

---

**From:** ALLA EL-AWAISI (0500697)  
**Sent:** Tuesday, July 02, 2013 1:18 PM  
**To:** 'elzubeir44@yahoo.com'; 'm.elzubeir@uaeu.ac.ae'  
**Subject:** Validated RIPL scale in a Middle Eastern context

Dear Professor El Zubeir,

I am a PhD student at the Robert Gordon university in Scotland conducting research on interprofessional education in Qatar. I read with interest your and your colleagues article in the Journal of Interprofessional Care (2006): Are senior UAE medical and nursing students ready for interprofessional learning? validating the RIPL scale in a Middle Eastern context and would like to use this scale in my research if you are ok with this. I hope you can email me a copy of this scale to use.

I look forward to hearing from you.

Best Regards,

Alla

Appendix 19: Permission from Original Authors to incorporate Healthcare Professional Attitudinal Scales.

## Re: Readiness for Interprofessional Learning Scale for healthcare professionals

Ross Reid <Ross.Reid@nes.scot.nhs.uk>

Tue 14/05/2013 09:18

To: ALLA EL-AWAISI (0500697) <a.el-awaisi@rgu.ac.uk>;

 2 attachments (166 KB)

RIPLS 23.doc; RIPLS 29.doc;

Dear Alla

I have no objection to the use of the scale for research. Please find attached the 23 point scale for postgraduate use & the 29 point scale for undergraduates.  
Good luck with your work.

Regards,

Ross Reid

Dr Ross Reid  
CPD Adviser  
Tayside Centre for General Practice  
Kirsty Semple Way  
Dundee  
DD2 4BF

Tel: 01382 383791

[ross.reid@nes.scot.nhs.uk](mailto:ross.reid@nes.scot.nhs.uk)

>>> "ALLA EL-AWAISI (0500697)" <a.el-awaisi@rgu.ac.uk> 13/05/2013 18:22 >>>

Dear Dr Reid,

I am a PhD student at the Robert Gordon university conducting research on interprofessional education in Qatar. I read with interest your and your colleagues article on 'Validating the Readiness for Interprofessional Learning Scale (RIPLS) in the postgraduate context: are health care professionals ready for IPL?' and would like to use this scale in my research. Hope you are ok with this.

I look forward to hearing from you.

Best Regards,

Alla

Alla El-Awaisi, *MPharm, MRPharmS, MSc*

PhD candidate

School of Pharmacy and Life Sciences

Robert Gordon University, Aberdeen, UK

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4/9/2017

Re: Survey of Interprofessional Collaboration Le... - ALLA EL-AWAISI (0500697)

## Re: Survey of Interprofessional Collaboration Learning Needs and Training Interest in Health Professionals, Teachers, and Students: An Exploratory Study

Baerg, Krista <dr.kbaerg@usask.ca>

Wed 03/07/2013 15:48

To: ALLA EL-AWAISI (0500697) <a.el-awaisi@rgu.ac.uk>;

You may use the survey we developed. I believe you will find everything you require in the article appendix. Please let me know if you require additional information.

Krista Baerg  
Sent from my iPhone

On 2013-07-03, at 1:38 AM, "ALLA EL-AWAISI (0500697)" <a.el-awaisi@rgu.ac.uk> wrote:

Dear Dr Baerg,

I am a PhD student at the Robert Gordon university in Scotland conducting research on interprofessional education. I read with interest your and your colleagues article in the Journal of Interprofessional practice and education (2012): Survey of Interprofessional Collaboration Learning Needs and Training Interest in Health Professionals, Teachers, and Students: An Exploratory Study and would like to use this survey in my research if you are OK with this. I hope you can email me a copy of this scale to use.

I look forward to hearing from you.

Best Regards,  
Alla

Alla El-Awaisi, *MPharm, MRPharmS, MSc*  
PhD candidate, School of Pharmacy and Life Sciences  
Robert Gordon University  
Aberdeen, UK

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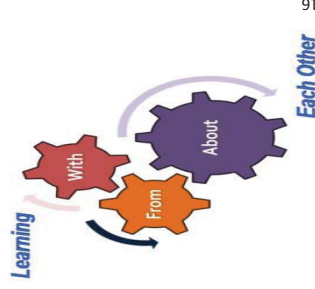
## The integration of Interprofessional Education into the CPH Pharmacy Program

**Alla El-Awaisi** MPharm, MRPharms, MSc  
 Assistant Dean for Student Affairs  
 Chair of the Interprofessional Education Committee  
 College of Pharmacy  
 Qatar University



### What is IPE?

'occasions when 2 or more professions learn with, from and about each other to improve collaborations and the quality of care'



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<http://www.aippenet.org/what-is-ipe/> (as inspired by the CAIPE definition of IPE)

### Outline

- Establishing Interprofessional Education Committee (IPEC)
- IPEC main focus:
  - Curriculum
  - Faculty Development
  - Student Led Initiatives
  - Research

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### AY14: Establishment of Interprofessional Education Committee

- ✓ Provide guidance and support in implementing interprofessional education within the pharmacy curriculum at the College of Pharmacy in Qatar University and other Healthcare Programs in Qatar.
- ✓ Dedicated to facilitating awareness and understanding of interprofessional education for interprofessional collaboration for students and faculty members.

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### IPEC Key Responsibilities

Oversee the development and implementation of interprofessional education within the pharmacy curriculum	Review the content and delivery of any IPE activities with evaluation of available resources and teaching methods.
Develop a yearly plan, using an appropriate model, for integrating IPE into the curriculum.	Adopt a set of shared IPE competencies and develop appropriate assessment strategies to ensure that graduate meet these competencies.
Initiate and maintain links with other health care professional schools in Qatar to ensure effective implementation of the planned IPE activities.	Evaluate the effectiveness of integrating IPE and recommend changes to the curriculum committee

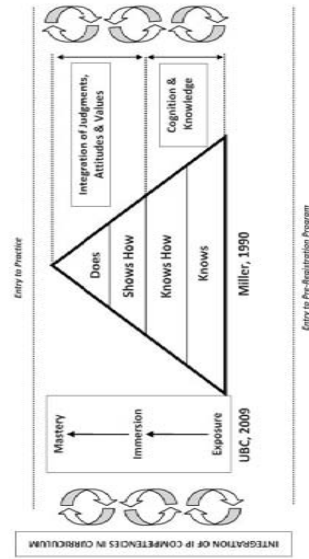
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### IPEC Representatives



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### IPE Model Adopted



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Ontario Pre-Registration Interprofessional Education Model

### IPE Shared Competencies

- Professional role clarification
- Interprofessional communication
- Patient-centered care
- Shared decision-making



Johnson B, Abu-Hayeh M, Burns C, Jenkinson P, El-Tawil M, Verjee M (2014). The development of a set of shared core competencies and evaluation criteria for Qatar: the process & product. Funded QF NRP094-48933-197

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College of Pharmacy  
University of Al-Qadisiyah

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## IPE in Pharmacy professional years

- 1<sup>st</sup> Year (Exposure)** Introducing IPE concept
- 2<sup>nd</sup> year (Exposure)** : IPE smoking cessation & being an effective team
- 3<sup>rd</sup> year (Immersion)** : Case based diabetes & IPE simulation
- 4<sup>th</sup> year (Mastery)** : IPE clinical placement & Course-based Approach: Integrated Care Planning

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## First Year Professional Year Exposure

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### AY14: Introducing the Concept of IPE



- Hosted: QU College of Pharmacy
- Professions: QU Pharmacy, OU Nutrition and OU Sports Science
- Total of 52 students

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### AY15: Introducing the Concept of IPE



- Hosted: QU College of Medicine.
- Professions: OU Pharmacy, OU Medicine, OU Nutrition and UCO Nursing
- Total of 112 students

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### AY16: Introducing the Concept of IPE



- Hosted: Weill Cornell Medicine - Qatar.
- Professions: Medicine, Pharmacy and Respiratory therapy, Nursing
- Total of 95 students

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## Second Year Professional Year Exposure

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### AY13: Crohn's Disease Case Based Patient Care



#### Pharmacy and Nutrition Students IPE Activity at Qatar University

An inter-professional education event between the College of Pharmacy and the Human Nutrition Program at the College of Arts and Sciences at Qatar University recently occurred on December 16th, 2013. A two-hour session that was integrated within courses from each respective college was conducted that had second-year pharmacy students collaborating with fourth-year nutrition students to solve a patient case relating to gastrointestinal disorders. Twenty-five pharmacy students formed small groups of five or six participants with seventeen nutrition students. Together, the students integrated the case and formulated a comprehensive care plan that integrated both medication and nutrition recommendations.

With healthcare systems moving towards team-based approaches, inter-professional education has been deemed an essential tool for ensuring health professionals are ready to work together upon graduation. The benefits include enhancement of critical thinking skills, communication abilities, and understanding of one's own scope of practice and role within the healthcare field.

Future plans include expansion to integrate IPE activities into other courses and professional years, as well as development of initiatives between other professional groups.



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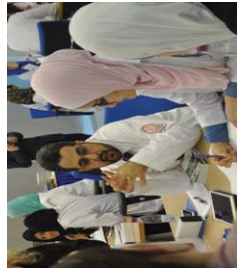
### AY14: IPE Smoking Cessation



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- Hosted: College of North Atlantic
- Professions: QU Pharmacy, QU Medicine, QU Public Health and CNAQ Pharmacy Technician
- Total of 51 students

### AY15: IPE Smoking Cessation



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- Hosted: College of North Atlantic
- 5 Professions: QU Pharmacy, QU Medicine, QU Public Health, CNAQ Respiratory Therapist and UCC Nursing
- Total of 72 students

### AY16: IPE Smoking Cessation



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- Hosted: University of Caigary Qatar
- 6 Professions: Nursing, Paramedicine, Pharmacy, Pharmacy Technician, Public Health, Respiratory Therapy
- 14 facilitators
- Total of 91 students

### AY13: Being an Effective Team Player



- Hosted: QU College of Pharmacy
- 3 Professions: QU Pharmacy, QU Nutrition and UCQ Nursing
- Total of 50 students

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### AY14: Being an Effective Team Player



- Hosted: Weill Cornell Medical College
- 3 Professions: QU Pharmacy, QU Nutrition and UCQ Nursing
- Total of 112 students

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### AY16: Being an Effective Team Player



- Hosted: University of Calgary Qatar
- 4 Professions: QU Pharmacy, QU Nutrition, QU Public Health UCQ Nursing
- Total of 96 students

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## Third Year Professional Year Immersion

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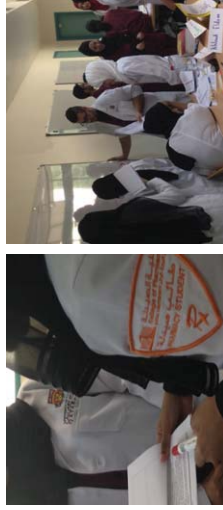
### AY13: Diabetes Case Based Patient Care



- Hosted: University of Calgary
- 2 Professions: QU Pharmacy and UCQ Nursing
- Total of 33 students

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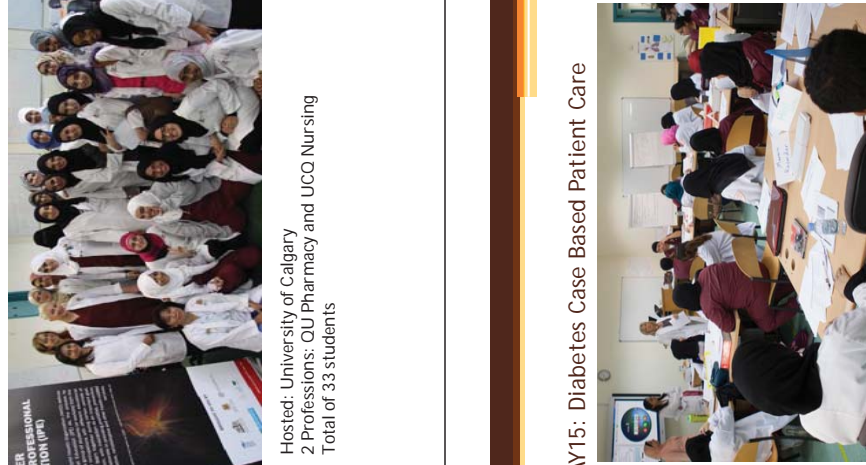
### AY14: Diabetes Case Based Patient Care



- Hosted: University of Calgary
- 2 Professions: QU Pharmacy and UCQ Nursing
- Total of 72 students

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### AY15: Diabetes Case Based Patient Care



- Hosted: University of Calgary
- 2 Professions: QU Pharmacy and UCQ Nursing
- Total of 112 students

AE 01/11/16

### AY16: Diabetes Case Based Patient Care



- Hosted: University of Calgary
- 2 Professions: QU Pharmacy and UCQ Nursing
- Total of 64 students

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### AY14: Diabetes Simulated Based Patient Care



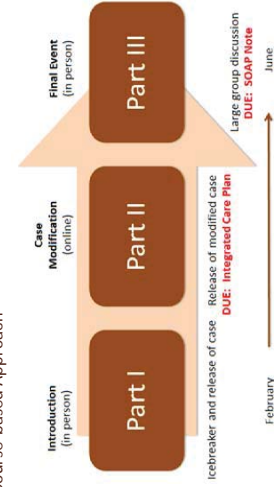
- Hosted: Weill Cornell Medical College
- 2 Professions: OU Pharmacy and WCMC Medicine
- Total of 65 students

### Fourth Year Professional Year Mastery

### AY14/ AY15/ AY16: IPE during Clinical Placements

- Two IPE activities was incorporated into the final year student Structured Practical Experiences in Pharmacy (SPEP). The two activities were:
  - Activity 1 – Shadowing another healthcare professional
  - Activity 2 - Participation in team meetings
- The students were then asked to write two reflective assignments about these two experiences. Students have very much enjoyed these activities but didn't enjoy the reflective assignment part

### AY14/ AY15: Integrated Care Planning A Course-based Approach



- Hosted: OU College of Pharmacy
- 2 Professions: OU Pharmacy and OU Nutrition
- Total of 38 (AY14), 58 (AY15) students

El-Adami A, Wilbur K, Wilbur K, Hassan Samirah Z, Majeed S, Al-Abadi T. Synthesis of interprofessional educational activities in Qatar: Engineering Health Sciences: Teaching, Learning and Inter-Professionalism. University of Calgary-Qatar. 2015. Conference. Doha, Qatar. May 7, 2015.

### AY17: IPE Simulation on Mental Health

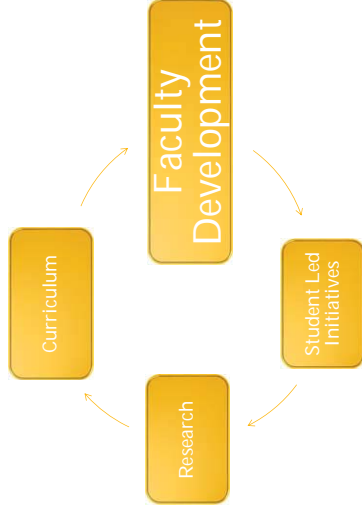


- Hosted: University of Calgary
- 2 Professions: OU Pharmacy and UCQ Nursing
- Total of 60 students



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### Focus of IPEC



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### February 2015: Interprofessional Education- Symposia to Qatar



- Around 70 Healthcare faculty members from healthcare programs throughout Qatar attended the 2-day symposia.
- Deans from Saudi Arabia participated in the symposia to learn how to bring IPE in KSA



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### February 2015: Interprofessional Education- Symposia to Qatar



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**QATAR UNIVERSITY**



**مؤتمر الشرق الأوسط الأول للتعليم الصحي المتداخل**  
**"أفاق جديدة في تعليم الرعاية الصحية"**  
**The 1st Middle East Conference on Interprofessional Education**  
**"New Frontiers in Healthcare Education"**

٤ - ٥ ديسمبر ٢٠١٥  
 4 - 5 December 2015

Organized by:  **جامعة قطر**  
**Qatar University**

Platform Sponsor:  **جامعة قطر**  
**Qatar University**

Academic Partner Sponsors:  **جامعة قطر**  
**Qatar University**

دولة قطر  
 المجلس الأعلى للصحة  
 State of Qatar  
 Supreme Council Of Health

جامعة الامارات  
 United Arab Emirates University

جامعة الكويت  
 Kuwait University

جامعة البحرين  
 Bahrain University



**Key facts**

- Original Expected Attendance: 314
- Total Registered Paid Attendance: 268
- Number of Domestic Attendees: 190
- Number of International Attendees: 78
- Hosted at Qatar University: Ibn Khaldoun Research Complex and Library.

كلية الصيدلة  
 College of Pharmacy

## Conference Sponsors & Bulk Registration

- Platinum Sponsor: Supreme Council of Health
- Academic sponsors: QU College of Medicine, QU College of Arts and Science, University of Calgary-Qatar and HMC
- Sponsoring their employee to attend by bulk registration:
  - University of Calgary- Qatar: 35 employee
  - Primary Health Care Cooperation: 40 employee
  - Aspetar hospital: 20 employee
  - College of North Atlantic- Qatar: 10 employee
  - Hamad Medical cooperation: 20 employee



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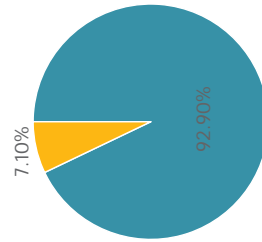
## Key facts

- The opening ceremony was in the presence of Qatar Minister of Public Health H.E. Abdallah Bin Khalid Al-Qahtani
- Official opening speech: Qatar University President Dr Hassan Al-Derham
- 4 Keynote Speakers
- 4 Qatari Panelists
- 37 Oral Presentations
- 6 interactive Workshop
- 40 Posters
- 14 Participating Countries
- Country of Attendees:
  - Australia, Bahrain, Canada, Egypt, Iraq, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Turkey, United Arab Emirates, United Kingdom & United States.



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## Did the IPE conference meet attendees expectations?

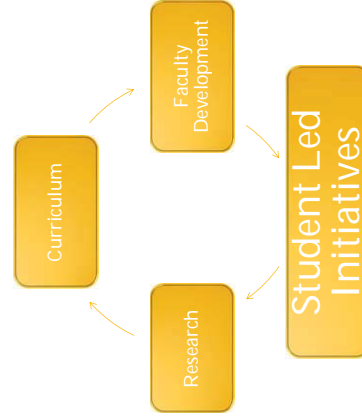


■ Yes ■ No



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## Focus of IPEC



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## Interprofessional Education Student Society



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## Inter-Professional Education Student Society- Qatar



**Mission and Vision**  
The mission of the Inter-Professional Education Student Society is to provide a platform for students from various health professions to collaborate and learn from each other. The vision is to create a supportive environment where students can share their experiences and knowledge, and work together to improve patient care.

**Objective and Goals**

1. To provide a platform for students from various health professions to collaborate and learn from each other.
2. To create a supportive environment where students can share their experiences and knowledge, and work together to improve patient care.
3. To provide a platform for students to share their experiences and knowledge, and work together to improve patient care.
4. To create a supportive environment where students can share their experiences and knowledge, and work together to improve patient care.
5. To provide a platform for students to share their experiences and knowledge, and work together to improve patient care.
6. To create a supportive environment where students can share their experiences and knowledge, and work together to improve patient care.
7. To provide a platform for students to share their experiences and knowledge, and work together to improve patient care.
8. To create a supportive environment where students can share their experiences and knowledge, and work together to improve patient care.

**Membership**  
The Inter-Professional Education Student Society is open to all students from various health professions who are interested in collaborating and learning from each other.

Weblink: <http://ipestudent-qatar.weebly.com/>

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## AY15 First Event: IPE student Research day



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## AY16 2nd Annual IPE Research day

2nd Annual Research Day for Health Students	
November 21, 2016   Qatar University	
<b>Registration</b>	08:00 - 08:30
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## AY16 2nd Annual IPE Research day



## First Interprofessional Event on Smoking Cessation



You are cordially invited to attend an Interprofessional Education event: "Smoking Cessation" at:

Landmark Mall  
Friday 31st March, 2017  
3:00pm - 9:00pm

## Invited contribution to a UK conference

### "Working together to put the patient first" West Sussex Hospitals Foundation Trust student conference

West Sussex Hospitals Foundation Trust student conference on 1 March 2016 at St Richard's Hospital Chichester

CARPE was invited to speak on global interprofessional education and practice at this conference attended by about 80 health and social care students from the region and beyond. The day included presentations from three directors, nursing and medical practice, clinical governance and Electric (Workload Campaign) Director for Health, a presentation from the IPE committee and a presentation from the IPE committee and Myriam Jarama, a thesis supervisor from Darul University. Dr Abla El-Awasli, Chair of the IPE committee and Myriam Jarama, a thesis supervisor from Darul University, were the guest speakers. The day was a very successful one for the conference, along with some very thoughtful and thought-provoking presentations from speakers' experiences from the region and beyond.

For more information contact: [marion.helms@stjohns.nhs.uk](mailto:marion.helms@stjohns.nhs.uk)  
 Marion Helms [marionh@stjohns.nhs.uk](mailto:marionh@stjohns.nhs.uk)

working together - student conference - patients first



## 3 CPH students participated in the 8th International Conference on Interprofessional Practice and Education & International Healthcare Challenge

### QU CPH student wins 1st place at an international conference in Oxford



Qatar University College of Pharmacy (QU-CPh) student and Interprofessional Education Student Society President, Ms. Abla El-Awasli, won 1st place at the 8th International Conference on Interprofessional Practice and Education which was recently held at Oxford University.



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## An upcoming student event: Student Health Care Challenge

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## Focus of IPEC

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## Examples of IPE Research

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## Examples of IPE Research 9 Articles to date



## Future Directions

- IPE to be operationally at Health Cluster Level. Interprofessional Education Office is being proposed.
- Exploring innovative approaches to IPE
- More IPE Research and Evaluation
- Leading a Middle Eastern Network
- Ensuring sustainability

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