1-1-2015

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Research article

Core Interprofessional Education (IPE) health competencies: The process of adaptation and implementation for a local environment

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ABSTRACT

IPE: Interprofessional Healthcare Education (IPE) competencies provide the criteria against which to measure the capacity and capability of fully collaborative healthcare teams to learn and work together. Significant work already exists in the determination of IPE competencies across all disciplines. Although there is still a lack of agreement on a single set of shared core competencies, successive competency iterations enhance its development. IPE competencies need to take into account local and cultural contexts as recommended by WHO, (2010). Here we present a collaborative process that builds on existing competency development, assessing additional academic IPE needs.

Core competencies: After the development of a set of shared core IPE competencies a two-day workshop was delivered to healthcare students from four professions. The results and feedback from students showed the value of the competencies. We discuss the evolving process through two major stages: (1) development of a model determining four shared core IPE domains, (2) the development and delivery of a set of IPE workshops explicitly and intentionally based on the model. This process is an example for the future development of IPE and IPP in any local setting.

Results: Testing the developed IPE in specific workshops revealed that most clinical scenarios were on a similar standard but also showed a deficit in collaborative patient centered care, an aspect suggestive of deficient interprofessional contact and prioritization.

Keywords: Interprofessional Education, healthcare, collaborative, adaptive, iterative, Qatar

INTRODUCTION

Interprofessional Education (IPE) is defined by the Canadian Interprofessional Health Collaborative Consortium (CIHC) as *"through interdisciplinary education, healthcare professionals learn collaboratively within and across their disciplines in order to gain the knowledge, skills and values required working with other healthcare professionals"* (CIHC, 2007). More than two decades ago, the World Health Organization (WHO) described IPE as *"a process by which a group of practicing healthcare professionals work together in order to provide promotive, preventive, curative, rehabilitative and other health-related services"* (WHO, 1988). This organization continues to encourage the integration of IPE into healthcare educational programs to help improve patient care outcomes (WHO, 2010). While other variations of IPE also exist (Barr, 1998; Buring, et al., 2009a; Buring, et al., 2009b; Thistlethwaite, Moran, 2010), the commonly emerging theme is one of collaboration and teamwork.

Barr (1998) suggested that a fruitful direction in the development of IPE was to focus on collaborative competencies rather than knowledge, skills, and attitudes. Much of the work, and certainly the most recent work, focused on competencies or capabilities (Thistlethwaite, et al., 2014). Barr also outlined three categories of professional competencies: common, complementary, and collaborative. Common competencies are those shared by all health professions. Complementary competencies are those that distinguish one profession from another. Collaborative competencies are dimensions of competence that every profession needs to collaborate, within its ranks and with other professions.

Curran, et al., (2009) used an iterative process to identify IPE core competencies with leading IPE researchers across Canada over a two-year period. They devised a framework and used it as a quality standard to evolve, deliver, and evaluate IPE courses and programs. MacDonald, et al., (2009) outlined a process of designing a toolkit of qualitative and quantitative assessment tools, to evaluate learning in healthcare workers and IPE programs. Archibald, Trumpower, MacDonald (2014) published a validation study in two countries, with several hundred healthcare students to validate qualitative tools.

For discussion purposes, Interprofessional Education (IPE) with a pre-licensure element of training, and Interprofessional Practice (IPP) with a post-licensure element of practice training are both considered equally. Educational and practice settings clearly differ. Developing a useful set of shared core IPE competencies, valid for use in an educational and subsequently a practice setting provides common understanding for both students and practitioners (Clark, 2010; Interprofessional Education Collaborative Expert Panel, 2011).

In the past fifteen years, considerable work has been achieved in developing core IPE competency frameworks (Thistlethwaite, et al., 2014). However, a systematic survey of this IPE work revealed a lack of shared core competencies across healthcare disciplines (CIHC, 2007). Investigators found that of the seven frameworks sampled, only two showed greater than 50% agreement in any single competency. The investigators attributed the lack of shared agreement to the use of discipline-specific terminology and inconsistent language use. Subsequent reviews by other investigators reported similar findings emphasizing the need for standardization of language as a precursor to shared mental models (Carraccio, Englander, 2013; Gum, et al., 2013). They suggested that convergence (shared understanding) was unlikely until such standardization occurred.

We build on preliminary work and continue to strive towards consensus with a shared understanding of IPE competencies (Johnson, et al., 2011). The research methodologies varied (F, et al., 2008; Gum, et al., 2013) but the engagement of all healthcare professionals was deemed essential.

CULTURAL CONTEXT

Hofstede (1986) developed a cultural framework that suggested some dimensions along which cultures may differ. For example, the dimension of "Collective" or "Individual" suggests that Western cultures tend towards a more individualistic model while Eastern cultures (including the Middle East) tend towards collectivist models. Similarly, the dimension of "Power Distance" suggests that Eastern cultures tend towards hierarchical organizational structures while Western cultures tend towards a shared one.

Cohen (2009) argues that culture has a significant impact on values, beliefs, and behaviors. Global Leadership and Organizational Behavior Effectiveness (GLOBE) researchers developed a classification system based on their analysis of cultural values, practices and leadership attributes across a wide range of countries and cultures. They also included several of the dimensions suggested by Hofested and others such as performance orientation and future orientation (GLOBE, 2011). They found that countries tended to cluster around cultural norms. Canada, United States, Australia, and England,

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for example, represented an Anglo cultural cluster while Qatar, Turkey, Kuwait, and Egypt represented a Middle-East cultural cluster. It is likely that cultural differences influence how we communicate and interact with each other and ultimately how we work together. There is, however, a growing body of evidence that healthcare students in Qatar are positively disposed towards IPE (Wilby, et al., 2015; Wilber, Kelly, 2015).

While the development of a set of shared core IPE competencies was crucial to this project, it was also important to determine the most appropriate strategy for providing students with exposure and practice in the competencies. A common theme running through most pedagogical models discussed in the IPE literature is one of collaborative, experiential, and authentic, with problem-based learning (Payler, Meyer, Humphris, 2008; Oandasan, Reeves, 2005). Consequently, instructional design and pedagogical principles with an emphasis on developing shared understanding through collaborative and authentic context, guided the development of a two-day workshop that integrated the competencies into a series of team-based activities. Consistent with such design, a significant degree of authenticity was embedded in scenario-based activities while a series of games provided profession-neutral practice in shared decision-making and communication skills.

To determine the efficacy of the shared core competencies, and the associated workshop design and delivery, the research integrated pre and post surveys. A rubric was developed to measure changes in the levels of competency across each domain throughout the workshops. Finally, post-workshop focus groups were conducted to provide an opportunity to learn what the experience was like for the students.

The research project's purpose was to identify a set of shared core IPE competencies relevant to a cultural and geographic region, with Qatar being chosen as the example. For testing the delivery of these competencies, an IPE workshop was developed to provide healthcare students with simulated exposure and practice in the derived competencies. Multiple methods were used to determine the effectiveness of the identified competencies.

METHODOLOGY - PROCEDURES:

The approach comprised three separate phases, with a number of stages in each phase.

PHASE 1: DEVELOPMENT OF SHARED CORE IPE COMPETENCIES

Articulating and agreeing to a set of IPE domains enabled the development of a model that described and placed IPE within a larger set of healthcare domains and competencies. The process involved multiple focus group sessions and iterative consensus-building activities with the research team as well as healthcare professionals from local healthcare facilities. The two major stages were: (1) development of a model and its associated shared core IPE domains and (2) adaptation of a set of competencies for use within each domain.

STAGE 1: DOMAIN DEVELOPMENT

The team consisted of seven deans and directors from post-secondary healthcare institutions and active hospitals in Qatar. Professions represented included internal medicine, nursing, pharmacy and allied health specialties. A literature review revealed seven sets of IPE competency frameworks. The goal was to select frameworks that supported prior work and which appeared appropriate for use in Qatar. Four were then selected for further review (Table 1).

A discussion of the true meaning of WHO's definition of IPE took place: what was field specific, what was shared by all disciplines, and what involved IPE. Integral to this discussion was an iterative review of the selected frameworks. This resulted in the model shown in Fig. 1.

Table 1. Source of competency statements.

	Competency source	Date	Country
1	Accreditation Council for Graduate Medical Education (ACGME)	2002	USA
2	Canadian Interprofessional Health Collaborative (CIHC)	2010	Canada
3	The Development of Competencies in Interprofessional Health Care for Use in Health Science Educational Programs (Interprofessional Core Competency Framework)	2011	Canada
4	Professional Competencies For Qatar Pharmacists At Entry To Practice	2011	Qatar

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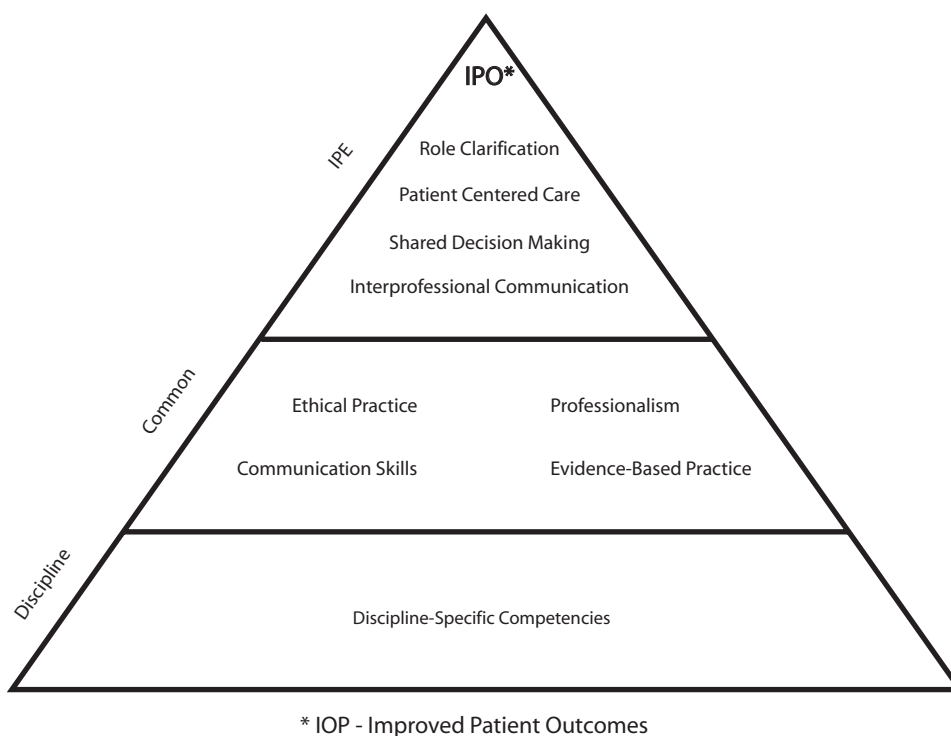
* IOP - Improved Patient Outcomes

Figure 1. Final model of core competencies.

Conceptualizing the top-most peak of the pyramid as "Improved Patient Outcomes (IPO)," it was not considered an IPE domain but rather a destination, goal, or direction of the layers. It helped to articulate the IPE domains that were unique and relevant to the outcome layer and to separate out IPE domains from others subsumed in the first or second layer.

This model development exercise confirmed Barr's work (1998) by articulating the same three general categories he had defined. It provided the detail within each category, in particular, IPE, to continue developing and defining the relevant domains and competencies.

STAGE 2: COMPETENCY DEVELOPMENT

Stage 2 of the project included the identification of a set of competencies unique to each domain. Competency statements from the four IPE frameworks formed the newly defined domains. The criterion for inclusion required that statements related to the domain in intent or wording. For each domain, approximately twenty competency statements arose. A Delphi-based revision methodology was adopted for the competencies (Fink, et al., 1984; McKenna, 1994). This technique involved the selection of a panel of content experts who reviewed a specific topic in successive rounds of judgment, after feedback to achieve consensus (Gebbie, et al., 2008). The steps adopted were:

1. Drafting competencies based on local expert opinion and review of relevant literature.
2. Establishing an external expert review panel in a mix of disciplines and experience.
3. Obtaining feedback from the panel, and incorporating feedback from each round into subsequent rounds.
4. Drafting a final statement of competencies, which a selected multidisciplinary research team reviewed.

Internal and external panels, including the authors, invited healthcare professionals, and educators to form and conduct iterative reviews of the developed shared core competency statements.

The research team identified twenty-five local healthcare professionals, educators, and content experts. Contacting each by email, all were invited to participate in an external review process. Individuals selected were based on experience, fluency in English, and Internet accessibility.
All received an email invitation with an attached document, describing the research project and defining the agreed scope of their participation.

The Internal review panel initiated the review process in two rounds by (1) compiling a list of statements and (2) ensuring consistency with the domain definitions. The first round allowed the compilation of an initial list of domain-specific competency statements derived earlier from the competency frameworks (Table 1). Competency statements were reworked, and duplications removed based on the Delphi approach. A reduction in the list of drafted competencies took place from approximately twenty initial statements per domain to an average of ten statements. A second round of reviews followed to ensure that the definition of each domain adequately covered statements related to it, to eliminate duplication and to ensure that all statements were qualitatively measurable.

Two subsequent review sessions (Rounds 3 & 4) took place with the twenty-five-member external expert review panel. With a split approach, half the panel participated in Round 3, with the rest in Round 4. Before the start of the latter, revisions arising from Round 3 were integrated into the competency document.

Three Research Assistants, in their third year of nursing studies, agreed to assess clarity and understanding of the competency statements. All were native Arabic speakers but fully conversant in English as a second language. They noted an increased clarity and understanding with each subsequent round of revisions.

In the fifth and final round, the internal panel once again reviewed and revised the shared core competencies.

Eight internal panelists and eleven external panelists provided feedback. Through the different Delphi rounds, many suggestions arose to ensure that the competencies were measurable, resulting in word and sentence structure changes. Later, changes were more precise and defined in meaning. Statements that were considered incompetent or vague were discarded. On average, six competency statements remained in each domain (Table 2).

PHASE 2: WORKSHOP DEVELOPMENT

Training programs promoting teamwork and communication are more effective when participants are asked to work together on related tasks and activities (Bridges, et al., 2011; Reising, et al., 2011; Soeren, et al., 2011; Sundary, et al., 2012; Lidskog, et al., 2009). However, a characteristic of team building programs are their focus on working together on activities unrelated to their normal work (Strauss, 2006; Haye, et al., 2007; Stone, et al., 2004; Martin, 2006). Adedunye studied the effectiveness of games as team building tools and found improvements in communication, camaraderie, and cooperation (2011).

With the Shared Core Competencies (SCC) in hand, a training workshop was developed to provide exposure to the SCC domains and competencies. Consistent with IPE practice and student perception, the workshop envisioned participation from students representing various health disciplines (Diack, 2008). She found that the percentage of students responding that they 'agree' or 'strongly agree' indicated that:

1. Learning with other students will make me a more effective member of a health and social care team (96.8%).
2. Patients would ultimately benefit if health care students worked together (95.7%).
3. Communications skills should be learned with other health and social care students (83.7%).
4. Shared learning before qualification will help me become a better team worker (89.0%).

The goal of the workshop was to provide healthcare students with exposure to and experience from those in other health professions while developing competence in the four domains of the shared core competencies. Training began with team building, teamwork, and collaborative activities, not necessarily related to health care. Healthcare simulations followed, consistent with a level of experience (i.e. students in the 2nd or 3rd year of their programs). Interspersed throughout the workshop, and before related activities, Shared Core Competency (SCC) content was provided through lectures and discussions.

PHASE 3: WORKSHOP DELIVERY

Over a six-month period, four two-day workshops were delivered on weekends to fifty-eight students representing medicine, nursing, pharmacy, and allied health care specialties. Measuring changes in IPE competencies, all of the group sessions were video recorded and analyzed, with full informed consent.

Table 2. Core IPE competencies as defined by this study.

Domain: Role clarification

Definition: Healthcare students and professionals understand and respect the role and responsibility of all stakeholders. [2]

Relevant stakeholders were identified as students, professionals, patients, and family.

Competencies:

Role:

   1. *Demonstrates through application an understanding of their own role. [2]*
   2. *Understands the scope of professional practices and roles of each member of the healthcare team. [3]*

General:

   3. *Demonstrates respect for other healthcare professionals' roles and responsibilities. [2]*

Domain: Inter-professional communication

Definition: Healthcare students and professionals communicate in a collaborative, responsible, and culturally sensitive manner. [2]

Competencies:

Patients:

   1. *Utilize effective communication skills with the patients and their family members. [1, 3]*
   2. *Disclose and effectively communicate ethical issues with the patients and their family members. [3]*
   3. *Demonstrate through application an understanding of respect, empathy, and cultural sensitivity when communicating with the patients and their family members. [4]*

Healthcare Professionals:

   4. *Demonstrate through application an understanding of the principles of teamwork communication. [2]*

General:

   5. *Communicate to ensure common understanding of healthcare decisions. [2]*
   6. *Ensure that accurate and timely information reaches those who need the information. [3]*
   7. *Understand and apply to the organizations (health agencies) approved standards of communication, internally and externally. [3]*

Domain: Patient centered care

Definition: Healthcare students and professionals seek out, integrate and value the input and the engagement of the patient and family as part of the healthcare team [Adapted from CIHC]

Competencies:

Healthcare Professionals:

   1. *Create and sustain a therapeutic and ethically sound relationship with the patients and their family members. [1]*
   2. *Demonstrate caring and respectful behaviors when interacting with the patients and their family members. [1]*
   3. *Performs professional roles and responsibilities in a culturally respectful way. [2]*

General:

   4. *Advocate for quality patient care and assist patients in dealing with healthcare system complexities. [1]*
   5. *Provide education and support to the patients and their family members in a respectful and understandable manner. [1; 2; 4]*
   6. *Encourage discussion and enable the patients and their family members to make informed choices about their healthcare. [1; 2; 4]*
   7. *Include patients and their family members as part of the healthcare team.*

Domain: Shared decision-making

Definition: Healthcare students and professionals include all stakeholders in the decision-making process regarding patient healthcare outcomes.

Competencies:

Health Professionals:

   1. *Exchange knowledge and skills with other members of healthcare teams at all times to promote collaborative practice when assessing, developing, and planning during the patient care processes. [2; 3; 4]*
   2. *Acknowledge each discipline's perspective during team meetings and, or inter-professional exchanges during the patient care process. [3]*
   3. *Involve all members of the team as well as the patient and their family members in the decision-making process related to planning and implementing care. [3]*

General:

   4. *Actively seek to create and support a climate of shared decision-making and collaborative practice. [2]*
   5. *Facilitate the integration of evidence-based practice into the shared decision-making process. [3]*

[1] ACGME
[2] CIHC
[3] Interprofessional Core Competency Framework
[4] College of Pharmacy

Table 3. Surveys and dimensions measured.

Survey name	Dimensions compared	Source
Readiness for Interprofessional Learning (RIPL) - 19 items	Teamwork and Collaboration Professional Identity	Parsell G, & Bligh J. (1999)
Attitude towards interdisciplinary learning and student development as health professionals - 15 items	Teamwork and Collaboration Professional Identity	Hyer K, Fairchild S, Abraham I, Mezey M. Fulmer, T. (2000)

A rubric developed specifically to measure IPE competencies was used in line with the SCC framework developed earlier. Two additional surveys were deployed before and after the workshop (Table 3).

Analyzed data from all four workshops produced fifty-eight pre-survey and fifty-six post-survey responses (Two EMS students defaulted in attendance on the second day of the workshop due to a misunderstanding of the full length of the workshop). Although students targeted for recruitment were in the third year of their program, allied healthcare students typically completed two-year programs. To recruit the necessary numbers of participants for each workshop, students from earlier or later years in their programs were allowed to participate. Students received meals at breakfast and lunch both days, an honorarium of 140 QAR (approximately CAN $50) and a Certificate of Completion for the workshops. Participants received a binder with all the workshop materials to take away for private use.

Student representation from each of the healthcare professions by year in the program is denoted in Table 4.

Participants' linguistic ability varied. Many spoke Arabic fluently as their first language, with English or Urdu interchangeable as their second or third language. Ages ranged from 19 to 30 years with representatives from Qatar, Pakistan, Somalia, Iran, and one from Australia. The majority was Muslim, with most students born and raised in Qatar.

RESULTS - PRE AND POST SURVEYS

Pre and post surveys were administered before and after the workshops. Both surveys used the same qualitative ranges (strongly disagree, disagree, unsure, agree, strongly agree), and were given a value. SPSS software was used to conduct Student t-tests on the pre and post data for each of the dimensions in the surveys. T-tests were generated for all participants and each professional group.

As can be seen in Table 5 both the RIPL and Attitude surveys showed statistically significant gains in terms of teamwork. Nursing students showed the largest gain while medical students showed statistically significant gains in terms of professional identity.

SHARED CORE IPE COMPETENCY RESULTS

During workshop development and the deployment phases, revision took place to ensure all healthcare scenarios had a consistent and effective structure. The first two iterations varied in activity, with different stages during the workshop. Workshops 1 & 2 were considered developmental for the purposes of SCC analysis. Workshops 3 & 4 were formally coded. The consequence was fewer participants but a more consistent set of comparatives (Table 6).

Workshops 3 and 4 consisted of four healthcare scenarios and three games. The games were designed to promote teamwork and collaborative decision-making. Each group developed a 'Logo' for

Table 4. Presentation of students from different programs

Program	Year in program				Total
	1	2	3	4	
All	2	37	13	6	58
Nursing	2	9	3		14
Medicine		4	1	4	9
Pharmacy		6	9	2	17
Pharmacy Technician (PT)		7			7
Respiratory Therapist (RT)		7			7
EMS		4			4
Total (%age)	3%	64%	22%	10%	100%

Table 5. Shows the results for the dimensions of Teamwork and Professional Identity.

	RIPL Mean (SD)				Attitude Mean (SD)			
	Teamwork		Professional Identity		Teamwork		Professional Identity	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
All	4.6 (.40)	*4.7 (.38) **	4.2 (.73)	4.3 (.96)	4.4 (.42)	*4.7 (.36) ***	4.1 (.48)	4.2 (.55)
Nursing	4.5 (.42)	4.9 (.27) *	4.4 (.42)	4.6 (.42)	4.4 (.41)	*4.7 (.37) **	4.3 (.48)	4.3 (.50)
Internal Medicine	4.5 (.40)	4.6 (.33)	3.9 (.32)	*4.4 (.37) ***	4.2 (.34)	*4.6 (.36) **	3.8 (.48)	*4.4 (.39) **
Pharmacy	4.4 (.42)	4.7 (.43)	4.0 (1.11)	4.5 (.56)	4.4 (.45)	4.6 (.41)	4.0 (.51)	4.1 (.64)
PT	4.8 (.27)	4.6 (.43)	4.4 (.38)	4.1 (.71)	4.6 (.36)	4.7 (.35)	4.1 (.37)	4.1 (.64)
RT	5.0 (.13)	4.9 (.38)	4.8 (.27)	4.7 (.25)	4.8 (.35)	5.0 (.05)	4.4 (.40)	4.3 (.60)
EMS	4.5 (.28)	4.3 (.47)	3.9 (.31)	2.2 (2.58)	4.4 (.48)	4.7 (.14)	4.4 (.41)	4.4 (.57)

* $p < .05$, ** $p < .01$.

Table 6. Workshop participants.

Workshop	Nursing	Medicine	Pharmacy	Pharmtech	EMS	Total
3	4	4	4	0	4	16
4	4	2	4	3	0	13

their team, agreeing to a consensus decision for two games: (1) a staffing problem that required the team to decide which employees to retain, (2) stranded on a deserted island, the team had to decide which four things they most needed to survive (e.g., rope, water, food, etc.). After each game, groups shared their decisions or logo with all the other groups.

The healthcare scenarios consisted of actors playing the part of patients, patients' friends, or relatives. The four scenarios were: (1) a patient with food poisoning, (2) a patient with asthma, (3) a patient with chronic obstructive pulmonary disease (COPD), (4) one then a second patient who fell ill during a long flight. The interviewing participants did not know the diagnoses. With clinical reasoning, they had to determine them through data gathering and critical thinking (asking questions, consulting supplied chart data, discussing the clinical findings and situation with their team).

A coding rubric was developed from the SCC framework to provide a consistent measure of competencies. Two coders iteratively revised the SCC Competency Rubric and reached an agreed rating system. The rating system consisted of six indicators from no evidence or knowledge of a competency to expert knowledge of competency:

Rating	Indicator
0	None
1	Beginner
2	Basic
3	Intermediate
4	Advanced
5	Expert

Coders built reliability through a process of coding and comparisons until attainment of the consistency of rubric understanding. All video readings were then coded by both coders collaboratively and discussed until reaching consensus for each video.

Four groups completed all seven activities in both workshops.

As the games did not include elements of patient care or professional role identification, they were coded for Interprofessional Communication and Shared Decision Making only.

It was interesting to note that groups improved throughout the day and in particular during the game activities. However, the results from the final scenario of the day suggested that it had elements not demonstrated by the previous games, and this influenced the group's performance in terms of competencies (see Fig. 2).
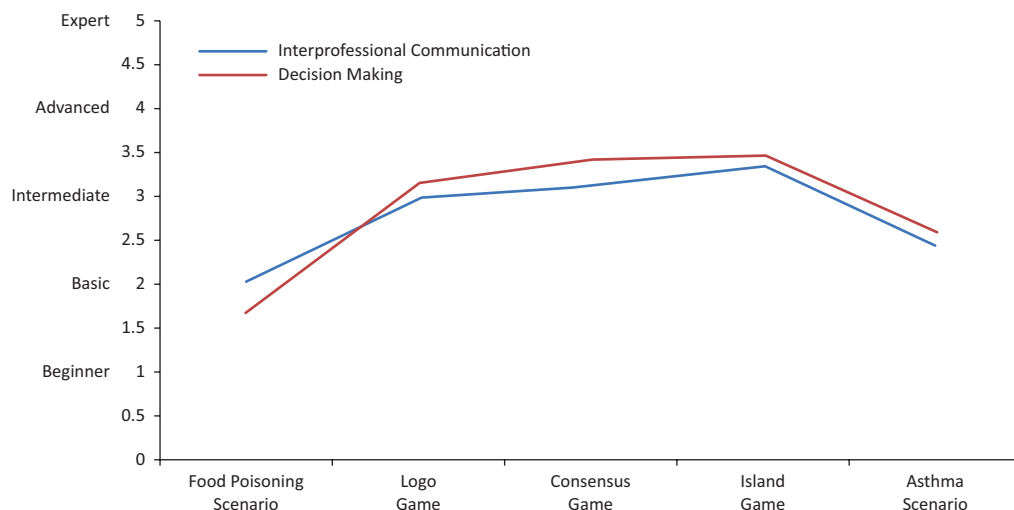

Figure 2. Mean SCC scores for teams from baseline to end of day one.

On the second day, participants were reallocated to new groups, with consequential reduction in team member bias.

The following chart shows the SCC coded video scores from day 1 & 2 for all four shared core competencies Fig. 3.
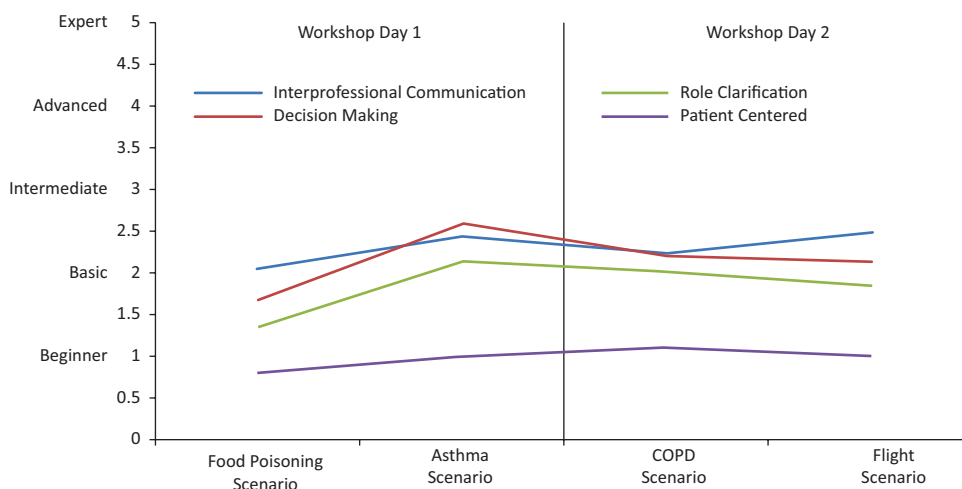

Figure 3. Mean SCC scores for teams for day one and two.

The healthcare scenarios progressed in difficulty by design, in small increments.

The final "in-flight" simulation scenario introduced a more complex second healthcare element part way through, with a second person becoming ill. Actors playing roles of friends or family members were instructed beforehand to show continued signs of agitation as the scenario developed. An important observation noted over the two days was the tendency of groups to focus on solving the problem at the cost of the patient and or family-centered care. While members of each group worked together as a team, they did not always include the patient or the family member or friend. The SCC results confirmed

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the observation showing patient-centered care as much lower in value and accomplishment than desirable. While the technical side of care with communication and health management was jointly acceptable, the collaborative team aspect of patient-centered care was significantly lacking and needed more attention.

FOCUS GROUP FEEDBACK

All the students were happy to collaborate with other institutions from different healthcare backgrounds. A better understanding of the role of other healthcare members in their team followed (Table 7). Student discussions revealed strongly positive learning experiences. They requested more workshops desiring their incorporation within their institutions' curricula.

Table 7. Student responses upon completion of the workshop.

1. *It was awesome. I would now work more comfortably with other professions in a friendlier environment.*
2. *Communicating and knowing more about the other healthcare students were the highlight of the workshop. I learned more on healthcare roles of others, so I intend to apply more communication that is effective with them for better patient care. Suggestion: Please add more activities and simulated lab scenarios as these were really effective.*
3. *I would use this practice in a work life. Because it helped a lot in communication with other professionals and provided more knowledge. Suggestion: more healthcare scenarios.*
4. *The workshop encouraged me to become a stronger catalyst in motivating an interprofessional environment and interaction at the hospital.*
5. *It was an amazing opportunity to work with different health professionals. Because of the workshop, when I see other professions at the hospital I will confidently communicate with them.*
6. *I now have better understand each profession role in the team and how to cooperate together to provide better patient centered care.*
7. *I had learned how to interact with other professions.*
8. *The workshop helped me to improve communication and knowledge sharing with other medical professions.*
9. *I got a clear idea of what to expect from other team members and where my major focus should be.*
10. *It was very helpful to tell us the importance of the interaction between healthcare providers.*
11. *The simplicity made it interesting. The workshop helped me to know that I should be more cooperative.*

DISCUSSION

This study developed a set of Shared Core IPE Competencies, with the deployment of workshops specifically designed to provide students with team exposure and experience. The workshops brought together students from four major healthcare disciplines for two full days, and the activities, namely games and healthcare scenarios, provided opportunities for collaboration in both health and non-health care contexts.

IPE

Pre and post survey results showed that most students retained positive thoughts towards teamwork and collaboration. Further dispositional enhancements did occur e.g. readiness and attitude. Similarly, perceptions towards IPE, other professions, and different professionals improved, changing positively. The lack of statistical significance between pre and post workshop may have been a consequence of a sample of participants that were already quite well disposed towards IPE. During the recruitment stage, the promise of refreshments, remuneration, and a certificate of participation, (normally valued quite highly) was still insufficient to engage surplus participants. Those participants volunteering, despite heavy courses and workloads, were sufficiently attracted to working with other healthcare colleagues, and give up an entire weekend. Nearly 100% of the participants agreed or strongly agreed with the dimensions of Teamwork and Professional Identity, across both surveys, in the pre-workshop survey results. Thus, the responses may show evidence of a "ceiling effect."

Post-workshop feedback revealed that students had few opportunities to work with other healthcare professions in their normal educational curriculum.

The SCC rubric for video reviews, demonstrated that groups quickly learned to work together. For Day 1, the analysis showed that teamwork and shared decisions improved markedly through game

activities but rather surprisingly, deteriorated during health activities. If games had relied more on acquired skills than those learned during their academic career, this result might have been reasonable. Completion of healthcare activities requires learning and development of new skills. The mixture of students at various stages of their programs may have affected the results. Students in their third year of studies had more requisite caring skills than second-year students.

The group composition changed from Day 1 to Day 2 by the reallocation of new teammates. Results for both afternoons' activities showed improvement in the final healthcare scenario of the day.

The degree of interaction and perceived benefit from working with other healthcare professionals was manifest from students' feedback. Participant feedback at the end of Day 2 of the workshop showed the perceived value of working with their future colleagues. Several participants felt that it was important to experience collaborative IPE before graduation and subsequent entry into healthcare practice.

WORKSHOP DEVELOPMENT

The workshop development created a framework based on SCC and supported by the previous literature. It was relatively easy to adopt, adapt, and deploy. The "keep-it-simple" strategies meant applying careful attention to the types of developed activities, namely games and healthcare. In Workshop 1, a powerful healthcare simulation exercise was developed, logistically proving to be difficult to implement. Subsequent strategies focused on the activity rather than equipment. This modification enabled up to four simultaneous healthcare activities to take place simultaneously. Student actors recruited as simulated patients and family members proved remarkably enthusiastic, able, and engaged.

Consultations with simulation experts continued throughout workshop and healthcare scenario development. Practice objectives used the SCC to focus on the scenarios. There was a strong tendency to prioritize healthcare elements rather than the SCC elements. Ultimately, it resulted in stronger healthcare scenarios.

Scheduling proved a significant barrier for shared IPE workshops. In Qatar, each academic institution has distinct and different academic schedules. Given the constraints by the variable and sometimes time-competing schedules, weekends proved to be the best time for student participation. Finding a mutually agreeable weekend to suit the target number of sixteen participants, with four from each profession, proved a challenge. This shortcoming is a significant barrier for running workshops. Students genuinely appeared to appreciate the opportunity to work with other health professionals. Even just two different professions working together were constructive.

With this study completed in Qatar, implications for a worldwide application of findings are also validated. What is apparent is that IPE enhances and benefits healthcare. It should be incorporated in general healthcare training to develop positive interprofessional learning.

SCC RUBRIC DEVELOPMENT

The development of a rubric based on the SCC was worthwhile but demonstrated the difficulty in measuring competencies. The development endeavored to keep the desired objectives in focus. Some coders noticed that the activities were not easy to apply to the rubric. Team members who knew more about the competencies assessed them more easily than those without any experience

LIMITATIONS

The participant pool for this study was small, necessitating a widening of participant selection criteria to include students in different years of their programs. Reid, et al., (2006) pointed out that students near the beginning of their program might not have developed a sufficient sense of professional identity. Students nearer the end of their program are less likely to change their perceptions of IPE. However, these two groups represented only 13% of the entire sample. The Allied Health participants differed from their colleagues in medicine, nursing, and pharmacy in the length of their programs tending to be two-year programs compared to four-year programs respectively.

Bias towards IPE cannot be excluded in the small sample size. More random sampling could have produced different results. Even though care was taken to schedule workshops at times during the academic year when participants were likely to be less busy, each of the four programs participating in this study had different academic schedules.

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Developing appropriate activities for all professions represented in this study, especially healthcare scenarios, was difficult given that it may not be common for them to work directly together in practice (i.e., at the same time, in the same room, with a patient). EMS professionals, for example, may be first-responders but would typically not be part of the bedside treatment.

CONCLUSION

This study was designed to support and promote interprofessional healthcare education in Qatar (Johnson, et al., 2012).

The process adopted was

(1) To build on core competency frameworks already developed.
(2) To adapt appropriate elements of those frameworks based on an understanding of a healthcare context in Qatar.

The model building process proved very useful by identifying and separating IPE competencies from common and discipline-specific as articulated by Barr (1998). The resulting shared core competencies from the iterative process involving health professionals, helped to ensure that the resulting shared core competencies.

Gum, et al., (2013), described an iterative approach involving health educators and professionals using focus groups and interviews to develop a shared understanding of IPE. Integral to their approach was a review and discussion of IPE frameworks found in the literature and discussions about the wording and meaning of frameworks. Their approach highlighted differences in understanding between key terms such as competency and capability.

The collaborative process described in this paper, similarly described in other IPE framework development papers (e.g. CIHC, 2007; Gum, 2013; Tashiro, et al., 2011) increases our shared understanding of core IPE domains and competencies and their meaning. Benefits arise after each iteration, which contributes to subsequent work. Although most core competency IPE frameworks predominantly developed in Western cultures, the inclusion of a culturally inclusive voice to the discussions will help improve a more universally shared understanding of core IPE competencies. It drives us towards WHO (2010), using the term "global lens" for healthcare professionals and policy-makers while at the same time reminding us that the local context is where the practice occurs.

The second phase of this project, matching the workshop development and delivery to the shared core competencies, is a key component of any IPE training. The IPE framework adopted or adapted must provide the direction for IPE training such that the training provides practice in the competencies as described and that the evaluation component is consistent with the framework.

The results, especially from the surveys, suggested that students were already pre-disposed towards IPE. However, feedback comments at the end of the workshops indicated a lack of much interaction between students in other healthcare professions. Any interaction, regardless of the IPE framework used, can be assumed to provide benefit. Structured interprofessional interaction with education is an important future objective.

Collaborative interprofessional interaction can also lead to better understanding of healthcare delivery, management, and treatment issues, with focused patient-centered care. Stakeholders should assimilate a better understanding of how best to integrate their training, for maximum efficiency and delivery of healthcare. When the discussion includes the context of use, a richer understanding of that context ensues (Johnson, 2012).

Declaration of interest

The authors affirm no conflicts of interest and are wholly and jointly responsible for their contributions to this paper.

Ethical approval

The Institutional Review Board fully approved the project funded by the Qatar National Research Program (NPRP), in collaborative research with the University of Calgary at Qatar.

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