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Walden University

College of Health Sciences

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Osaeloka Ekwueme

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2018

Abstract

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Organizational Implications

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Services

Walden University

November 2018

Abstract

Interprofessional collaboration is recognized as the innovative, evidence-based strategy that strengthens health systems and improves performance and health outcomes. While resource-rich countries have benefitted much from the implementation of this initiative, literature is scarce regarding sub-Saharan Africa. This quantitative cross-sectional descriptive study described the extent of interprofessional collaborative practice at the tertiary care level in Nigeria and its implications on patient health outcomes, professionals' performance, satisfaction, and healthy practice environment. The relational coordination theory (RCT) provided the conceptual framework for the study. Key research questions were on the association between the extents of interprofessional practice and each of the outcome implications. Data were collected using a questionnaire survey and were analyzed using means, standard deviations, *t* tests, correlation and regression statistics, and Chi-square tests. Results showed that the health professionals rated the practice of interprofessional collaboration low and perceived that the extents of the practice negatively affected patient's mortality, professionals' work performance, job satisfaction, and the frequency of interprofessional conflicts and strike actions. Recommendations included policy formulation and implementation, commitment and willingness by the health professionals to teamwork and patient-centered care. The implications for positive social change is that these results could be used as a tool to advocate for policy formulation and policy change for effective implementation of interprofessional collaboration; and as a database for future training intervention on collaborative practices among health professionals.

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Dedication

This study is dedicated to God Almighty, through whose inspiration; I was able to embark upon and completed the doctorate degree journey. I also dedicate the study to my loving wife, Mrs. Agatha Chinasa Ekwueme, who stood behind me and gave me all necessary emotional and physical support; and to my children, Munachimso, Precious, Chiemerie, and Udochukwu, that I frequently consulted in times of technical difficulties.

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Chapter 1: Introduction to the Study

Introduction

This is a quantitative study on the extent of interprofessional collaborative practice in a hospital setting in Nigeria and the implications of the practice in relation to the global standard on the institution's health intervention outcomes, healthcare professionals' performance and satisfaction, and on interprofessional relationships in the practice environment. The study was considered necessary in Nigeria in view of the low rating of the Nigerian health systems performance, in comparison with other systems globally (Adrian, 2015; Anekoson, 2013; Onyeniran & Onikosi-Alliyu, 2015); and the evidenced based positive impact of interprofessional collaborative initiative, on the achievement of global health priorities of improving quality of health services (Adams et al., 2002), patient outcome and experience (Pfaff, Baxter, Jack, & Ploeg, 2014; Robson & Kitchen, 2007), and on decreasing mortality, morbidity, and average hospital length of stay (Elsevier, 2016; Mast, Rahman, Bridges, & Horsley, 2014) recorded in resource-rich countries of the world. The study has multiple positive social change implications at all levels of care, especially at the health services delivery point. At the hospital or primary care level, the study provided a prerequisite database that would serve multiple purposes. These include data for future intervention training on hospital based interprofessional collaboration for evaluation of the implementation of the collaborative initiative and for the assessment of the impact of the initiative on the health professionals' performance, interprofessional relationships, and interactions in the practice environment. All these

were aimed at improving overall health sector goal and patients' health outcome experience.

The major content of this introductory chapter included the background of the study, statement of the problem, purpose of the study, research questions and hypotheses, theoretical and conceptual frameworks for the study, and the nature of the study. Additionally, key terminologies were defined; assumptions, scope and delimitations, limitations and significance of the study to the field of practice were also described. Summary of the major highlights of the chapter were also provided

Background

The World Health Organization [WHO], in collaboration with other national, bilateral, and multilateral health organizations, has continued the emphasis on improving processes and initiatives that would promote the delivery of effective and efficient health services, which involve improving access, affordability, coverage, and quality of services (WHO, 2017). The WHO (2017) further emphasized that the achievement of these immediate health services output is dependent not only on availability of the human and material resources, but more also on the way the resources are effectively organized, managed, and delivered. Interprofessional collaborative practice is not only essential and central to the achievement of these global health priority of improving access, coverage, and quality of health services (Adams et al., 2002), but has been found to improve patient outcome and experience (Pfaff et al., 2014; Robson & Kitchen, 2007), and to decrease mortality, morbidity, and average hospital length of stay (Elsevier, 2016; Mast et al., 2014).

According to the WHO (2010), collaborative practice is evidenced only and when multiple health care workers, with different professional training, orientations, and experiences, work together with other stakeholders including the patients, their families, and the communities to provide accessible, affordable, safe, and quality health care interventions. Analysis of the WHO framework for action on interprofessional education and collaborative practice revealed that collaborative practice is strategic to the achievement of improved health outcomes, by serving as the coordinating point for the integrative activities of the “collaborative practice-ready health workforce”, and thereby strengthening health system by reducing fragmentation of services, and enhancing optimal services delivery (WHO, 2010, p. 9, figure 1). Interprofessional collaborative initiative offers the multiple healthcare professionals the opportunity to partner with each other, collaborate, participate, and coordinate healthcare management activities that would best address the ever growing complex disease processes (Aquiono, Olander, Needle, & Bryar, 2016; Clancy, Gressnes, & Svensson, 2013; Piecuch, Pawlowicz, Kozłowska-Wojciechowska, Waniewski, & Mkarewics-Wujec, 2014; Pype et al., 2013), and the associated medical conditions and health issues (Bridges, Davidson, Odegard, Maki, & Tomkowiak, 2011; D’Amour, Ferrada-Videla, San Martins, & Beaulieu, 2005).

In view of the growing complexities in disease processes, the complex global health system, and the need for evidence based innovative strategies that will provide a platform for health systems strengthening (WHO, 2010), there has been global call for the promulgation and implementation of the interprofessional collaboration, both at the medical education training and at the health care practicing levels (WHO, 2013).

Following over 5 decades of research and in-depth inquiry into the practice of collaboration, the WHO and its allied partners have shown that the effectiveness of interprofessional collaborative practices is dependent on effective interprofessional education, which involves persons from more than one professions or disciplines learning together within a common environment with the aim of initiating and promoting effective collaboration that would enhance and strengthen health outcomes (WHO, 2010). Thus, interprofessional education is a prerequisite to achieving a “collaborative practice-ready” health manpower that would effectively tackle the challenges of responding to the multiple population health needs both at the local and national levels (WHO, 2010, p. 6).

Many resource-rich countries that have implemented the interprofessional collaborative initiative recorded varied degrees of successes (Harris, et al., 2016; Peduzzi, Orchard, & Leonello, 2015; Rice et al., 2010; Supper et al., 2014; World Health Organization, 2013); and have found the initiative useful in the delivery of primary healthcare (WHO, 2013), integrated healthcare (Gaboury, Lapierre, Boon, & Moher, 2011), and in specific diseases management, with positive patient outcomes and efficiency in health services delivery (Gougeon, Johnson, & Morse, 2017; Mast et al., 2014). Also in accordance with the World Health Organizations’ recommendation for further research , many researchers in addition to reporting positive patient outcomes and efficiency in health services delivery, have recommended various mechanisms and frameworks on the determinants and factors influencing collaborative practices among the interprofessional teams at the levels of initiation, execution, and evaluation at the various healthcare settings (Mischo-Kelling et al., 2015; Martin-Rodriguez, Beaulieu,

D'Amour, & Ferrada-Videla, 2005; Willumsen, Ahgren, & Odegard, 2012; World Health Organization, 2010). The formation of teams and teamwork among interprofessional groups has become a necessary step for the effective practice of interprofessional collaboration that would enable patient-centered care (D'Amour, Ferrada-Videla, Rodriquez, & Beaulieu, 2005).

The frameworks for clearer understanding of the practice of interprofessional collaboration in the context of interprofessional teamwork are many, but the concepts are similar and interrelated. The team-based care framework, as developed by Reeves, Lewin, Espin, and Zwarentein (2010), have been successfully applied by other researchers in studying interprofessional approaches in various health care settings (Mischo-Kelling et al., 2015; Reeves, McMillan, Kachan, Paradis, Leslie, & Kitto, 2014). The framework is based on four core domains or elements that are each linked in two-way patterns to the centrally positioned interprofessional collaborative team group. These core domains are the (a) relational factors, which pertains to team relationship issues of power, hierarchy, leadership, roles and (b) processes, processual factors that focuses on the systematic processes of collaboration such as time, space, routines, rituals, information and communication technology, and task shifting; (c) organizational factors, which include institutional structures, management processes, supports or litigation postures; and the (d) contextual factors, that relate to sociocultural, socioeconomic, and political environment of the organization (Reeves et al., 2010; Mischo-Kelling et al., 2015; Reeves et al., 2014).

The WHO (2010) stated that the mechanisms that will positively shape the practice of interprofessional collaboration would include institutional support, organizational culture, and operational environment. Institutional support structures include governance styles, collaborative protocols and tools, pooled and shared resources, managerial practices, and procedures and operations. Workable organizational culture involves entrenched strategies for effective communication, favorable conflict resolution policies, and shared and participatory decision-making processes. Organizational environment would include physical settings, in terms of buildings, facilities, and space designs (WHO, 2010). Martin-Rodriguez, et al., (2005), in their review of empirical and theoretical studies on interprofessional collaboration, identified interactional, organizational and systemic factors as the determinants that influence the level of collaboration. Absence of these factors, similarly referred to as personal, relational, and organizational factors, according to Pype and colleagues (2013), would constitute significant barriers to effective interprofessional collaboration (. Generally, concepts, attributes, or characteristics that are commonly found include clear and shared visions, goals, identity, commitment; partnership, interdependency and power; mutual trust and mutual acquaintances; role clarity and communication strategies; coordination and integration (D' Amour et al., 2005; Reeves et al.,2010; Shannon, Karine, & Johanne, 2011; Weller, Barrow, & Gasquoine, 2011).

Despite the large number of studies conducted in the high- and middle-income countries, reported successes achieved, and the availability of clear frameworks recommended for effective initiation, implementation, and progressive evaluation of

interprofessional teamwork and collaborative practices, there is no clear picture and documented evidence on the pattern and the extent of interprofessional collaborative practices in the healthcare settings in Nigeria. Literature is deficient and there is dearth of data on the extent, degrees, approaches, and current status quo of interprofessional collaboration among healthcare providers in the Nigerian tertiary health institutions. There is lack of research studies to describe the mechanism, approaches, and benefits of interprofessional collaboration specific to the Nigerian health sector that aligns with the recommendations by the World Health Organization (2010). Few available studies conducted in Nigeria assessed perceptions, behaviors, and attitudes of healthcare providers toward interprofessional collaboration (Falana, Afolabi, Adebayo, & Ilesanmi, 2016; Iyoke, et al. 2015; Odunaiya, Ilesanmi, Fawole, & Oguntibeju, 2013; Onyekwere, 2013). A clear description of the extent and approaches of the interprofessional collaboration in relation to validated conceptual frameworks, especially at the tertiary referral care level in Nigeria and the implications to the health institution effectiveness, would enable effective and targeted interventions to enhance quality collaborative efforts towards priority areas of local and national health needs. Thus, this study was an attempt in that direction to describe the extent of hospital-based collaborative practices in Nigeria, and the potential implications to the organizational health intervention effectiveness and resources utilization efficiency.

Problem Statement

The extent of the practice of interprofessional collaboration in the Nigerian healthcare settings and the implications of the nature of the practice on the health

outcome experiences of the patients as well as on health professionals' performance, satisfaction, interprofessional relationships and interactions within the practice environment has not been fully described. Many resource-rich countries have successfully implemented interprofessional collaboration with varied levels of success (Harris, et al., 2016; Peduzzi, et al., 2015; Rice, et al., 2010; Supper, et al., 2014; World Health Organization, 2013) in the delivery of primary healthcare (WHO, 2013), integrated healthcare (Gaboury, et al., 2011), and in specific diseases management, with positive patient outcomes and efficiency in health services delivery (Gougeon, et al., 2017; Mast, et al., 2014). Researchers have also demonstrated the effectiveness of interprofessional collaborative practice in addressing the global health priority of improving access, coverage, and quality of services (Adams et al., 2002; World Health Organization, 2017); improving patient outcome experience (Pfaff, et al., 2014; Robson & Kitchen, 2007); reducing mortality, morbidity, and average hospital length of stay (Elsevier, 2016; Mast, et al., 2014); reducing the global health workforce crisis by increasing staff retention, reducing the intention to leave, and improving job satisfaction (WHO, 2010).

Despite these notable practical implementations of interprofessional collaboration in the resource-rich countries, and its proven effectiveness and efficiency in health services delivery at all levels of care, there appears to be no clear picture on the nature and extent of the practice in the Nigerian hospital settings. Review of available literatures on the practice of interprofessional collaboration in Nigerian health settings, at the time of this research, revealed the knowledge, attitude, and behaviors of healthcare providers

toward the practice but demonstrated no clear pattern of practice or the potential implications on patient health outcomes and on the healthcare professionals' services (Falana, et al., 2016; Iyoke, et al. 2015; Odunaiya, et al., 2013; Onyekwere, 2013).

Therefore, the problem was that, while the standard practice of interprofessional collaboration is known globally and has been successfully and beneficially implemented in all levels of healthcare in the resources-rich countries, the patterns and the implications of the practice to morbidity, mortality, and length of stay experiences of the patients have not been clearly described in the Nigerian healthcare settings. Another problem was that the potential impacts of the extents of the interprofessional collaborative practice on the healthcare professionals' work performance, job satisfaction, interprofessional relationships and interactions have neither been clearly assessed nor described. This study was embarked upon to describe in clear terms the extent of the interprofessional collaborative practice and its potential implications to the Nigerian healthcare system, in view of the low rating of the Nigerian health systems performance in comparison to other systems globally (Adrian, 2015; Anekoson, 2013; Onyeniran, & Onikosi-Alliyu, 2015), and the interprofessional conflicts in the Nigerian healthcare settings (Ademola, Asuzu, & Taiwo, 2015; Akpabio, Mildred, Akpan, Akpabio, & Uyanah, 2016). The results of the study would help to improve the overall health outcomes by addressing the issues described above.

Nature of the Study

I used a quantitative method approach for this study to fully describe and examine the extent, degree, and approach to interprofessional collaboration among the major

healthcare providers: the physicians, nurses, pharmacists, and the laboratory scientists and/or technicians. The quantitative approach was also used to ascertain and describe the potential implications of the collaborative approach to the health organization interventions effectiveness, healthcare professional's efficiency, policy formulation and implementation, interprofessional relationships within the practice social environment, staff retention and job satisfaction, and patient's health experience.

Researcher constructed questionnaire instrument was used to ensure an objective assessments of the extent of interprofessional collaboration, ratings of the healthcare providers' perceived effectiveness of the interprofessional collaborative approach to achieving better patient's experience and health outcomes, and the implications of the current collaboration status on the overall organizational effectiveness and efficiency. Postpositivists' philosophical assumptions in relation to predicting cause-effect relationships (Creswell, 2009, 2014), and the relational coordination theory (Havens, Vasey, Gittell, & Lin, 2010) informed the quantitative research approach.

A cross sectional design was employed to describe the patterns and the extents of interprofessional collaboration, the potential implications to the organizational effectiveness and efficiency, and the pattern of relationships between variables (see Frankfort-Nachmias & Nachmias, 2008). The nonexperimental, cross sectional design was considered most appropriate, in view of its ability to provide a snapshot baseline data that would clearly describe the current practice of interprofessional collaboration at the study institution; and thus provide opportunity for further exploratory research in the future (University of Southern California, 2018). Additionally, cross sectional design was

considered most appropriate in view of the descriptive and inferential nature of the quantitative research questions, and the quantitative deductive approach that allows for the application and testing of theoretical frameworks (Creswell, 2009).

The key study variables were provided through the cross sectional design are the extent of interprofessional collaborations, marked by the levels of relational ties of collaboration (shared goal), cooperation (mutual understanding), shared decision making (participation), partnership (rights and responsibilities), coordination (interdependency/harmonious), and communication ties marked by frequency, timeliness, accuracy, and problem solving. The quantitative data collected, using the researcher-developed and validated questionnaire, from the doctors, nurses, pharmacists, and laboratory scientists were analyzed using descriptive and analytical methods, including frequency distribution, mean, standard deviation, student *t*-test, Chi square, Pearson *r* correlations, and multiple regression analysis.

Research Questions

As a quantitative study, using cross sectional design, research questions were designed to elicit information of the extents of interprofessional collaborative practice and implications to the organizations' effectiveness and efficiency in healthcare interventions; healthcare professionals' performance and satisfaction, interprofessional relationships; and relatedness to the health institutions support system, practice culture, guidelines, and policy. Four research questions and their respective hypotheses were designed and these include:

1. What is the association between the extent of interprofessional collaborative practice and patient's mortality outcome in Enugu State University Teaching Hospital?

*H*₀1: There is no association between the extent of interprofessional collaborative practice and patient's mortality outcome

*H*_a1: There is an association between the extent of interprofessional collaborative practice and patient's mortality outcome

2. What is the relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction?

*H*₀2: There is no relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction

*H*_a2: There is a relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction

3. What is the association between the extent of interprofessional collaborative practice and healthcare professionals' performance?

*H*₀3: There is no association between the extents of interprofessional collaborative practice and healthcare professionals' performance

*H*_a3: There is an association between the extents of interprofessional collaborative practice and healthcare professionals' performance

4. What is the relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts in the hospital practice environment?

H₀4: There is no relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts in the hospital practice environment

H_a4: There is a relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts in the hospital practice environment

Purpose of the Study

In view of the dearth of statistical data on the current state of interprofessional collaboration at the health services delivery points, especially at the tertiary level of care in Nigeria, and the potential implications to the patients' health outcomes and experience, and on efficient health services delivery, I sought to close these identified gaps by describing the extent of interprofessional collaboration in a focused Nigeria hospital setting, and the implications thereof, on the organizations' health intervention effectiveness and efficiency in providing effective patient centered care and enhancing healthcare professionals performance and job satisfaction. The available scholarly literature on interprofessional collaboration specific to the Nigeria local health context portrays an unclear description of the approaches and the extent of the interprofessional collaboration among healthcare providers in the hospital settings (Falana, et al., 2016,

Iyoke, et al., 2015, Odunaiya, et al., 2013, Onyekwere, 2013). Current research also appears to neglect the potential implications of the current status quo collaborative practice to the overall health institution's effectiveness and efficiency in health services delivery (Falana, et al., 2016; Iyoke, et al., 2015; Odunaiya, et al., 2013; Onyekwere, 2013); and in conflict resolution (Falana, et al., 2016; Olajide, Asuzu, & Obembe, 2015; Osaro & Charles, 2014).

Thus, I sought to describe the nature and the extent of interprofessional collaborative practice in the Nigerian tertiary healthcare settings, evidenced by the presence of well-established interprofessional team and teamwork, and assessed through the existing levels of collaboration, cooperation, shared decision making, partnership, communication, and coordination (see Weller, et al., 2011). The study further described the correlation and established the associations between the levels of the extent of interprofessional collaboration as the independent variables with the patient's mortality outcome experience, healthcare professionals' performance, job satisfaction, and interprofessional conflict experiences in the health care practice environment as the dependent variables. These objectives were achieved by the use of self-administered and validated questionnaires to the major healthcare professionals directly involved in the provision of healthcare interventions to the patients.

Significance of the Study and Social Change Implications

This study has significance because I provided detailed baseline information that would serve as a database on the extent and implications of interprofessional collaboration in the Nigerian hospital settings. Although interprofessional collaborative

practice has been proven as an evidenced-based effective health initiative for addressing global health priorities (Adams, et al., 2002; World Health Organization, 2017), strengthening health systems and improving health outcomes (World Health Organization, 2010), and useful in targeted and integrative health interventions in resource-rich countries (WHO, 2013; Gaboury, et al., 2011; Gougeon, et al., 2017; Mast, et al., 2014), it is yet an under researched topic regarding resources-constrained countries of the West African sub region, with special reference to a Nigerian tertiary health institution.

The findings of the study provided a platform for advocating for positive social change in the areas of services delivery and policy making arms of the Nigerian health sector. It also provided a useful database for future intervention studies; evidence based data for evaluation of the practices of interprofessional collaboration, and for formulation of hospital based collaboration policy guidelines and charter for the interprofessional collaborative team and teamwork, as well as promoting continuing interprofessional medical education. Additionally, at the health services delivery point, the results provided useful information for responding to hospital challenges of curbing interprofessional conflicts provision of effective and efficient healthcare services, and promoting better patient outcome experience, in terms of reduced mortality, morbidity, and average length of stay. Also, the data generated by this study could be used as a prerequisite database for the Federal Ministry of Health, Nigeria for the evaluation of the practice of interprofessional collaboration at all health care levels. This is in line with the provisions of the National Health Policy on health systems strengthening, which advocates for

collaboration and partnership at all levels of priority health programs implementation, and among relevant health authorities; to ensure mutual accountability; and involvement of the patients, family members, and communities in healthcare planning, implementation, and evaluation (Federal Ministry of Health, [FMOH] Nigeria, 2016).

Theoretical and Conceptual Frameworks

Conceptual Framework

According to World Health Organization (2010), interprofessional collaborative practice involves teamwork among multiple health care workers with different professional backgrounds, and with different profitable skills working with others and alongside the patients, families, care givers, and communities, with the aim of offering quality patient centered care, and highest attainable health care. D'Amour et al. (2005) emphasized that teamwork has become a necessarily condition for the effective practice of interprofessional collaboration and patient-centered collaborative care.

Some of the frameworks or models reported in the work by D'Amour et al. (2005) included a model of team effectiveness, analytical framework of interdisciplinary collaboration, structuration model of interprofessional collaboration, structuration model of interorganizational collaboration, collaboration and social exchange, interdisciplinary alliance model, and bidisciplinary, referred to as conceptual model of collaborative nurse-physician interactions and certified nurse-midwife, physician and client collaborative cycle. However, common concepts or variables that are often mentioned in the different models or frameworks can be grouped under the following collaborative themes, sharing, partnership, interdependency and power (D'Amour, et al., 2005). These common

concepts relate to one another by forming interlocking structure that defines quality interprofessional team. The elements of these models or frameworks were discussed in detail in the literature review section.

Theoretical Framework

Amidst the various proposed theoretical frameworks, two theoretical frameworks, the relational coordination theory (RCT) and the theory of reasoned action (TRA) are closely related to this study. However, the RCT aligned best to this study. The RCT concept hinged on the coordinating complex network of social processes, human interactions, and relationships among the participants in the network with the highest-level functional coordination and performance achievable through shared goals, shared knowledge, and mutual respect (Gittell, Godfrey, & Thistlethwaite, 2013; Gittell & Suchman, 2013). RCT theorists focused on the strength of problem solving rather than previous discordance and reliance on divisional silos (Gittell, Godfrey, & Thistlethwaite, 2013; Gittell & Suchman, 2013). The relational approach engages more in productive, rather than wasteful, activities to coordination, which far outweighs the mechanical approach, in achieving better and desired outcome performance (Gittell & Suchman, 2013).

Relational coordination theory aligned well with the topic of this research as it explained the dimensions of collaborative team work and has been successfully used in previous studies to achieve a high performance outcome, in terms of quality patient care (Havens, Vasey, Gittell, & Lin, 2010). RCT has also been associated with positive scores in the assessment of chronic illness care (Noel, Lanham, Palmer, Leykum, & Parchman,

2014). The framework has also been usefully applied in mitigating leadership crisis, and the organizational and technological challenges encountered by participants in a patient portal network (Otte-Trojel, Rundall, De Bont, & Klundert, 2017). Additionally, interprofessional collaborative practice and RCT have common concepts that provision of quality care is based on optimizing communication with all health care stakeholders and building shared goals with shared knowledge, mutual respect, by enhancing mutual interprofessional relationships between and among the various stakeholders, and interest groups.

The concept TRA is that when a person forms a belief about an action, the person automatically acquires an attitude toward it, which in turn influences the persons' intention to perform the action, which subsequently leads to the performance of the final act (Fishbein & Ajzen, 2010; U.S. Department of Health & Human Services, 2005). However, TRA is best applicable when the influence of belief and attitude to behavior is being considered (Fishbein & Ajzen, 2010; U.S. Department of Health & Human Services, 2005); which is not the intent of the present study.

TRA is usually described in association with the theory of planned behavior (TPB) as both theories explore the relationship between beliefs, and attitudes, behavioral intentions and behavior (Fishbein & Ajzen, 2010; U.S. Department of Health & Human Services, 2005). The two models advocate that behavioral intention is the most important behavioral determinant, and that it is influenced by the personal attitude toward performing the behavior, and beliefs about the stand or position of significant others or influencers regarding approval or disapproval of the behavior (subjective norm) (Fishbein

& Ajzen, 2010; U.S. Department of Health & Human Services, 2005). Both theories also assume that all other factors, such as culture and environment; operate through the models constructs, and not in isolation, or independently as sole predictor variables (Fishbein & Ajzen, 2010; U.S. Department of Health & Human Services, 2005). An additional construct, perceived individuals' behavioral control or belief about the ability to control a particular behavior was later added to TPB as behavioral determinants to account for those blame factors beyond their control, or their perceived inability to control certain acts or behaviors (U.S. Department of Health & Human Services, 2005). According to Fishbein and Ajzen (2010), background factors such as individual factors, social factors, and information are precursors of behavioral, normative, and control beliefs in the TRA. Individual factors include personality, mood, emotions, values, stereotypes, general attitudes, perceived risk, and past behaviors. Among the social factors identified are education, age, gender, income, religion, race, ethnicity, and culture; whereas information factors include knowledge, media, and intervention. These factors influence behavioral, normative, and control beliefs; which in turn respectively influence attitude toward the behavior, perceived norm, and perceived behavioral control (Fishbein & Ajzen, 2010). The intention to carry out or to perform the behavior is jointly influenced by the attitude toward the behavior, perceived norm, and perceived behavioral control (Fishbein & Ajzen, 2010).

Research Design

There are three methods or approaches to research referred to as quantitative, qualitative, and mixed methods (Creswell, 2009, 2014). Quantitative research method

was selected for the study. Quantitative research objectively examines relationships among the different variables as numerical data with the use of statistical instrument and applying the knowledge of the existing theory deductively to explain the observed relationships (Creswell, 2009).

The quantitative strategy of inquiry was nonexperimental cross sectional design, and used a structured questionnaire survey instrument I created to assess interprofessional collaborative practices and the organizational implications among a cross section of the major healthcare providers, the physicians, nurses, pharmacists, and laboratory scientists. The quantitative approach was used to describe the relationship of the extent of interprofessional collaborative practices to global standard of collaboration practice; the organizations effectiveness and efficiency in healthcare services delivery; the organizations' structure, systems and policy, and also the relationship to human resources performance, job satisfaction, and interprofessional harmony.

The SPSS IBM statistics version 21 was used for the quantitative data entry, organization, and analysis. Analytical strategies employed for the Likert type scale format of the questionnaire included descriptive statistics of the mean values, standard deviations, *t*-test statistics, chi-square tests, Pearson's *r* for association, and multiple logistic regressions to describe the patterns of relationships between variables (see Green & Salkind, 2014; Warner, 2013).

Definition of Terms

Collaboration: Working together of different professional groups aimed at achieving organizational goals including good patient outcome and better healthcare experience (Weller, Barrow, & Gasquoine, 2011).

Conflict: Conflict is defined as a situation resulting from experienced or perceived variations in common goals, values, ideas, attitudes, beliefs, feelings, or actions (Higazee, 2015).

Cooperation: Working together with mutual understanding according to expectations, in a common front and efforts for common benefits (Weller, et al., 2011).

Coordination: Working together harmoniously and functionally for more effective outcomes or results (Weller, et al., 2011)

Effectiveness: Organization's "ability to create acceptable outcomes and actions" (Ledlow & Stephens, 2017; Pfeffer & Salancik, 1978), and is externally or transactional focused (Håkansson & Snehota, 1995).

Efficiency: The internal and transformational, and concerns how well the organization meets its goal in terms of non-wasteful and useful application of resources (Agency for Health Research & Quality, 2016; Håkansson & Snehota, 1995).

Effective service: Services based on scientific knowledge proven to be beneficial, provided for those likely to benefit than those not likely to benefit (Agency for Health Research & Quality, 2016).

Efficient: Avoiding waste or resources, time, ideas, and energy (Agency for Health Research & Quality, 2016).

Evidence-based practice: Evidence-based practice involve the use of the best available evidence to make decisions about individual patients' care (Youping, 2014).

Interdisciplinary: Old terminology for interprofessional, involve two or more professionals working together with greater degree of collaboration among team members and with shared responsibilities (D'Amour, Ferrada-Videla, Rodriguez, & Beaulieu, 2005).

Interprofessionality: The process that affords the healthcare professionals the opportunity to reflect on the best way to provides answers to health needs of the population at the levels of the patient, family, and community; and to develop a comprehensive, unified, cohesive, and integrated practice to address the identified health needs (Aschenbrener, 2011; D'Amour & Oandasan, 2005).

Interprofessional communication: Communication with patients, families, communities, and other health professionals in a responsive and responsible manner that supports a team approach to the maintenance of health and treatment of disease (Interprofessional Education Collaborative Expert Panel, 2011).

Interprofessional collaborative practice: Interprofessional collaborative practice is defined as “when multiple health workers from different professional backgrounds work together with patients, families, careers and communities to deliver the highest quality care”(World Health organization, 2010, p. 7).

Interprofessional education: Interprofessional education is “when students from two or more professions learn about, from and with each other to enable effective collaboration and improved health outcomes” (World Health Organization, 2010, p. 7).

Interprofessional team: A interprofessional team is formed or exists when two or more different healthcare professionals interactively work together in a complementary manner and on a regular basis, for the defined, specified and mutually accepted primary goal of providing patient care, and meeting the needs of the patients, families, or community (Aschenbrener, 2011; Institute of Medicine, 1972; Orchard, King, Khalili, & Bezzina, 2012).

Interprofessional team-based care: Care delivered by relatively small number of professionals, with collective interest, identity, and shared responsibilities, geared toward satisfying health needs of individual patients or group of patients (Aschenbrener, 2011).

Job satisfaction: Job satisfaction is an acceptable and pleasurable emotional state of being satisfied resulting from the appraisal of one's job" (Weiss, 2002). The emotional state could be a combination of positive or negative feelings a person has over a job (Aziri, 2011).

Multidisciplinary: Several professionals working in a particular project, but uncoordinatedly, independently or in parallel (D'Amour, et al., 2005).

Participation/Shared Decision Making: Participation, or shared decision making, involves individuals or group members in the entire program and decision-making process; contributing own quota for the successes of the program and effective decision-making (Weller, Barrow, & Gasquoine, 2011).

Partnership: A formal relationship between two or more persons or groups, with rights and responsibilities (Weller, Barrow, & Gasquoine, 2011).

Patient-centered Care: Care that is respectful and responsive to individual patient preferences, needs, and values, with clinical decisions guided by patient's values (Agency for Health Research & Quality, 2016).

Patient health outcomes: Clinically defined as a state or condition including death (mortality), morbidity (disease state), increased length of stay, disability, dissatisfaction, discomfort that result from patient health care (Liu, Avant, Aunguroch, YuZhang, & Jiang, 2014)

Performance: A well-performing workforce is a workforce that is responsive, fair and efficient in achieving the best health outcomes possible, within the available resources and circumstances (World Health Organization, 2006).

Safe: Safe, in terms of this study, is defined as avoiding harm to patients from the care that is intended to help them (Agency for Health Research & Quality, 2016).

Timely: Reducing waits and sometimes harmful delays for both those who receive and those who give care (Agency for Health Research & Quality, 2016).

Trans-disciplinary: Involve several professionals across disciplines, seeking to open territory, with deliberate intention to share knowledge, competencies, and expertise (D'Amour, Ferrada-Videla, Rodriguez, & Beaulieu, 2005).

Assumptions, Limitations, Scope and Delimitations

Assumptions

Several facts and statements, based on the participants' characteristics, study methodology, and design were assumed to be true and applied in this study, though were not verified due to the researchers' inherent inability to do so. These include:

- The research participants were freely open enough and provided honest, truthful, and accurate responses to the research questions based on their knowledge and experience, and to the best of their ability. The assumption was made based on the fact that the participants were assured of confidentiality of information provided and that their participation was voluntary.
- The research participants personal and professional biases, attitude and beliefs toward other disciplines, and presumed use of the research findings, did not affect their responses on the extent of interprofessional collaboration in the hospital. However, these possibilities were envisioned, and thus were fathomed in the choice of study design, and in the wordings of the questions in the survey instruments, and in the clearly stated purpose of the study, and the proposed use of the research findings. All these measures minimized the potential effects on the study design.

These assumptions were made in the context of this study because honest and truthful responses to the research questions, including awareness and blocking of personal biases were necessary for quality results and generalization of the findings to similar settings. The participant's responses were described and interpreted, in relation to the findings of

previous studies, with the aim of adding to the body of knowledge in the discipline and making positive social impact.

Limitations

The quantitative study method, with cross sectional design, lacks both the advantage of a fuller exploration of the phenomenon in question as in a qualitative study and the strengthening, confirmation, or disconfirmation of either the findings of quantitative or qualitative research as in the mixed study (Creswell, 2009). The chosen methodology may have constituted investigative and interpretative limitations to the present study. Also, the distinguishing feature of the cross-sectional design, such as having no time boundary, a reliance on existing differences between subjects due to lack of intervention, and nonrandom allocation of subjects into groups could have also constituted limitations to the study (University of Southern California, 2018).

However, the larger sample size for the quantitative study, the confidence that was established through confidentiality of information, survey instrument which captured information on the practice of interprofessional collaboration since employment into the health institution, and the use of simple random sampling for the selection of healthcare professionals, were also synergized to improve the strength of the study design. The multidisciplinary nature of the study subjects, their similarities to other clinical settings, and the grouping of Likert items into scale categories, respectively enhanced internal and external validities, and reduced the problem of confounder variables as discussed in the scope and delimitation section of this chapter. The unavailability of standard and agreed strategies for thorough investigation of the accuracy of the information provided by the

participants may have influenced the study outcome. However, the use of Likert type items, that do not give room to *yes* or *no* answers, and the thorough explanation of the study purpose, and assurances of confidentiality, where all used to mitigate the effects of these personality factors. Additionally, the questionnaires were self- administered to the participants, with clarifications by the researcher when necessary, were spot checked for completeness, accuracy, and correctness.

Secondly, the inability to include all the healthcare professionals, clinical and nonclinical, that were involved directly or indirectly in the provision of clinical care in the hospital due to time and resource constraints could have constituted barrier to fuller generalization of the findings. However, the inclusion of the major stakeholders, doctors, nurses, pharmacists, and laboratory scientists in the clinical care, provided quality information on the extent of the collaborative practice. Additionally, the use of probability sampling of the participants in this quantitative study, which ensures representative samples of each of the professionals enhanced the generalization of the research findings to the health clinical settings within Nigeria, and sub-Sahara African countries, and beyond with similar culture, beliefs, and practices.

Using Likert-type of scale to measure responses could have constituted a limitation, despite its benefits of allowing assessments of the degrees and intensities of perceptions of the participants, especially if they participants followed one line of thought or patterned responses after decoding the wordings of the questions. Reversal of the questions could have reduced the threats of this limitation, but doing so required extra analytical re-arrangements, which could have also resulted to analytical error if not

correctly done. However, the use of descriptive statistics and extra carefulness that were followed in analyzing and interpreting Likert-type scales, bearing in mind the controversy surrounding its usage, either as ordinal or interval measurement scales as explained in the methodology section of this study, were all employed to reduce the limitations associated with the use of Likert type questions (Bishop & Herron, 2015; Boone & Boone, 2012; Sullivan & Artino, 2013).

Scope and Delimitations

The scope of the study was limited to the Nigerian geographic region as a nation, the Southeastern region of the country, and to a tertiary health institution. The professional groups included for the study were limited by their direct involvement to provision of clinical care, including making diagnosis and involvement in the pharmacological therapy. The information sought on the extent of interprofessional collaboration, and the implications to organizational effectiveness and health professionals' efficiency was limited by years but extends to the practices since the inception of the health institution, as far as the participants were privileged to know by the virtue of their knowledge and years of experience. The methodology that was employed, though nonexperimental, followed scientific method of research; and thus was capable of reducing the chances of error, and increasing the internal validity. Additionally, the specific focus on the extent of the practice, and its implications to organizational goal effectiveness and professionals' efficiency was to ensure thorough and skillful description of the phenomenon, thus the reason for the grouping the Likert item questions into scales or categories to form one independent variable for a group of

item questions. Narrowing the independent variables also enhanced internal validity, as such action in turned reduced the possibility of cofounders.

The fact that the study involved multiple healthcare providers, the doctors, nurses, pharmacists and laboratory scientists, directly involved in the provision of clinical services, was in line with the World Health Organization definition of interprofessional collaboration (WHO, 2010), as multidisciplinary approach to healthcare provision, which also enhanced the external validity of the study. Again, the fact that same group of professionals included in the study were usually involved in the day-to-day clinical services provision in other medical settings in Nigeria, outside the study site, could have also enhanced the external validity of the study. Other healthcare professionals proposed to be excluded, that were directly involved in the clinical services provision, alongside with the new entrants into medical profession, adhoc healthcare professionals, nonregular and temporary healthcare professionals, could only affect external validity if, and only if, the study was intended to be generalized beyond the clinical healthcare services settings.

All the conceptual frameworks and other theories related to interprofessional collaboration have their common elements or denominators tied to quality of relationships and communications were fully discussed in the literature review session. TRA, though related to interprofessional collaboration, is more usefully applied in a situation where the study focuses on the influence of beliefs, attitudes, and on behavioral intentions to carry out an action or a particular behavior (Fishbein & Ajzen, 2010; U.S. Department of Health & Human Services, 2005). This study rather was focused on describing the extent of the practice and how it affected health organizational standard

goal of providing patient centered care, either by enhancing or reducing healthcare professionals' performance, job satisfaction, and healthy practice environment. Thus, the challenge or the threat of external validity where present, would have been highly reduced the design of the study.

Having all the medical doctors involved in clinical services provisions, and their counterparts in nursing, pharmacists, and laboratory scientists, and the healthcare professionals involved in the administration of the hospital as study population, would have enhanced the generalization of the findings to similar clinical settings, in all the three levels of healthcare, primary, secondary, and tertiary within the Nigerian state; and beyond to other African and developing countries around the globe, with similar clinical and geographical settings. The nature of the study populations as described, which included professionals who were involved in provision of clinical care services, has widened the scope of the study and increases the chances of generalization. Although the patient's perspectives were not directly assessed due to resources' factors, the healthcare professionals and the administrator's perspectives on the effectiveness of the hospital interventions, interactions and relations, in relation to the extent of interprofessional collaborative practice, could potentially reflect the perspectives, condition, and position of the patients on the extent of interprofessional care, and how it related to their healthcare experiences.

Summary and Transition Statement

The background of the study provided information of the complex disease processes and the complexity of the management protocol required that necessitate evidenced-based initiatives to promote collaboration in health care. Innovative researches, mostly from the resources rich developed countries of the world on interprofessional collaboration, and the health sector benefits in terms of improved health outcomes, and patients centered care were presented. The issues of dearth of statistics and paucity of research data on interprofessional collaboration in the developing countries were highlighted. The problem statement and the purpose of the study were presented based on the facts of dearth of data and paucity of information on interprofessional collaboration in the resource poor and developing countries of the world, especially in the sub-Sahara Africa, with special reference to Nigeria, with the attendant implications for patient's care and health systems performance.

The study was presented in this chapter as a quantitative study, with cross sectional design type, using researcher-constructed and validated questionnaire as survey instrument for data collection. Research questions as constructed, were focused on eliciting the extent of the practice of interprofessional collaboration at the study hospital and the implications both to the patients, the healthcare providers, and the health institution. Descriptive and inferential statistics were presented as the methods for data analysis. Relational coordination theory was described as the theory that grounded the research study.

Chapter 2 presents a review of literature of the historical medical events that preceded collaborative actions and activities, and the conceptual and theoretical

frameworks of interprofessional collaboration. The chapter focused on the critical review of research studies that were closely related to my study, the design and methods that were employed, the relevance of the study, and any identifiable gaps that needed to be addressed in the present study. Empirical studies on interprofessional collaborative practice, conducted in the hospital settings in Nigeria, were critical reviewed for value, relevance, and comprehensiveness, with the view to eliciting the extent of the practice and identifying implications thereof.

Chapter 2: Literature Review

Introduction

There is dearth of data on the exact nature and the extent of practice of interprofessional collaboration at all levels of healthcare delivery in Nigeria, and the implications to patient health outcomes, and healthcare professionals' performance, job satisfaction, and interprofessional conflict experience within the hospital practice environment. Thus, the need for this study, the purpose of which was to provide a clearer description and a database on the extent of interprofessional collaboration at the tertiary level of care in Nigeria, and its potential implications to the organizational goals of achieving better patient outcomes and improved healthcare professionals' performance and satisfaction.

According to the World Health Organization (2010), interprofessional collaboration in medical education and clinical practice settings is the innovative, evidence-based strategy that strengthens health systems, and improves overall performance and health outcomes. Strengthening health systems is the focus of the many health sector reform strategies in the most countries of the world, including Nigeria, with the objectives of improving population health in terms of quality and equity; enhancing health systems responsiveness, ensuring fairness and equity in health care financing, and thereby improving the overall health system goal of effective and efficient service delivery (Tandon, Murray, Jeremy, & David, 2000). The World Health Organization health system performance report, which rated Nigeria, 187th among 191 countries of the world assessed, blamed underutilization of available resources, including human capital,

as the main reasons for the poor performance recorded in many of the countries (Tandon, et al., 2000; World Health Organization, 2017). Interprofessional collaborative education and practice has been recognized by health partners and stakeholders as an effective and innovative strategy that can be usefully applied in reducing the threat of global health workforce crisis, by preparing collaborative practice-ready health work force, equipped with the necessary skills and abilities to response to local and population health needs (World Health Organization, 2010).

In an effort to overcome the health sector challenges and poor performance, many resource-rich countries have implemented the interprofessional collaborative initiative in different health settings, with positive patient outcomes and efficiency in health services delivery (Gaboury et al., 2011; Gougeon, et al., 2017; Mast, et al., 2014; Pfaff, et al., 2014; Robson & Kitchen, 2007; WHO, 2013), evidenced by decreased mortality, morbidity, and average hospital length of stay (Elsevier, 2016; Mast, et al., 2014). This chapter provides an analysis of the different scientific research works and reports on the approaches, applications, and usefulness of interprofessional collaborative practice and team work, with special reference to the patterns and current status of the collaborative practice in a Nigerian hospital setting, and the implications to the organizations' effectiveness in health services delivery, and efficiency in human capital utilization.

The content and the organization of the literature review are as described in this paragraph. This chapter is a review and presentation of scholarly and scientific research works on the historical developments of interprofessional collaboration in education and practice; provided definitions for interprofessional collaboration and related concepts. I

described theoretical concepts, frameworks, and theories of interprofessional collaboration that grounded this study. Key elements of the theoretical frameworks were examined in relation to the concepts of interprofessional collaboration and its various components. The larger part of this chapter was devoted to the review of related studies done in various countries of the world under differing health settings, on the approaches and practice of interprofessional collaboration among the healthcare professionals and disciplines, with specific emphasis on those studies that involved the physicians, the nurses, laboratory scientists/technicians, and the pharmacists. Available studies on the hospital-based interprofessional collaborative practice in Nigeria were critically examined in relation to the extent and approaches of the practice, the health care providers' perceptions; and the relationship of the collaborative approaches to patient outcomes, provider's efficiency and satisfaction, interprofessional relations and industrial harmony, and to the health institutions' policy, systems and structure.

Literature Review Strategy

The following databases were freely searched for, without putting year boundaries, for peer-reviewed journals, CINAHL and MEDLINE simultaneously, Thoreau Multi-Database, ScienceDirect, PsycINFO, ABI/INFORM Global (ProQuest); and Goggle direct article search and Exact article research using Walden Research tool. The reason for not limiting the search to year interval is because interprofessional collaboration is not a new process, and there was the need to link the developmental processes and various interprofessional studies into a continuum of study to ensure comprehensiveness, and to enhance fuller description of the impact of the innovative

strategy in health services delivery efficiency and effectiveness. The searches were conducted using a simple systematic research strategy (see Alderson, Green, & Higgins, 2004) that was based on the use of key search words such as *interprofessional, collaboration, teamwork, coordination, interdisciplinary, multidisciplinary, professionals titles such as physicians, nurses, laboratory scientists/technicians, pharmacists; frameworks, models, mixed, quantitative, qualitative, hospital, West Africa, and Nigeria*. Screening of the articles reviewed was done on the spot during the research process by examining the abstract for predetermined inclusion criteria. Applying a screening grid approach for paper selection (Alderson, et al., 2004), the articles included for review must have had a title that reflects collaboration in health field settings; be nonexperimental study or experimental with significant relationship to the present study; use of either quantitative or qualitative research methods or mixed methods research; have interprofessional participants such as physicians, nurses, laboratory scientists and/or attendants, and pharmacist and/or pharmacy technicians in any combinations; and with explicit conceptual or theoretical framework.

Events Preceding the Development of Interprofessional Collaboration

Interprofessional collaboration is not a new concept, but rather, several unforeseen health events that negatively militate against quality health services and patients' outcomes, led to the recent need for all stakeholders in health and governance to move toward interprofessional education and collaborative practice in medical education and health services delivery (World Health Organization, 2010). As far back as 1965, Coggeshall (1965) reported the need for a shift from the traditional concept of

medicine as a single discipline engulfed in the restoration of individuals to a healthy disease-free state, to a concept where health professionals adopt a concerted approach to improve individual, societal, and population health (Aschenbrener, 2011). Few years after, in response to public and professional demands for improved nursing education and patient care services, as nurses were considered patients' advocates, Lysaught (1970) proposed a change in the nursing education system to incorporate curriculum based on practice research, role classification, level of responsibility to patients care, and most importantly to joint practice with other health professionals for positive social change (Flaherty, 1987).

As the recognized need for collaborative work among healthcare professionals heightened, the Institute of Medicine, in a conference proceeding on interdisciplinary education for health professionals, stated in a categorical term, the obligation of health organizations to engage in interdisciplinary education and patient care at the clinical settings with a clear and visible administrative support (Institute of Medicine, 1972). Subsequent serial reports on serious health events by the Institute of Medicine (1998) brought to focus the urgent need for enhancing health professionals' competency in the delivery of effective and safe health interventions to meet the needs of patients' through interprofessional medical education, and collaborative practice.

The Institute of Medicine (1999) quantified the number of deaths due to preventable medical errors to be between 44,000 and 98,000 each year and called for a change of approach to emphasize competency, knowledge sharing, enhanced communication between healthcare providers, and safety practices through collaborative

efforts. The Institute of Medicine lamented the inconsistency in the methods for ensuring continued competency among health professionals and emphasized on the implications for the inertia in taking an innovative action and change that would guarantee high quality and safer care to patients (Institute of Medicine, 2001, 2007). In defining professional competency assurance as a shared responsibility, the Institute of Medicine (2003) further stressed that the health professional education and practice should be patient centered; have interdisciplinary team approach, which emphasized communication, cooperation, coordination, and collaboration; be evidence-based in practice; and with quality improvement approach, that is based on information and communication.

As a build up to the events that led to the establishment of interprofessional collaboration, the Citizen Advocacy Center (2004) established a road map, built on 10 principles, which would guarantee sustained professional competency for improved health care. On top of the list of the 10 principles, is the use of collaboration, quality assurance, and evidence-based approach that is built upon what works or on the best of practice (Citizen Advocacy Center, 2004). Similarly, in the pursuance of the goal for team-based care, which is built on providing a safer patient-centered care and population orientated healthcare system, the expert panel on interprofessional education collaboration established four competency domains that characterize interprofessional collaborative practice. These domains include values and ethics, roles and responsibilities, interprofessional communication, and teams and teamwork (Interprofessional Education Collaborative Expert Panel, 2011). The value and ethics

domain concerns practice of patient-centered care approach, with community orientated mindset that pursues mutual respect and shared values in a conflict free practice environment (Interprofessional Education Collaborative Expert Panel, 2011). Role and responsibility domain emphasized complementary and synergistic expertise of other health professionals in promoting patient-centered interprofessional collaboration (Interprofessional Education Collaborative Expert Panel, 2011). The communication domain is at the heart of interprofessional collaboration and is considered the condition for a successful and effective collaborative intervention. The team and team work domain on the other hand, emphasized shared vision and goal, shared problem solving, and shared decision making in an interdependent manner for better patient outcomes (Interprofessional Education Collaborative Expert Panel, 2011).

Thus, the call for a change from the traditional doctor-centric healthcare environment and emphasis on silos that divided healthcare professionals to a concerted and collaborative initiative that emphasized complementary and synergistic practice is historically a buildup of events relating to inefficiency and incompetence on the part of healthcare professionals that negatively impacted effective and efficient medical practice and the population health (Citizen Advocacy Center, 2004; Interprofessional Education Collaborative Expert Panel, 2011). In response to the need for global health priorities through an evidence-based global health initiative, the World Health Organization (2010) launched an evidence-based framework for interprofessional education and effective collaborative practice that would strengthen the health system, and improve health outcomes.

Defining Key Concepts Related to Collaborative Practice

In the years of attempts to develop a cohesive and integrated approach to the disciplinary knowledge and practice of responding to needs of patients and clients, several related terminologies have emerged. These terminologies include interdisciplinary, cross-disciplinary, multidisciplinary, trans-disciplinary, interprofessionalism, interprofessional collaboration, interprofessional collaborative practice, interprofessional education, and interprofessional team and teamwork.

The concepts conceptually preceded interprofessional, which in turn could be referred to as modern usage or updated version of these terminologies. Interdisciplinary, multidisciplinary, and trans-disciplinary conceptually describe relationship between or among two or more disciplines, or professional specialization for the purposes of providing answer to a common problem, in this case health related problems. The relationship regarding collaborative education could be at the levels of faculty and students (Institute of Medicine, 1972); while at the collaborative practice, it could be at the levels of healthcare providers, patients and/or community (Aschenbrener, 2011). These terminologies frequently found usage in literature in association with the practice of team and teamwork (D'Amour, et al., 2005).

Interprofessionalism, unlike interdisciplinary which was developed in response to the fragmented health disciplinary knowledge, was formed to act an interface between interprofessional education and interprofessional collaborative practice (D'Amour & Oandasan, 2005). The primary aim is to clearly show the developmental process of cohesive practice among different professionals within the same or deferring

organizations, and the determinant factors influencing and inherent to interprofessional education and collaborative practice respectively (D'Amour & Oandasan, 2005).

Interprofessionality, as a process, affords the healthcare professionals the opportunity to reflect on the best way to provides answers to health needs of the population at the levels of the patient, family, and community and to develop a comprehensive, unified, cohesive, and integrated practice to address the identified health needs (Aschenbrener, 2011; D'Amour & Oandasan, 2005). The process of achieving this laudable health aspiration involves honest, committed, continuous, and unequivocal interaction, knowledge sharing, and participation among the professionals and the clients, while exploring the educational and care options (Aschenbrener, 2011; D'Amour and Oandasan, 2005).

The defining characteristics of interprofessional collaboration and collaborative practice are evidenced in the explanatory definition offered by the World Health Organization (2010) in its proposed framework for action on interprofessional education and collaborative practice. In the framework, World Health Organization (2010) stated that “collaborative practice happens when multiple health workers from different professional backgrounds work together with patients, families, carers and communities to deliver the highest quality care”(p. 7). The collaborative process enables the healthcare workers from different health professions, to have a common platform, in this case an interprofessional team, to synergize health actions with the participation of the patients and family members to offer the best available and evidence based quality care (World Health Organization, 2010). According to Martin-Rodriguez, et al.,(2005), interprofessional practice is an effective, efficient, and satisfactory means of delivering

quality patient-centered care, with competent and experienced team members committed to promoting better patient outcomes and health experience. Gonzalo and colleagues (2016), in defining interprofessional collaborative care as a process of promoting quality care, emphasized the role of improved communication, coordinated care, and patient-centered share-decision making in achieving the desired quality. The type of environment that promotes interprofessional collaboration is said to be characterized by trust, respect, open communication, shared knowledge, expertise, decision making, and problem solving centered (Sangster-Gormley, Griffith, Schreiber, Borycki, Ferddema, &Thompson, 2015).

Interprofessional education and interprofessional collaborative practice are interdependent on each other to achieving the overall health outcomes (Aschenbrener, 2011). As interprofessional education enhances learner's outcomes (Aschenbrener, 2011), by having collaborative practice-ready workforce in place (World Health Organization, 2010), interprofessional collaborative practice enhances patient care outcomes (Aschenbrener, 2011, World Health Organization, 2010). Interprofessional education is said to "occur when students from two or more professions learn about, from and with each other to enable effective collaboration and improved health outcomes" (World Health Organization, 2010, p. 7). Interprofessional education collaborative as is established with the movement toward team-based patient care, by enhancing professional's competencies for collaborative practice in the following four domains of values and ethics, roles and responsibilities, interprofessional communications, and team and teamwork (Aschenbrener, 2011). With the proper integrative framework for

interprofessional education and collaborative practice in place, the interprofessional health care teams so developed will maximally harness the skills of the team members to share and manage difficult cases, with resultant better patient health experience, health outcomes, and stronger health system (World Health Organization, 2010).

As noted, establishment of team-based care among others is the main vision of interprofessional education (Aschenbrener, 2011); and teamwork is the main context and the platform in which the collaborative practice- ready workforce provides collaborative patient-centered care (D'Amour, et al., 2005; World Health Organization, 2010).

Traditionally, team is considered a “transitional social system”, and is formed when a group of persons agree to work together for a defined, specified, and mutually accepted goal, with each member understand and accept defined roles and responsibilities toward achieving the goal (Institute of Medicine, 1972). When applied to the health system, with the primary goal of meeting the needs of patients and their families, or the community as the case may be; the members of the team maximize the potentials, competencies, and the skills of the others in a complementary manner to effectively and efficiently meet the set goal (Institute of Medicine, 1972). Team can be classified on the basis of how closely the work with, or is in personal and physical contact with the patient, and include patient, medical, and health teams. Patient care team has more direct physical contact with the patient such as doctors, nurses, dieticians, and physiotherapists; medical care team has not as close contact as the patient team, and essentially provide back-up services such as laboratory technicians, pathologists, radiologist, pharmacists; whereas health care team is

very low contact with the patient, and has more community orientated relationship (Institute of Medicine, 1972).

However, the most frequently conceptual use of the concept of team relates to the degree of collaboration, and includes multidisciplinary, interdisciplinary, and trans-disciplinary teams (D'Amour, et al., 2005). Multidisciplinary involve several professionals working a particular project, but uncoordinatedly, independently or in parallel. Interdisciplinary has a greater degree of collaboration among team members with shared responsibilities; whereas trans-disciplinary is seeking to open territories, and has deliberate intention to share knowledge, competencies, and expertise (D'Amour, et al., 2005). Interprofessional team-based care is described as care delivered by relatively small number of professionals, with collective interest, identity, and shared responsibilities, geared toward satisfying health needs of individual patients or group of patients (Aschenbrener, 2011). Interprofessional team-based care is offered within the umbrella of interprofessional collaborative care. The team is dynamic, and applies relationship-building values to play assigned roles and responsibilities effectively to achieve patient-centered or population-centered goal orientated care, in a safe, timely and equitable manner (Aschenbrener, 2011).

Effective team and teamwork is very vital to achieving high quality, reliability, patient outcome and safety, as well as addressing issues related to workforce shortages and crisis, and minimizing adverse events and medical errors (Queens University, 2017). Team effectiveness is best understood on the basis of input-process-output models (IPO); which explains the relationship between the input, organizational culture, designated with

the letter 'I'; the process, the interprofessional team designated as 'P'; and the output, job satisfaction, designated with the letter 'O' (Korner, Wirtz, Bengel, & Goritz, 2015). Thus the IPO models describe how the input, which include organizational culture, team composition, structural of communication, task design; and the mediating process, that is interprofessional team, which comprised of communication, coordination, respect, and conflict leadership exact their impact on the team output, such as team performance, job satisfaction, well-being, cost effectiveness, quality of care, and treatment outcome (Korner, et al.,2015). According to Korner, Wirtz, Bengel, & Goritz (2015), findings of several studies by different researchers have shown that organizational structures or characteristics affects treatment quality and success, by influencing interprofessional team and teamwork, which in turn predicts or influences job satisfaction. Likewise, in conducting a multi-center cross-sectional study involving 272 medical employees in fifteen rehabilitation clinics in Germany, Korner, et al. (2015) developed a model, using the Input-Process-Output (IPO) models as a framework, to predict job satisfaction through interprofessional teamwork. The model is referred to as model of the impact of organizational culture on teamwork and job satisfaction, and it has similar structures and concepts like the IPO models. Korner, et al. (2015) model describes a framework where organizational culture directly influences leadership, structure and strategy, interprofessional teamwork, and job satisfaction; and the interprofessional team also directly affects job satisfaction.

Conceptual and Theoretical Frameworks of Collaboration

Conceptual and theoretical frameworks have often been used interchangeably, despite their differing meanings (Nalzaró, 2012). Although both frameworks consist of concepts that are logically and sequentially arranged, conceptual framework is deduced from related concepts, and represents less formal structure than theoretical framework, which is derived from existing theories, and is thus more useful for studies based on existing theory (Nalzaró, 2012). Conceptual framework is an organizational tool for understanding, clarifying and proposing relationships among concepts, ideas, thoughts and courses of actions; whereas theoretical frameworks serve as an analytical tool for the purposes of explaining, describing, and predicting relationships; both of which are geared toward achieving research purposes (Baum, 2003; Nalzaró, 2012; Shields & Rangarjan, 2013; Shield & Talalli, 2006).

Conceptual Frameworks of Collaboration

Many of such frameworks have been formulated to aid description, explanation, and prediction of relationships among core concepts of interprofessional collaboration. The core concepts are the building blocks of interprofessional collaboration and practice, and are derivable from their respective definitions. Interprofessional collaboration as a partnership between healthcare professionals and a client or patient, has core elements which include participation, collaboration, coordination, shared decision making, and focused goal (Bridges, Davidson, Odegard, Maki, Tomkowiak, 2011). The partnering relationship results in a collaborative practice, which is a process involving communication and decision making, with the sole purpose of synergizing the groups'

knowledge and skills to achieve the common goal of improving patient outcomes and quality care (Bridges, et al., 2011).

The main elements of the collaborative practice include responsibility, accountability, coordination, communication, cooperation, assertiveness, autonomy, mutual trust and respect (Bridges, et al., 2011). Interprofessional collaborative practice is made operational through a practice concept referred to as interprofessional collaborative team, in which the values and ethics of membership lead to mutual respect and positive attitude towards improving patients' health outcomes. A classical interprofessional collaborative team framework was proposed by Reeves, Lewin, Espin, & Zwarenstein (2010), for clearer understanding of collaborative teamwork. The framework is built around four thematic areas referred to as rational, processual, organizational, and contextual factors. Rational factors are those factors internal to the team members, and include professional power, hierarchy, socialization, team composition, team roles, and team processes. Processual factor relates to time and space, routines and rituals, information technology, unpredictability, urgency, complexity, and task shifting. Organizational factor involves inbuilt relationship between the organization and the team members and include organizational support, professional representation in the organization activities and decision making, and inherent or explicit fear of litigation among the team members. Contextual practice structures that equally influence and is being influenced by interprofessional collaborative teamwork include cultural diversity, gender, political will, and economic condition (Reeves, et al., 2010). Each of the thematic areas and the respective subtheme factors establishes a bidirectional relationship with

interprofessional teamwork. The influence of each of the factors on the team effectiveness and practice outcomes is dependent on its presence or absent, and on the nature of the role it plays with regard to promoting and enhancing team collaboration, or negatively challenging the collaborative team process.

Weller, Barrow, and Gasquoine (2011) in their qualitative study of interprofessional collaboration among junior doctors and nurses in a hospital setting stated that for interprofessional team to exist and perform maximally, there must exist among the team members, sufficient cooperation and communication, sense of collaborative responsibility, good knowledge base, skills and competencies, and good team attitudes and behaviors. For fuller understanding of the nature of the collaboration, interprofessional team framework based on the concepts of quality of collaboration, shared mental models, team coordination, and communication environment was adopted by Weller, et al., (2011). Quality of collaboration involve mutual respect and trust; shared mental model related to information sharing and shared priorities; team coordination concerns defining team roles and leadership, coordinating decision-making, and orientation of new team members; and communication environment which relates to openness to communication, and environment that encourages freedom of speech, and voice vote (Weller, et al., 2011). The present study benefited so much from these concepts as applied in the work of Reeves, et al., (2010), and Weller, et al., (2011) in the formulation of the research questions and the constructs that formed the variables of the study.

Martin-Rodriguez, et al.,(2005) in their review of theoretical and empirical studies identified a framework built on the major types and main characteristic determinants of successful interprofessional collaboration. The determinants in the framework include interactional factors, organizational factors, and systemic factors. Systemic determinants include those influencing conditions outside the organizational environment, which are referred to as social, cultural, educational, and professional systems (Martin-Rodriguez et al. 2005). Social systems concerns differences in power between different professionals in the team, such as those resulting from gender differentiation and socio-economic status, or social class differentiation. Power differentiations or inequality in power sharing constitutes great barrier to effective interprofessional collaboration. Regarding cultural systems, deep rooted cultural values such as strong attachment to autonomy negates the principles of collaborative practice, and foster individualism and specialization. Traditional educational system and training promotes professional territorialism and protectiveness, and limited knowledge of the diverse benefits of the skills and expertise, shared values, roles and responsibilities of the other disciplines. Professionalism being promoted by the professional system encourages domineering ideology, autonomy, territorial control and behaviors, which negates collaborative core elements of interdependency, mutual trust and social integration (Martin-Rodriguez, et al., 2005).

Organizational systems or factors traditionally have hierarchical structures, rather than horizontal structures, and as such do not promote shared decision-making, openness in communication, and teamwork. Good organizational philosophical values and norms,

administrative support through motivation and clearly stated collaborative vision, and availability of team resources including space and time, and adequate coordination and communication mechanisms are necessary organizational factors that would promote collaborative practice and teamwork (Martin-Rodriguez, et al., 2005). Interactional and relational determinants include willingness to collaborate, evidenced by cohesion and commitment in the group. Willingness to collaborate, however, is dependent on factors such as previous professional education and experience, beliefs in sharing and acceptance of innovation, existence of mutual trust and respect, and effective communication (Martin-Rodriguez, et al., 2005).

In order to understand and build collaborative networks at the levels of organizations, professionals, and services users, Willumsen, Ahgren, and Odegard (2012) emphasized the need to for fuller understanding of the concept of integration, and professionals' perception of collaboration. According to Willumsen, et al. (2012), collaboration is all about bridging the gap between differentiation and integration. Differentiation refers to the difference that exist in "orientation and formality of structure" between different bodies; whereas integration is the "quality of the state of collaboration" required to achieve a concerted effort in response to the demand of the environment (Willumsen, et al., 2012, p. 200). Thus, the system, units, departments and professionals are jointly involved in integration process. In examining interorganizational collaboration, a continuum of integration was developed to show the existing quality of collaboration. The continuum of integration stretches from full segregation, where virtually no contact exists between services providers; to linkage, with exchange of

information and referrals; then coordination in network, where there is interprofessional team, but no involvement of services user individual plans; cooperation where there is team work with involving individual services user plan and a coordinator; and to full integration, where there is full collaborative arrangements with organizational supports. The concept of integration continuum has been used to construct a measurement instrument referred to Scale of Organizational Integration (SOI) (Willumsen, et al., 2012).

However, conceptual framework for interprofessional collaboration developed by examining the professionals' perception of collaboration along the line of individual, group, and organizational factors incorporates more elements of collaboration than those described in the integration continuum (Willumsen, et al., 2012). Individual factors identified by the professionals that affect levels of collaboration includes work motivation, role expectations, personality, and professional power. Group factors perceived to affect collaboration include leadership issues, coping abilities, communication and social support. Perceived organization factors in the interprofessional collaboration include organizational culture, vision, aims, domains, and environment (Willumsen, et al., 2012). This collaborative model, with 12 factors that professionals considered central to understanding collaboration is referred to as 'perception of interprofessional collaborative model (PINCOM)' (Willumsen, et al., 2012, p. 201). The PINCOM has been used to develop a valid and reliable collaborative measurement instrument referred to as perception of interprofessional collaborative model Questionnaire (PINCOM-Q). Both the scale of organizational integration and PINCOM-

Q have been jointly used to formulate a research design for simultaneous measurement of collaboration and integration in an individual and a group level (Willumsen, et al., 2012).

Shannon, Karine and Johanne (2011) developed a collaborative model referred to as the structural model of interprofessional collaboration to guide a team intervention among specialized nurse practitioners (SNPs) and the clinical nurse specialists (CNSs), in a bid to promote collaborative approach to patient care, and to build team spirit within cardiac surgery population. The model was developed to bridge the gap between the two nurse practitioners who were known to work in parallel, with competitive spirit, devoid of collaborative and mutual goals that characterized interprofessional teamwork (Shannon, et al. 2011). The structural model of interprofessional collaboration has four dimensions grouped into two subscales of relationship and organization dimensional settings. Relationship dimension which is between individuals include shared goals and visions; and internalization, which is composed of mutual trust and acquaintances. The other two dimensions relate to organizational settings or presence of organizational structures that supports or promotes collaboration. The organizational structures are further subdivided into two components, formalization which comprise of physical settings and structures, tools, agreements, and protocols for collaboration and information exchange; and governance or leadership patterns (Shannon, et al., 2011). Governance concerns regulation and regulatory tools for collaboration, which includes internal (endogenous), and external, endogenous. Exogenous are outside influences to collaboration, and include associations and political bodies. Indicators for favorable governance include centrality, which refers to the presence of clear directions and

instructions guiding professional actions; a local leadership with clear mandate, roles and responsibilities; support for innovative collaborative activities; and connectivity or interconnectivity between individuals to enhance coordination (Shannon, et al., 2011).

Theoretical Frameworks of Collaboration

Theoretical concepts have been used to develop frameworks that explain group or team effectiveness and efficiency, because teamwork is a platform or a necessary step for effective collaborative practice in health institutions and health-related organizations (D'Amour, Ferrada-Videla, Rodriguez, & Beaulieu, 2005). Several collaborative frameworks developed from studies on standard theories by different researchers were described by D'Amour, et al. (2005). Among these are model of team effectiveness and analytical framework of interdisciplinary collaboration, which were developed from organizational theory (D'Amour, et al., 2005). The model of team effectiveness is built on inputs related to team task, team composition, cultural and organizational contexts; process variables which include leadership, communication, and decision-making; and output variables described as performance, innovation, well-being, and viability (D'Amour, et al., 2005). The model of team effectiveness has been used in the evaluation of team activities in preventive, promotional, and clinical based care programs, with the findings that teamwork leads to group effectiveness, innovation and stress free work environment (D'Amour, et al., 2005). Similarly, analytical framework of interdisciplinary collaboration has input, process, and intended output variables. Input variables are contextual and include leadership, managerial and structural characteristics. Intra-group processes are the team member's beliefs, social integration, and the degree of conflicts

among members, and within the program processes. Task characteristic is considered a major determinant factor mediating the outcome. The intensity of collaboration, considered as the degree of interprofessional coordination and shared activities, are the outcome variables (D'Amour, et al., 2005). Members' beliefs and values, and formalization in terms of rules that guide and strengthen structures, foster collaboration (D'Amour, et al., 2005).

Two collaborative theoretical frameworks were derived from organizational sociology. These are structuration model of interprofessional collaboration, and structuration model of interorganizational collaboration (D'Amour, et al., 2005). Structuration model of interprofessional collaboration is demonstrated in four dimensions of finalization, interiorization, formalization, and governance. Finalization concerns the presence of clear and shared goals, which include the team vision, mission, and values; and how the team members understand, recognize, and manage the diversities of motives, and expectations (D'Amour, et al., 2005). Interiorization refers to the degree of sense of belonging existing among the team members, awareness and importance attached to interdependency of the group to each other, understanding of the group values, and the degree of mutual trust among members (D'Amour, et al., 2005).

Formalization is analyzed based on the presence of rules that guides members activities and actions; whereas governance focuses on the strength and nature of the leadership, central and local leaderships, their expertise, level of engagement, involvement, connectivity, and responsiveness to the groups expectations (D'Amour, et al., 2005). Structuration model of interorganizational collaboration, though examines

collaboration among professionals working in different types of organization, still has conceptual similarities with structuration model of interprofessional collaboration. Structurally similar to networks, the inputs are the characteristics of the network organizations, but the processes variables are the four dimensions of finalization, which concerns shared goals and visions; interiorization, that is degree of sense of belonging among the members; formalization relating to the structure of the clinical care; and governance which deals with leadership characteristics and interconnectivity. The organizations' output is evaluated based on the quality of patient care, innovation in the professionals' collaborative practices, and professional's satisfaction (D'Amour, et al., 2005). Based on the variables of collaboration identified in the structuration model of interorganizational collaboration, and in other collaborative models and case studies, three types of collaboration have been described. These are collaboration in action, collaboration in construction, and collaboration in inertia (D'Amour, et al., 2005). Collaboration in action has been shown from previous evaluative studies on collaboration to be the most desirable; and its practice has also been associated with strong leadership, accessibility and availability of services on a continuous basis (D'Amour, et al, 2005).

Another theory that has been usefully applied in the analysis of collaboration is the social exchange theory. Theoretical frameworks that adopted the concepts of social exchange theory in the analysis of collaboration include five-stage model of collaboration, and interdisciplinary alliance model (D'Amour, et al., 2005). Social exchange theory tries to understanding social institutions and behaviors through the analysis of interpersonal transactions and interactions. The fundamental concepts of this

theory applied in the analysis of collaboration are exchange and negotiation. The exchange concept is that people join groups where they derive specific benefits; while in turn assist the group to attain its goals and objectives. The negotiation process starts from the time the individual offers a specific expertise in anticipation to receiving specific benefits from the group (D'Amour, et al., 2005). Thus, the process of collaboration among groups and individual professionals according to this model involve constant exchange and negotiation, with the review to maximizing individual and group benefits, as well as helping the group achieve desired goals and objectives. The social exchange theory was later expanded into four-parameter model: exchange, negotiation, building environment of trust, and role differentiation. Five overlapping activities of the expanded social exchange theory include assessment and goal setting; determination of collaboration fit, whereby the participants exchange and negotiate ideas, and roles; identification of resources for collaboration and reflection on the participants benefits; refinement and evaluation of ideas, and implementation of activities; and finally evaluation of team practices, receiving feedbacks, and charting of future goals or the way forward (D'Amour, et al., 2005). Interdisciplinary alliance model is a merger of two models, which respectively deals with iterative processes, and interpersonal factors, that interplay in the collaborative process (D'Amour, et al., 2005). The requisite conditions or assumptions that ground the model are that caring is a reciprocal professional ethic, personal knowing involve mutual reflection, and social support evolve from interprofessional relationship (D'Amour, et al., 2005). These assumptions depict

interdisciplinary collaboration as an interprofessional ethical practice, participatory and mutually supportive.

There are collaborative models that have similar concepts with the other theoretical models, except that they are not based on explicit theory, but rather were constructed based on literature and available empirical data. Two of the models are the conceptual model of collaborative nurse-physician interactions; and certified nurse-midwife, physician and client collaborative cycle (D'Amour, et al., 2005). Conceptual model of collaborative nurse-physician interactions considers the influences of personal, interpersonal, organizational, and professional's interactions on the effectiveness of collaboration. The effectiveness of this model, which is evidenced by attainment of clinical patient goals, depends on mutual respect for professional roles, and actual and perceived power sharing or symmetry among the professional (D'Amour, et al., 2005). The certified nurse-midwife, physician and client collaborative cycle based successful collaborative practice on the external conditions, individual attributes, organizational dynamics, trusting attitude, and philosophy of the practice clearly stated in the mission statement. These concepts revolve in a cyclic pattern of relationships, based on building trust, as well as conducting trust based incentive activities (D'Amour, et al., 2005).

Review of the Theory that Grounded the Study

Relational Coordination Theory: Origin, Choice and Rationale

The relational coordination theory (RCT) is the key theory that conceptually grounded this study. Relational coordination, purposed for task integration, using high powered and quality communication and relational ties to achieve high performance, was

first discovered in the flight operations of airline industry in the 1990s by Jody Hoffer Gittell while carrying out a dissertation research; and later introduced to larger audience in the Southwest airlines and in the healthcare industry in 2003 and 2009 respectively (Gittell, 2003; 2009). Relational coordination has now become a powerful tool or guide to focused or guided organizational change (Gittell, 2016). As earlier on explained in the section of theoretical framework in chapter one, Relational Coordination Theory framework aligns with the dimensions of collaborative team work, and has been successfully utilized in previous studies to achieve a high performance outcome, in terms of quality patient care (Havens, Vasey, Gittell, & Lin, 2010); and has been significantly associated with positive scores in assessment of chronic illness care (Noel, Lanham, Palmer, Leykum, & Parchman, 2014); and usefully applied in mitigating leadership crisis, organizational and technological challenges encountered by participants in a patient portal network (Otte-Trojel, Rundall, De Bont, & Klundert, 2017). The concept of collaborative practice as defined by the World Health Organization, which involve working together of multiple health workers across disciplines in partnership with the patients and families to achieve highest quality care (World Health Organization , 2010), is in that regard in tandem with the concept of relational coordination. The concept of collaborative practice is similar to the concept of care coordination, which is primarily the focus of relational coordination theory. Care coordination is a conscious and deliberate effort by two or more professionals involved in the care of patients, in partnership with the patients, families and other care givers, to deliver planned and mutually agreed health care activities, strengthened through information exchange, to

meet patients' health needs and care preferences (Agency for Healthcare Research & Quality, 2014). Care coordination from patient/family, health care professionals, and system representative perspectives, uniformly focused on activities geared toward meeting patients' needs and preferences. From the health care perspective, the activities are patient-and-family, and team-based; whereas from the system representative perspective, the activities are organizational or system based care activities, that integrates personnel, information, and other resources to facilitate effective and efficient health services delivery (Agency for Healthcare Research & Quality, 2014). Thus, care coordination and interprofessional collaboration are based on conscious and deliberate efforts by multi-professionals to carry out patient centered care, through strong relational ties of collaboration, coordination, cooperation, participation and quality communication ties (Gittell, Godfrey, & Thistlethwaite, 2013; Weller, et al., 2011), in partnership with the patient and the families, aimed at promoting and facilitating effective and efficient healthcare delivery; evidenced by better patient outcomes and health experience, improved healthcare professionals performance and job satisfaction, and conflict free environment and conflict resolution ability (Gittell & Suchman, 2013). Hence, dimensions and elements of the relational coordination and interprofessional collaboration are similar and relate to each other, and formed the basic structure of quality interprofessional collaborative team, as reflected in the research questions and the questionnaire instrument. The elements of quality coordination care and interprofessional team form the independent variables, whereas the expected outcomes of the coordinative

care and interprofessional collaboration, such as satisfactory patient and healthcare professionals' outcomes form the dependent variables.

Relational Coordination Theory: Conceptual Analysis

Relational coordination is a process geared toward task integration and work organization, mutually reinforced through effective communication, shared goals, shared knowledge and mutual respect” (Gittell, et al., 2013). The dimensions of communication network and relationship ties are assessed respectively through the frequency, timeliness, accuracy, and problem-solving nature of the communication; and the quality or the degree of shared goals, knowledge, and mutual respect (Gittell, et al., 2013). As a theory of how people and organization work and interact, the relational coordination results in effective performance by enabling task interdependency, and improved job satisfaction by the provision of social support and stress-free work environment. Relational coordination theory results in overall quality care through organizational structures that promote and reinforce team work across groups, bridges the gaps and silos practice created by the traditional bureaucratic structures, replacing it with more rational structures that encourages and promotes cross functional teamwork, conflict resolution, high performance, boundary spanners, protocols, and cross-functional information system (Gittell, et al., 2013). Achievement of these fits are made possible through rational approach, where coordination function is carried out by direct contact with the front-line workers through cutting edge network at the boundaries of customers; rather than the traditional bureaucratic form, where the coordination function is carried out by the managers at the top of the management ladder, away from the front-line

managers and customers (Gittell & Suchman, 2013). The dimensions of shared goals, shared knowledge, and mutual respect improve work relationships, leading to high quality communication, interdependency, synergy, fewer delays and error, and desired performance outcomes (Gittell & Suchman, 2013). Additionally, these achievements are possible through the cross-cutting organizational structures that foster and build cohesiveness, participants high awareness and recognition of worth and values, reward system based on cross-functional capacity for teamwork, performance, proactive conflict resolution, use of work protocols that crosses boundaries, and job designs that encourages development of networks across functional boundaries (Gittell & Suchman, 2013). Thus relational theory advocates structural redesign rather than replacement, aimed at strengthening weak relational processes, structures, work systems, skills, knowledge, and performance (Gittell & Suchman, 2013). Where fully explored and promoted, rational coordination predicts high quality care, safety, effectiveness, financial efficiency, effective professional and patient engagement, and satisfactory professionals' outcomes (Gittell & Suchman, 2013).

Houdt, Heyrman, Vanhaecht, Sermeus, and Lepeleire (2013) in a literature review study of an in-depth analysis of theoretical frameworks for the study of care coordination, defined as “the deliberate organization of patient care activities between two or more participants (including the patient) involved a patient’s care to facilitate the appropriate delivery of health care services” (p.2); identify theoretical frameworks for the study of care coordination. These frameworks include Anderson Behavioral Model; Donabedian Quality Framework; Organizational Design Framework; Relational Coordination

Framework; Multilevel Framework; Five Phases of team coordination; Interactional Model; Time, Interaction, and Performance (TIP) Theory; Interorganizational Network Theory; Cognitive Workflow Model; Framework of team performance; and Integrative Model (Houdt, et al. , 2013).

Out of a total of fourteen key concepts identified in these frameworks, rational coordination model and multilevel framework has each eleven of the concepts, except external factors, cultural factors, and team outcome. The fourteen concepts include external factors, team structure, task characteristics, cultural factors, knowledge and technology, need for coordination, administrative operational processes, exchange of information and communication, goals, roles, quality of relationship, patient outcome, team outcome, and organization or inter-organizational outcome (Houdt, et al., 2013). These key concepts exert certain level of influence on collaborative care and care coordination; with the degree of influence dependent on the organizational specifics and local context. External factors such as national health policy, economic factors, and dependency on regulations and existing resources have great influence on the level of care coordination and collaborative activities. The nature of physical and organizational structures can provide support or act as hindrance to effective collaboration and care coordination. Cultural factors, though not incorporated in many of the theoretical frameworks, can influence collaboration and coordination function to a greater degree especially in the African settings. Regarding cultural factors, emphasis is laid on professional's attitudes, beliefs, norms, and values, which are deep rooted factors that influence the health care providers intentions to support, oppose, or perform collaborative

and care functions (Houdt, et al., 2013). The concept relating to knowledge and technology focuses on available skills, expertise, training and information technology, which enhances the competency of the professionals or care providers. The concept tagged need for coordination is analyzed as perceived and evaluated needs. Need for coordination, which primarily focuses on the need for information exchange, is a vital concept that acts as coordinating mechanism for collaborative and coordinative care. Perception of the care providers and the organization regarding the need for coordinative care, as well as their evaluation of the wherewith, in terms of resources are both equally necessary for quality care coordination (Houdt, et al., 2013). The nature of administration and administrative procedures impinges on collaborative and care coordination. Administrative procedure involving the use of impersonal methods, such as use of standardized, non-flexible arrangements, with minimal feedback, and guidelines, differs from personal methods which involve personal interactions between collaborators, team members, with great deal of feedback between the healthcare professionals. Administrative procedures where there is joint planning, joint decision-making, with maximum feedback as in team meetings are crucial for effective collaboration and care coordination (Houdt, et al., 2013). Exchange of information, ideas and opinions among team members are central to successful care coordination and collaborative activities. Clearly defined goals that the members jointly and understandably agreed upon, and assume collective ownership, in the presence of specified roles and responsibilities for individual members, are the solid road maps for focused collaboration and care coordination. Quality of interprofessional relationships built on mutual respect and trust

are ingredients for sustainable collaboration and coordinative function (Houdt, et al., 2013).

The last three key concepts dealt on the outcome variables both for the patient, the team, and the organization. Patient outcomes and health experience in terms of health status, mortality, morbidity, satisfaction, continuity of care, safety, efficiency of services, and efficacy of interventions, availability and accessibility of care are the ultimate goals of collaborative and coordinative care. Team outcome, defined as team experience, behaviors and satisfaction are very pertinent in evaluating team effectiveness and continued existence (Houdt, et al., 2013). The last care coordination concept, organizational or inter-organizational outcomes focuses on the comprehensiveness of services, accessibility of services and care, compatibility of care, conflict resolutions abilities and experiences are veritable yard sticks for measuring organizations' services delivery efficiency. However, the most important or ultimate outcome of collaborative care and care coordination is patients' outcome experience (Houdt, et al., 2013).

Standard Methods and Approaches to Interprofessional Collaborative Practice

According to World Health Organization (2010), collaborative practice occurs when multiple healthcare workers, from different disciplines, with different professional backgrounds and experiences, different skills and expertise, work together alongside with the patients, families, other care givers, and communities, to offer the highest quality care. In other words, the multileveled health care workers form a team, comprising of experts and professionals from different disciplines to provide the much needed quality health care needs of the patients. Thus, teamwork has been described as a necessary condition

and the main context or platform for providing collaborative patient-centered care in health and health-related institutions (D'Amour, et al., 2005).

The formation of interprofessional healthcare team offers the multiple healthcare workers the opportunity to provide healthcare services, in line with the Triple Aim of providing high quality care in terms of safety and efficacy, cost effective and efficient services, and with better patient and providers' experience, that would eventually lead to improved patient health outcome (Brandt, Luftiyya, King, & Chioreso, 2014).

Interprofessional collaborative team is said to exist and functional when there is sufficient cooperation and communication among members; expressed sense of collective responsibility, and availability of collaborative practice-ready workforce or team with requisite attitude, knowledge, skills, and behaviors acquired from interprofessional education , which are necessary for effective collaborative practice (Weller, et al., 2011).

A collaborative practice geared toward achieving optimal health services is organized, in the context of local health care delivery, with the needs of the patient or the population in mind, rightly referred to as “needs-based approach or population-based approach” (WHO, 2010, p. 28). This is made operational in the presence of a “collaborative practice -ready health workforce”, and other practice level structural mechanisms, including institutional supports, working culture and supportive environment (WHO, 2010, p.28).

Supportive institutional mechanism and policy should encourage collaboration and coordinative team care, rather than fragmentation of care, synergy and interdependency, clear governance models, structured protocols and guidelines, shared

operating procedures and responsibilities, and adequate time and space for collaborative activities (WHO, 2010). Organizational or working culture should offer best opportunities for shared decision-making; routine team meetings; interprofessional continuing medical education or continuity professional development, including joint seminars and conferences; charting common goals and patient management plans; aligning and balancing individual tasks and shared tasks; and providing common ground for dialogue and negotiation of shared resources (WHO, 2010). Practice or work environment is expected to be spaciouly designed and built to enhance interprofessional collaborative clinic practice, instead of constraining it. Space design or redesign where applicable should accommodate inputs from all stakeholders, including patients in some instances, and the health-care professional team. The physical space should be devoid of traditional bureaucratic and hierarchical positions that hinders collaboration; but instead, should be developed or redesigned to reflect a shared space that would encourage and facilitate effective communication (WHO, 2010).

A typical example of standard method for interprofessional collaboration is the practice of interprofessional meetings and ward rounds between professional groups participating in interprofessional team. Describing the conceptual framework that informed their thoughts in a study of collaborative approach in an orthopedic ward, Papem Thiessen, Jakobsen, and Hansen (2013), differentiated between traditional ward round approach, and the new interprofessional daily meeting approach using the principles of collaboration described by Allport in 1954. In the traditional ward round, each of the profession work independently, and with little or no communication. During

ward rounds, the coordinator of nursing group just follows the surgeon, who comes to conduct ward round at convenient or at privately considered appropriate time, depending on his or her other professional, surgical or clinical duties. The nurse coordinate contribute to the round only by the request of the surgeon, by reading the nursing observations; after which the surgeon reviews the case, do necessary clinical examination, and make treatment prescriptions, which guides the tasks of all other professionals independently, including the physiotherapist and occupational therapists, who do not participate in the ward rounds. Any communication between the different therapists and the surgeon is through the nurses, nursing records, and the surgeon's prescription (Papem Thiessen, et al., 2013). However, in the new interprofessional daily meeting approach to collaboration, the interprofessional team shares mandatorily equal group status, common goals agreed upon during interprofessional meetings, practice intergroup cooperation by sharing information according to established criteria, and receive supports from the authorities and management units (Papem Thiessen, et al., 2013).

Interprofessional Collaborative Practice

Review of literature on interprofessional collaborative practice revealed that many of previous studies were conducted through social constructivist world view, which is typically a qualitative research approach (Creswell, 2009), focusing on understanding the healthcare professionals' experience of the collaborative phenomenon, and instituting intervention programs to ascertain the effectiveness of the interprofessional collaboration in improving patients' desired and health professionals' satisfactory outcomes. However,

similar constructs, related to and consistent to the scope of the present study were often employed by the researchers, as could be seen in the next section on the review of studies on interprofessional collaboration among multiple healthcare professionals.

Clancy, Gressnes and Svensson (2013) conducted an e-post questionnaire based study using cross sectional design among multiple health professionals in different sized Norwegian municipalities, to examine collaborative activities relating to public health nursing. The response rate were public health nurses (849, 43.64%), doctors (113, 54.8%), child protection workers (519, 16.34%), and midwives (115, 41.3%). Six-point Likert Scales instrument were used to assess collaborative activities, and descriptive and analytical statistics, involving analysis of variance (ANOVA), Kruskal-Wallis H and chi-square tests were used to determine the differences between groups. Among the 1596 total respondents, majority (1072, 67%) and (1309, 82%) respectively stated that collaboration functions well and has improved, with yet another 30% (485) stated that interprofessional conflicts were common. All groups related relational ties such as trust, respect, and collaborative competencies highest as the driving force for the good collaboration observed, whereas formalized structures, leadership and economy were rated lowest (Clancy, et al., 2013). Although the study employed similar methodological approaches to my intended study to elicit the degree and issues associated with collaborative practices among the health professionals in the Norwegian municipalities; there is merit to conduct similar, but more comprehensive study in the local context of the Nigerian hospital setting. The present study will involve and utilize multiple health professionals to establish a baseline data on the extent of the practice, evidenced by the

presence of quality interprofessional collaborative team and teamwork; and assess the potential implications of the status quo practice, to satisfactory patient outcomes, health professionals' performance and job satisfaction.

Quality collaboration between pharmacists and other health professionals especially physicians are necessary to ensure quality pharmaceutical care and less prescription errors in the care of patients, for enhanced experience and better outcomes. World Health Organization (2010) had recommended earlier interprofessional collaboration in form of continuing medical education and joint professional activities among various health professionals, to entrench the culture of interprofessional collaboration among the future practitioners. A questionnaire based study to determine how inter-faculty relationships could improve collaboration between physicians and community pharmacists was conducted in a university medical setting by Piecuch, Pawlowicz, Kozłowska-Wojciechowska, Waniewski, and Makarewicz-Wujec in Warsaw, Poland (2014). The self-administered questionnaire has 10 open ended questions on relationships and role of pharmacists in the pharmacotherapy processes. Spearman's rank correlation coefficient and chi-square test were the tests statistics applied. Result showed that out of 2020 subjects invited, only 404 (20%) of the future physicians, 265 women and 139 men completed the questionnaire. About 44% of the medical students reportedly maintained professional relationships with the pharmacy students, and only 22% had about pharmaceutical care. Additionally, 84% of the medical students had engaged in social gathering or recreational meetings with the pharmacists, 17% in community service, and 15% in scientific and educational meetings (Piecuch, et al., 2014). Although

this study was done among future medical doctors in Poland, the findings may be no less true in the Nigeria medical institutions; thus strengthening the need to assess the extent of interprofessional collaboration among practicing doctors, nurses, pharmacists, and laboratory scientists, and the possible implications to the deteriorating health indices in the Nigerian health sector, as generated from the services delivery points (Adrian, 2015; Anekoson, 2013; Onyeniran, & Onikosi-Alliyu, 2015),

A similar quantitative study on interprofessional collaborative care (IPCC) process, was conducted in one medical academic center in central Pennsylvania in 2013 (Gonzalo, Himes, McGillen, Schifflet, and Leshman, 2016). The study is prospective cross sectional design, aimed at determining variables associated with the percentage of bedside interprofessional rounds in 18 hospital-based clinical units, using data obtained from 29,173 patients assessed during the 1241 nursing audited unit-days. Bedside interprofessional rounds were defined as “encounters including one attending –level physician and a nurse discussing the case at the patient’s bedside” (Gonzalo, et al., 2016, p. 2). Logistic regression model analysis constructed with four covariate domains showed that 21,493 patients (74%) received bedside rounds. Factor variables associated with increased occurrence of bedside rounds were spatial characteristics such as intensive care and intermediate care units; patients’ level characteristics such as hospital length of stay; use of rounding scripts; and perceived provider and leadership support (Gonzalo, et al., 2016). Bedside interprofessional round is one of the hospital routines promoting interprofessional collaborative care, a process that enables different professionals and

teams to work together to improve communication, coordination of care, and patient-centered shared-decision making (Gonzalo, et al., 2016).

Other important routines such as treatment pathways, individuals serving boundary-spanning roles, and team meetings have been found to promote care coordination and teamwork (Gonzalo, et al., 2016). This study used patients' sampled during planned auditing program to assess the percentage of bedside interprofessional rounds (BIRs). This present study offers an extra opportunity for the researcher to assess the practice of BIRs and other factors, including system, organizational, and interactional factors, promoting the practice of interprofessional collaborative care (IPCC) from the perspectives of the different professional groups. Identification of the comprehensive factors promoting or diminishing the practice of IPCC in the present study will vitally promote targeted interventions for improving collaborative patient-centered activities, and invariably better patient outcome and experience.

Interprofessional collaborative has been shown to improve health professionals satisfaction, as well as enhances healthy work environment, not only for the benefits of the patients in terms of improved outcomes and health experience, but also for the organization in terms of achieving cost efficiency in services delivery, and provision of stress free practice (Zheng, Sim, & Choon-Huat Koh, 2016). Satisfaction is linked to some degree of attitude or emotional response, physical and social conditions of an individual resulting to positive or negative feeling about his or her job (Jathanna, Melisha, Mary, & Latha, 2011). A cross-sectional study to determine the attitudes of primary care physicians and nurses towards interprofessional collaboration and

facilitating factors was conducted in National Healthcare Group polytechnics, in Singapore by Zheng, et al. (2016). A self-administered anonymous questionnaire, based on the Jefferson Scale of Attitudes toward Physician-Nurse Collaboration (JSAPNC), after being piloted for content validity with three senior physicians and three senior nurses were administered to 455 participants. Results showed poorer mean score (50.39, SD=4.67) for physicians than for nurses (51.61, SD=4.19); with significant mean difference (MD=1.22, CI=0.35-2.09, $p=0.006$). Nurses with advanced education had better mean score (52.28, SD=4.22) compared with nurses with basic education (51.12, SD=4.11), with statistically significant difference (MD=1.16, CI=0.12-2.20, $p=0.29$). Additionally, male participants had a poorer mean (50.27, SD=5.02) than female counterpart (51.38, SD=4.22), again with statistically significant mean difference (MD=1.11, CI=0.07-.2.14, $p=0.036$). Regression analysis, however, indicated that only educational qualification among nurses was independently and positively associated with attitudinal scores ($p=0.018$). This study is related to the present study where the presence and quality of interprofessional team will be analyzed for association with the health professionals' performance, satisfaction, and conflict experience; alongside the mortality experience of the patients. However, the present study is more comprehensive, involving multi health professionals, with primary focus on the associations between quality interprofessional team and satisfactory outcomes for patients and health professionals, including any association with conflict experiences within the practice environment. The issues of gender and educational achievements in the present study will be tested individually for covariate effects on the dependent variables.

The role of interprofessional collaboration between the physicians and nurses to improving job satisfaction as well as reducing the turnover rate among 579 nurses was demonstrated in a Chinese dental clinic by Zhang, Huang, Liu, Yan, and Li (2015). The study was a prospective, cross-sectional study, using structured questionnaire to collect data covering general information, index of work satisfaction, nurse-physician collaboration scale, and turnover intention scale. The Pearson correlation analysis was used to analyze relationships between scores, while multiple linear stepwise regressions analysis was used for an independent variable and two independent variables. Positive correlation was demonstrated between job satisfaction and the scores of physician-nurse collaboration; whereas negative correlation was found between physician-nurse scores and stated likelihood of leaving the current job. Thus, it was concluded that improving the level of physician-nurse relationship is necessary to enhancing job satisfaction, as well as reducing turnover among nurses. This study is in alignment with the present study which seeks to describe the extent of interprofessional collaboration among multiple health professionals in the hospital setting, and how the extent of collaboration is associated with the patient outcome, health professionals' job satisfaction, performance, and interprofessional relationships in terms of their conflict experience in the practice environment. Though the study methodologically is related to the present study, but it lacks the comprehensiveness and the multidisciplinary nature of the present study that defines the concepts of interprofessional collaborative practice (World Health Organization, 2010).

Few researches have been conducted in interprofessional collaborative practice between physicians, nurses, and other allied health professionals such as pharmacists and medical laboratory scientists. Most of the studies focused on the collaboration between the physicians and the pharmacists, rather than between the physicians and the medical laboratory scientists. The studies applying different metrological approaches showed that collaboration between the physicians and pharmacists can improve the management outcomes of patients with chronic diseases like hypertension and diabetes (Hwang, Gums, and Gums, 2017); decrease readmission, improvement in the quality of care, and in the value placed on patient care (Boykin, Wright, Stevens, & Gardner, 2018); and reduces blood parameters tested such as blood sugar level, blood pressure and lipid profiles, as well as reduces the costs of treatment in chronic disease patients (Hutchison and Hash, 2012).

A cross-sectional survey study of 1109 Michigan office based physicians, the internists, pulmonologists, endocrinologist, and cardiologist were conducted by Kucukarlan, Lai, Dong, Al-Bassam, and Kim (2011), to describe their beliefs, attitudes and intentions to collaborate with the community pharmacists in the management of patients medications. The Theory of Reasoned Action was the theoretical model used in studying the collaborative behavior. The mailed out survey questions were measured on a 7-point Likert scale, ranging from not very important to very important. Regression analysis of the usable 332 surveys returned showed overall physician's beliefs that collaboration with the community pharmacist will improve medication adherence was the strongest predictor of attitude toward collaboration, followed by the belief that

collaboration would result in improved prescription. The results also showed attitude toward collaboration as another strong predictor of intentions to collaborate (Kucukarslan, et al., 2011). This study is significantly related to the present study, through the methodological approach, the concepts of attitudes and beliefs, which associate either positively or negatively to job satisfaction (Aziri, 2011). Though gap still exists on the nature and level of collaborative practice advocated for with the other health professionals.

Medical laboratory technology and medical laboratory practitioners play an important integral role in the health care system, through quality laboratory diagnostic tests, and thus healthcare team would be incomplete in the modern medical practice without the input of the clinical laboratory practitioners. A cross-sectional study to ascertain the attitude of the health professionals toward medical laboratory technology and its importance in bettering patient management was conducted in a university specialist hospital and training center in Ethiopia, between February 2014 and March 2014 by Derby and Mekonnen (2017). Anonymous self-administered structured questionnaire was administered to all health professionals who volunteered to participate and responses were measured on a 5-point Likert scale. Results showed 75% favorable attitude toward medical laboratory technology position in the modern medicine and team practice, with physicians shown highest recognition than health officers and nurses. About 68.5% of the participating subjects believe that medical professionals contribute very importantly to better patient management (Derby & Mekonnen, 2017).

Interprofessional Collaborative Practice with Different Methodological Approaches

The status and the extent of the practice of interprofessional collaboration among healthcare providers differs across health systems, and is dependent on several factors, including organizational and governance factors; systemic factors or organizations' practice environment; interactional or interpersonal relationships; and providers' knowledge competencies, perspectives and attitudes toward collaborative practice (D'Amour, et al., 2005). Recognizing that the mechanisms that shape the practice of interprofessional collaboration differs across health systems, the World Health Organization in its framework for action on interprofessional education and collaborative practice recommended the use of appropriate mechanisms that can be specifically applied to the countries local health context (WHO, 2010). However, there are specific attributes and/ or elements that characterize the degree of interprofessional collaboration across health systems. These include joint decision-making and ownership, teamwork and group interdependency, shared responsibilities for intervention outcomes, shared vision, goals and objectives, shared power, and open communication for effective patient care (Clark & Greenawald, 2013).

Similar collaborative characteristics were demonstrated in a qualitative design study among purposeful selected 8 medical physicians' directors and 10 nursing unit directors that also provide patient care in a trauma center in mid-Atlantic region of the United States (Clark & Greenawald, 2013). Six standard questions guided the interview aimed at determining the dynamics of collaboration among the healthcare partners in the 800-bed, level 1 trauma center. With the use of a qualitative software data analysis

program, and applying investigator triangulation and member checking technique, the authors identified four patterns and themes that define the degree and outcomes of collaborative practice at the trauma center. The themes identified that influences collaboration include the impact of organizational support, shared expectations, relationships, and communications. Failure or breakdown of communication line is described as the major cause of severed collaboration or barrier to effective collaboration (Clark & Greenawald, 2013). The study protocols, methodology and design enabled critical analysis of the roles of systemic and organizational strategies in enhancing collaboration and interprofessional relationships among healthcare professionals from the administrative perspectives. Although the findings in this study are in tandem to reports in the existing literatures identifying organizational and systemic factors as critical to extent of practice collaboration in health-related settings, the strength of the study would have been enhanced had the authors linked their arguments to existing organizational theoretical frameworks on collaboration. The small sample size and the use of single specialized center limit the generalization of findings of this study. Narrowing the study to the qualitative inquiry of the organizational and systemic factors influencing collaboration from the perspective of the administrative nurse-physician directors, and without seeking to understand the contributions of interactional and personal factors of the healthcare providers, have created a huge gap that the present quantitative study will seek to fill. The proposed use of quantitative design in my study, and expansion to include multiple healthcare professionals will provide additionally facts, and quantitative perspectives of the factors associated with the patterns and extent of collaborative

practice, and the implications to organization intervention effectiveness and human resources efficiency.

The extent of interprofessional collaboration at the hospital settings can be evaluated by examining its various operational methods, in the form of interprofessional collaborative (IPC) interventions, known to foster positive interactions between the members of the different healthcare professionals together, with the dual purpose of enhancing collaboration, and achieving better patient outcomes (Zwarenstein, Goldman, & Reeves, 2009). In line with this perspective, a systemic review study of standard databases was carried out to assess practiced-based interventions designed to improve interprofessional collaboration and their impacts on patient satisfaction, effectiveness and efficacy of healthcare services provided to patients (Zwarenstein, et al., 2009). Only five randomized control trials studies that reported objectively measured changes using a validated instrument and/ or self-reported instrument on patient or client outcomes were included for the review. The interprofessional collaborative methods or interventions examined include daily interprofessional and interdisciplinary inpatients rounds, and interdisciplinary team meetings. As a measure to improve trustworthiness and validity, investigator biases were checked through triangulation and member checking technique, and consultation with other investigators (Zwarenstein, et al., 2009). Although results were presented in narrative format, as meta-analysis were not considered possible, due to the non-homogeneity in the clinical settings, the findings were mixed, but significant to the evaluation of interprofessional collaborative practices. The study on daily interdisciplinary inpatient medical round in acute care hospital reported positive impact

on length of stay, and thus on total patient charges, in contrast to the finding of similar study carried out in a community-based hospital telemetry ward. Also, the study on nursing home settings with monthly interdisciplinary team meetings reported improved prescription of psychotropic drugs.

Additionally, study on interprofessional collaboration where multidisciplinary meetings were instituted with external facilitator using strategies to encourage collaborative work was associated with improvement in patient care (Zwarenstein, et al., 2009). Despite the small size and limiting the inclusion criteria to randomized control trials in line with the stated study objectives, the multidisciplinary nature of the study is pertinent to the full understanding of the effectiveness of interprofessional collaborative practice interventions or methods in a heterogeneous clinical setting. Although the authors purposely did not review the place of continuing medical education or continuing professional developing activities as methodological approach to interprofessional collaboration, the present quantitative study will in addition to exploring other methods for interprofessional collaborative practice, seek to ascertain the extent of interprofessional educational or competency improvement activities existing among the professional groups.

Interprofessional in-patient- centered rounding has also the potential to bridge the historical gap created by the hierarchical and patriarchal relationship that had long existed between physician and nursing practitioners, which has adversely affected the practice of interprofessional collaboration at the tertiary care level (Sharma & Klocke, 2014). A pilot survey study was conducted in a community based hospital in the United States among

90 medical floor nurses, to assess and improve the perception and attitude toward interprofessional care provided by the hospital, with emphasis on the practice of in-patient rounding, being valued as a healthcare member, level of interaction and communication between care providers, and job satisfaction (Sharma & Klocke, 2014). Baseline data analysis using online statistical software showed that nurses were not completely satisfied with the nature and state of in-patient rounding in the hospital; and were equally not satisfied with the level of interaction and communication between the care providers, their level of participation and how they were valued as a healthcare team members, the workflow and the overall job satisfaction (Sharma & Klocke, 2014). However, compared with the baseline data, nursing satisfaction with the interprofessional collaborative activities, especially in relation to communication and patient-centered in-patient rounding improved significantly post-four months collaborative round intervention model.

The baseline and post-intervention results of this pilot survey study revealed the extent of the practice of interprofessional collaboration at a hospital setting; and the readiness of the nursing staff to participate in a collaborative teamwork, where different professional groups, the patients, and their family will mutually discuss patients' health condition, and come out with agreed care plan that is centered on patients health need and preference. The research methodology and design is appropriate for the set objective; though as an expanded pilot study, and with the use of single professional group as participants, is short of generalization beyond the participating group. The use of quantitative methods design in the present proposed study will not only enable

comprehensive assessment of the extent and methods of interprofessional collaborative practice in a tertiary hospital setting in Nigeria, but also the relationships and the implications of the extent and methods of the collaborative practices to the organizations intervention effectiveness and efficiency. Although the present quantitative study is not centered on attitudes and behaviors known to influence intentions to practice a behavior and the behavior outcomes (Fishbein & Ajzen, 2010), the inclusion of multiprofessional in the assessment of the collaborative practice proposed in the present study, will provide comprehensive data for future interventions that will promote team-based collaborative practice and patient-centered care.

Nurse and doctors are seemingly the closest allies with the patients in clinical work setting and are expected to collaboratively work together for the common goal of providing quality, effective and efficient patient centered care, for better patient health experience and outcomes. Available evidence contrasts this expectation, with notably poor collaboration between doctors and nurses, with resultant poor-quality care and patient outcomes. Weller, Barrow, and Gasquoine (2011) conducted a qualitative study, with semistructured interview design, among 25 junior doctors and nurses from different hospital settings in New Zealand; for the purpose of understanding the nature of interactions or relationships, and the issues affecting interprofessional collaboration. Snowball sampling technique was used, and the data collection was through face-to-face, and telephone interviews. An “Analytical approach to coding against a predetermined coding framework” of quality of collaboration, shared mental models, team coordination, and communication environment was used in the analysis (Weller, et al., 2011, p. 480).

Data as transcribed in the interviewee's own word, suggest that they believe in mutual respect, information sharing and mutually agreed goals, and non-competitive and complementary roles in patient management. However, effective collaboration and teamwork were marred by non-supportive organizational structures, with established silo nursing and medical teams, space and spatial differentiations where the nurses are based in the wards and perform round at differing time with allotted patients; while the junior doctors are members different consultant teams, covering over 20-30 patients scattered over different wards, for the different consultants and teams. The report further showed that there was no formalized or structured means or strategies for information sharing, except as received in piece meals during ward rounds. Additionally, the reports indicate presence of different priorities, commitment, and perspectives on patient health problems and management modalities (Weller, et al., 2011). This study is quite critical to understanding the systemic, interactional, and organizational barriers to quality interprofessional collaboration in the hospital settings. However, a study with the added benefits of quantitative design, and involving multiple professionals; in a poor resources country like Nigeria, with dearth of data on the comprehensive nature and extent of the practice of interprofessional collaborative; will provide comprehensive data that might be usefully employed in enhancing interprofessional collaboration at all levels of care.

Similar to Weller, barrow, and Gasquoine (2011) qualitative interview study design that examined the relationship between systemic, interactional, and organizational structures to interprofessional practice, was a classical qualitative study on interprofessional collaboration and family member involvement conducted by Reeves,

McMillan, Kachan, Paradis, Leslie, and Kitto (2015) in eight intensive care units (ICUs) in the United States and Canada over a period of two years. In the study, a comparative ethnographic approach involving use of observational, interview and documentary data was undertaken to elicit in-depth understanding of the nature of interprofessional collaborative practice among doctors, nurses, and pharmacists, in line with conceptual framework that is based on relational, processual, organizational, and contextual factors. A total of 504 hours of ICU-based observational data, 56 semi-structured interviews data, and documentary data of the clinical guidelines and unit policies, were all used in the data analysis. Findings were described in the collaborative domains of rational, processual, organizational and contextual, each with family involvement. Regarding relational domain, results showed that collaborative interaction between health care professionals were by chance, especially when there were issues or queries related clinical practice. Teamwork was professional specific, rather than interprofessional, with each professional groups collaborating along the line of professional devise. Traditional medical hierarchy dominates the new spirit of interprofessional collaboration. Family members' involvement was positive at this relational level, with family members filtering information between the providers and teams especially when obvious gaps exist in the communication line (Reeves, et al., 2015). Availability of information technology and ICU space encourage parallel teamwork, less family involvement, and siloed professional activities. Again, formal ward rounds were largely taken based on separate professional groups. Organizationally, intensive care unit (ICU) is a very busy environment, and encourages face-to-face activities, but not in a standard interprofessional collaborative

manner. Although, there was a guideline to admittance of family members to ICU, it was fairly enforced, and it affected the extent of family involvement. Social, political, and economic environment of the institution; and language and cultural dimensions or differences among the stakeholders greatly influenced and shaped interprofessional collaboration and level of family involvement (Reeves, et al., 2015). This study methodologically and contextually is vital to fuller understanding of interprofessional collaboration among the major health care providers, including the patients; with the solid conceptual framework that grounded the study fully applied in the thematic analysis and explanation of the research findings. However, the present study, which proposed the use of quantitative strategies, extensive analysis of the views and perspectives of the four major health care providers, and examination of organizational and institutional factors on interprofessional collaboration, will provide additional informative data for fuller understanding of hospital-based interprofessional collaboration in the context of resource poor country.

Nigerian Studies of Hospital-Based Interprofessional Collaboration

Scientific evidence abound in many developed countries on the extent of the practice of interprofessional collaboration, and the degrees of successes achieved (Peduzzi, Orchard, & Leonello, 2015; Rice, Zwarenatein, Conn, Kenaszchuk, Russell, & Reeves, 2010); but reverse is the case, in many developing countries, especially in Nigeria, where evidences of the nature of collaborative practice are anecdotal (Iyoke, et al., 2015). The need for research-based documentary evidence on the extent of the practice of interprofessional collaboration led Iyoke and colleagues to carry out a study

aimed at describing the interprofessional relationships, knowledge and attitude of obstetricians and gynecologists in two teaching hospitals in South East Nigeria on interprofessional teamwork (Iyoke, et al., 2015). The study is a questionnaire based cross-sectional study design, involving a convenient sample of 116 obstetrician and gynecological doctors from the University of Nigerian Teaching Hospital and Federal Teaching Hospital, Abakaliki, Ebonyi State, Nigeria. A 25-item researcher constructed, semi-structured, self-administered questionnaire was the data collection instrument. Using the SPSS statistical software, version 17.0, the authors demonstrated that the majority of the doctors had high awareness, good knowledge, right perception, and good intentions regarding interprofessional teamwork practice (Iyoke, et al., 2015). Although the study provided rich information regarding the knowledge and attitude of specialized group of a particular discipline about interprofessional collaboration, the methodology and design limits the generalization of the findings to other disciplines; and the study did not provide comprehensive and in-depth knowledge of the nature and the variables influencing interprofessional teamwork at the hospital, and the possible implications to effective and efficient health delivery. Convenient sampling of few doctors from a single discipline, and assessment of only knowledge and attitude toward collaborative practice could not sufficiently document the degree of the practice, and the organizational implications thereof. Additional focused information on the extent of the practice and its implications to the organizational goals is required for future intervention studies to enhance interprofessional collaborative practice that is patient centered, in Nigeria, and thus the need for the proposed quantitative study among multiprofessional groups.

Team work and a multidisciplinary collaboration are recognized as requisite for successful management of difficulty and complicated medical cases (Okoro & Ameh, 2012). Having recognized that pediatric surgery is young growing specialty in Nigeria, and the need for collaboration in the management of pediatric surgical cases, Okoro and Amen (2012) conducted a questionnaire survey study to assess the nature and extent of collaboration between pediatric surgeons and other medical disciplines considered vital for effective management of cases. The questionnaire instrument was delivered to the pediatric surgeons through both electronic mail and hand delivery by non-participatory resident doctors in surgery. A total of 47 pediatric surgeons and resident trainees who were actively practicing and available at the time of the study were purposeful included in the study. Descriptive analysis using SPSS version 17.0 showed that most of the respondents believed that there was inadequate collaboration between the pediatric surgeons and other relevant specialties, resulting from lack of strategies for communication and exchange of information, poor awareness of the need for collaboration, mutual suspicion, and lack of shared responsibility for bad outcome. The areas identified for collaboration include patient care, training and research; and majority of the pediatric surgeons relate poor patient outcomes occasionally experienced during their practice to inadequate collaboration with the other medical specialties (Okoro & Ameh, 2012). This study though reported inadequate collaboration between the surgeons and other relevant specialties, resulting from the absence of major elements of collaboration or collaborative domains in relation to the set objectives, the authors however used a purposive sample of single discipline, the pediatric surgeons, without

seeking the perspectives of the potentially identified collaborative allies. The study could not establish the presence or absence of interprofessional team and team work, the basic standards for evaluation of practice of collaboration, and the quality of collaboration based on the presence of major domains of collaboration. The proposed quantitative cross-sectional study design for the present study will result in an in-depth and comprehensive assessment of the nature and extent of interprofessional collaboration through multiple stakeholders; and how the collaborative status quo has influenced patient outcomes, professional's efficiency, satisfaction, and healthy practice environment.

Although assessing attitude and behaviors that influence intentions to perform a behavior is not the primary focus of the present study, it is pertinent to performance of interprofessional collaboration among multiple healthcare providers, especially in the Nigerian setting where data on interprofessional collaboration is scarce. A study aimed at assessing and comparing the attitudes of doctors and nurses toward collaborative care, and the implications for effective healthcare delivery was conducted in a federal tertiary health institution in southwestern part of Nigeria by Falana, Afolabi, Adebayo and Ilesanmi (2016). The descriptive cross-sectional survey of 404 respondents, comprising 256 nurses and 148 doctors, utilized self-administered 60-point attitude questionnaires, adapted from Jefferson Scale on Attitude towards Doctor-Nurse Collaboration to collect data. Responses were scored on a 4-point Likert-type scale from strongly agree scoring 4, to strongly disagree scoring 1; with a total score of above 50 considered good attitude, whereas scores less than 50 was considered poor attitude. Statistically analysis was done

using SPSS, version 17. The result showed that female respondents had significantly higher mean attitude toward collaboration more than male counters; and nurses equally had significantly higher mean attitudinal scores more than doctors (Falana, et al., 2016). The study is critical for assessing the level of acceptance of interprofessional collaborative practice at the hospital setting, and the design is appropriate for the set out objectives of the study; and descriptive and analytical statistics, involving independent sample t-test, Chi-square, and logistic regression were also appropriate for the form of data collected. The authors however did not state the implications of the attitudinal findings for effective healthcare delivery, as was expected based on the study purpose; neither were the nature and the extent of the collaborative practice affected by the attitude elicited. This study on attitude was not analyzed based on any established theoretical framework on attitude and behavior such as theory of reasoned action and theory of planned behavior (Fishbein & Ajzen, 2010). More robust and comprehensive research, in which additional advantages of multidisciplinary nature, representative sampling, and application of appropriate theoretical frameworks quantitative design will be leveraged; involving different healthcare professional groups, to assess the patterns and extent of the collaborative practice, and the implications to organizations' effectiveness and efficiency, will provide quality data for future collaborative intervention at the hospital setting.

Interprofessional collaboration across professional groups and disciplines is fundamental for the provision of safe, quality, cost effective and efficient patient centered care, at all the three levels of healthcare delivery, primary, secondary, and tertiary. A cross-sectional survey study, with correlational analytical design, on interprofessional

collaboration at the secondary care level in oil rich Rivers State of Nigeria was conducted by Onyekwere (2013). The study purpose was to examine relationship between interprofessional collaboration and work efficiency, at the 21 General Hospital study sites in the state. One hundred and forty seven (147) healthcare professionals from seven professional groups, and 210 patients that visited the hospitals at the time data collection were both purposively selected for the study. The healthcare professional groups include the medical doctors, registered nurses/midwives, pharmacists/technicians, medical laboratory technologists/technicians, radiologists/radiographers, physiotherapist, and medical social workers. Specific research objectives and hypotheses were built around the following domains of collaboration: interdependency, diversity, and mutual trust; whereas Tuchman's Teams work Theory on team development grounded the study (Onyekwere, 2013). A five-point Likert-type scale was used to score the responses on the researcher's self-developed instruments, teamwork assessment scale and patient satisfaction survey form; and the statistical analysis was performed using SPSS software. The result showed a high degree of agreement between the different healthcare professionals that interdependency and mutual trust among the professional groups are related to team cohesiveness, efficient material and time resources utilization in healthcare services delivery. Professional diversity, on the other hand, was found to be inversely related to team cohesiveness, and efficient time resources utilization (Onyekwere, 2013). The authors interestingly recommended intensive professional diversity management through periodic team training program for enhance team spirit and to build efficiency in healthcare delivery. The method and design of this study,

including the analytical strategies, are quite aligned to achieving the purpose and providing answers to the research questions and hypotheses. The study provided rich information on the influence of three identified elements of collaboration on work efficiency, from the perspectives of multi-professional groups, still practicing on a divided discipline line, or on a side of silo lines. The study could not establish the presence or absence, extent or status of interprofessional collaboration through the lens of interprofessional team, rather than from intra-professional collaboration or professional teams as implied in the study; and the theoretical concepts or elements of quality team collaboration, such as coordination, partnership, cooperation and communication (Weller, Barrow, & Gasquoine, 2011).

A cross-sectional descriptive survey of 100 doctors and 95 nurses, selected through two phase sampling, proportionate stratified and convenience, was conducted in an indigenous university teaching hospital In Nigeria, by Okoronkwo, Anieche, Chinweuba, and Ndu (2013), to elicit the perceptions, as well as identify factors that promote and hinder interdisciplinary collaborative practice (ICP) among the two medical professions. Using a 23-item ICP structured questionnaire, designed in a 4-point Likert rating scale of strongly agree 4, agree 3, disagree 2, and strong disagree 1 for positive statements, and the reverse for negative statements, the authors reported positive perception on ICP by both the doctors (27.5) and nurses (23.76), with no statistically significant difference ($t=1.328$, $p=0.2009$). Factors perceived to enhance interdisciplinary collaboration include clarity of roles, written and oral communication, agreed plan of action and choice of care, and equal influence of each other's decision. However, both

doctors and nurses disagree on having joint team leadership of the ICP, joint input to plan and choice of patient care, equal influence on care decision, and clearly written and oral communication of actions by all collaborators, with the nurses favoring joint leadership, plan of care, equal influence, and clear communications than doctors, indicating presence of some form of leadership power tussle among the two professions. Giving higher priority to status than expertise was identified as the greatest hindrance to ICP. The study, like similar studies on interdisciplinary collaboration in Nigeria that concentrated on eliciting the knowledge and attitude toward ICP, was limited by the absence of data on the actual practice of interdisciplinary collaboration and the potential implications to the health institutions effectiveness and efficiency.

Another cross-sectional descriptive study of 300 nurses, doctors, pharmacists and medical laboratory scientists, selected from the medical disciplines through multistage sampling was conducted to ascertain factors influencing industrial harmony among the health care professionals at the University of Nigeria Teaching Hospital (UNTH), Enugu State, Nigeria (Goodman, Okoronkwo, Nwodo, Ephraim, & Moses, 2017). Of the 7 Likert item questions, only one sought to know the perception of the health professionals on whether the practice of interdisciplinary collaboration (IPC) in UNTH is such that could promote industrial harmony. The rest of the 6 questions were designed to ascertain whether inputs were usually taken from other professions during ward rounds; whether other professionals with the requisite expertise were invited to provide patient care; whether information are shared across professions; if mutual respect and trust existed among health care professionals; if other health care professionals are permitted to act

autonomously; and whether professional view points on patient care were recognized across professions. Thus in addition to determining whether the level of the practice of ICP promoted industrial harmony, the study further provided an insight into the nature of the practice of IPC among the health care professionals in the teaching hospital. Overall report showed that the health professionals have positive response to the 7-item Likert questions, with the mean ranged from 2.52 to 3.32; which was above the cut of point of 2.5 for positive response. The lowest mean of 2.52 was the responses on whether the presence practice if ICP is such that could promote industrial harmony, while the highest mean of 3.32 was recorded for the question that assessed whether other health professionals with the requisite expertise were invited to provide care. The adhoc invitation or the practice of ICP by invitation could explain the health professionals' minimal agreement (mean 2.52) that the present ICP practice was capable of promoting industrial harmony. Analysis according to professional disciplines showed that the doctors have overall mean of 3.20, nurses 2.78, pharmacists 2.64, and medical laboratory scientists 2.01; indicating that the medical laboratory scientists were not carried along in the invitatory practice of ICP at the teaching hospital. The adhoc invitation of health professionals with expertise on specific areas of practice or disease entities, though gave an insight into the traditional nature of medical practice, and of the relationships among healthcare professional, the study could not clearly described the extent of the practice of interprofessional collaboration in relation to the global defined standard as set up by World Health Organization (2010). The failure may not far from the purpose of the study which was to ascertain factors influencing industrial harmony among the health workers.

Similarly, a phenomenological study of nurse/physician conflicts in Nigerian hospitals and their impacts on managed care delivery was undertaken among 100 nurses purposively sampled from five major healthcare facilities to explore their lived experience of interprofessional, personal, and ethical conflicts in care of patients, using five thematic research/interview questions (Okhakhu, Okhakhu & Okhakhu, 2014). Although this study is a qualitative study, differing in design and methodology from the present study, the interview findings identified nine categories of potential conflict areas, which upon further review, were combined into three categories, which include sharing of patient information, joint participation in planning, setting common objectives, and having joint resolution of problems; joint participation in patient care/decision-making process, mutual trust, respect, and support, awareness of roles and responsibilities, and open communication; and cooperativeness. In analyzing the interview reports, the authors stated strongly that interprofessional collaborative team care, coordinated and team clinical practice, and open and strong communication ties are inevitable for safe and effective patient care; rather than dysfunctional silos practice, which undermine centered team care, and continuum of care, with devastating organizations' health outcomes. The authors recommended that the collaboration domains identified in this nurse-physician study, which included sharing of patient information; joint participation in planning; patient care and decision-making; high degree of cooperation; communication ties involving frequency, timeliness, accuracy, and problem solving; in addition to the three relationship dimensions of shared goals, shared knowledge, and mutual respect should be carefully implemented to ensure safe working environment devoid of conflicts for better

patient health experience and healthy workforce (Okhakhu, et al., 2014). The present quantitative study intended to examine and describe the practice of the collaborative domains at the tertiary level of care, as well as to describe the implications not only to conflict and stress free work environment, but also to patient health outcomes experience, health professionals work performance, and job satisfaction.

Summary and Gap in the Literature

Indeed, literature abound regarding interprofessional collaboration in health and health related fields, at the medical training and practice levels, hospital and community based hospital settings, primary, secondary, and tertiary levels of care (Harris, et al., 2016; Peduzzi, et al., 2015; Rice, et al., 2010; Supper, et al., 2014; World Health Organization 2013); and in integrated (Gaboury, et al., 2011), and in specific diseases managements (Gougeon, et al., 2017; Mast, et al., 2014) in resource rich developed countries across the globe. Although, these literatures detailed the models, the relational and communication tie concepts, key dimensions, and the benefits of the practice interprofessional collaboration to patients and the health sector, but there was less emphasis on the implications of the nature of the practice to the services providers and the health organization. The story is quite different in the resources poor developing countries of the world, with Nigeria in focus, where the nature and the extent of practice, in relational to the global standard has not been described, and thus is poorly understood, with minimal scientific data available to evaluate the extent of the practice at any of the three tiers of care, and the potential implications to patients, healthcare providers, and to the organizations effectiveness and efficiency. In Nigeria, the few literatures available are all

about the perceptions and attitudes toward collaborative practice; not specific or categorical on the nature or model of practice, present or absent of interprofessional team or teamwork (Falana, et al., 2016; Iyoke, et al. 2015; Odunaiya, et al., 2013; Onyekwere, 2013; Okoro & Ameh, 2012); and almost no literature exist regarding the potential implications to stakeholders at the point of service, the patients, healthcare providers, and the health organization. These identified gaps when successfully filled by the outcome of the present study, will provide a solid background, as well as create a positive impact on the effective implementation and evaluation of interprofessional collaborative practice at all the three tiers of care for better patient's outcomes and health experience.

Additionally, the outcome of the study will provide a hospital collaborative database, and an operational framework for interprofessional collaborative activities, necessary for strategic health planning and policy making at the local, state, and federal government levels, for effective health reform actions and health sector strengthening.

Summary and Transition Statement

In this chapter two, serious attempts were made in defining the variables, and concepts related to interprofessional collaboration, and distinctions were made between conceptual and theoretical frameworks that ground the research study. Important and land marking medicals events that culminated to the serious move for promulgation of interprofessional collaboration were highlighted. Rational coordination theory, which underpins the study, was described, alongside other theories and frameworks that had been usefully applied to collaboration, such as theory of reasoned action. Empirical studies that have direct methodological and contextual relationship to the present study

were critical reviewed. The present quantitative study, with cross-sectional descriptive design, would provide a platform to ascertain and describe the degree and extent of interprofessional collaborative practice in the Nigerian local context, and the implications to the organizational goal effectiveness and efficiency in services provision. The next chapter presented the method and design that were employed in this study, including the tools for data collection and methods of data analysis.

Chapter 3: Research Method

Introduction

The purpose of this quantitative study is to provide a clearer description of the extents of interprofessional collaborative practice among healthcare professionals in the tertiary care level in Nigeria, and the potential implications of the practice on patients' outcome mortality experience, the health professionals' performance, satisfaction, and interprofessional conflict experience in the practice environment. This study was designed to close the gap created by the dearth of statistics on the extent of interprofessional collaboration at the services delivery points and its implications to patients and health professionals' satisfactory outcomes, with the view to providing a database to aid policy making, training, effective implementation and evaluation of interprofessional collaboration at the various levels of care in Nigeria.

Chapter 3 contains a description of the overall research design as well as the approaches and strategies I used to complete the study. The major areas of the study covered in this chapter include the research design and approach, sample population and frame, sample size determination and sampling procedure, data collection method and instrumentation, the role of the researcher in the data collection process, data analysis, and measures for ethical protection of participants, including participants rights and privileges in relation to the study.

As a quantitative research survey study, with participants that could be described as homogenous by profession and goal orientation, I employed a cross sectional design (see Creswell, 2009), with descriptive and analytical data management approaches. This

design was informed by the logical analysis of the research problems of having no clear description of the current approach, the nature of, and the extent of the practice of interprofessional collaboration in the Nigerian hospital setting, and the organizational implications; and by the descriptive and analytical nature of the quantitative research questions, seeking to provide answers to these problems.

Research Design and Rationale

In this study, the independent variable was the presence or absence of quality interprofessional collaborative team and teamwork, categorized into six dimensional levels of collaboration: cooperation, participation/shared decision-making, partnership, communication and coordination. The key dependent variable was at three levels as it affects the patient, health professionals, and the practice or work environment. These dependent variables respectively include patient outcome mortality experience; health professionals' performance and job satisfaction; and frequency of interprofessional conflicts experienced of the health professionals in relation to the work or practice environment. According to Maxwell (2005), a good research design mitigates operational failures, but promotes efficiency, quality and acceptable outcomes. A quantitative method, using a cross-sectional descriptive design was used in this study. Quantitative method, using deductive approach, primarily describes relationships among variables using the lens of existing theoretical framework (Creswell, 2009). The descriptive design aided detailed descriptions of the extent of interprofessional collaboration; having a clearer description of the extent of interprofessional collaborative practice and its potential implications to the organizational goal effectiveness and

services efficiency is in tandem with the postpositivists' worldview and the associated philosophical assumptions that informed the study design (Creswell, 2009). The postpositivists worldview, sometimes referred to as “scientific method or doing science research” hinges on the “deterministic philosophy” of cause-effects or cause-outcomes relationship or associations which seek to establish causal relationship by identifying the independent variables that influences the outcomes variables (Creswell, 2009, p. 7). The choice of descriptive cross-sectional design was resources effective in terms of human capital, cost, time, and feasibility. The design choice has the potential to advance knowledge in the interprofessional collaborative initiative, especially in the Nigeria hospital local context setting, where data is still scarce on the degree of implementation and potential implications. The descriptive cross-sectional design allowed me the opportunity for further in-depth analytical study on interprofessional collaboration in Nigeria local context using varied methodological approaches. However, where basic statistical data on interprofessional collaboration is available as in the resources-rich countries, the use of other approaches such as qualitative and intervention methodologies may be justified.

Methodology

Study Population and Sample Frame

The study population comprised the healthcare providers in the employment of the Enugu State University Teaching Hospital, Enugu, Nigeria. The healthcare providers in this institution are categorized by profession as the medical doctors, nurses, pharmacists, physiotherapists, radiographers, laboratory scientists/technicians, dieticians,

and dental therapists and/or technicians. The target populations from which samples were drawn for this study included medical doctors, nurses, pharmacists, and medical laboratory scientists. Each of the target populations served as a sampling frame for that group. Among these target populations, nurses were the largest in number, followed by the medical doctors, the pharmacists, and then laboratory scientists. By job seniority and cadre, the nursing population is further group as deputy directors of nursing (DDN), assistant directors of nursing (ADN), chief nursing officers (CNO), assistant chief nursing officers (ACNO), principal nursing officers (PNO), senior nursing officers (SCNO), and nursing officers (NO). Doctors are grouped in the hospital as honorary consultants, hospital consultants, resident doctors still undergoing professional postgraduate specialist training, and the house officers for those new graduates doing 1-year internships. The pharmacists are classified as deputy director pharmacy, assistant director pharmacy, chief pharmacist, deputy pharmacy, senior pharmacy, and pharmacist. The laboratory professionals are similarly classified as deputy director laboratory scientist, assistant deputy director laboratory scientist, chief laboratory scientists, laboratory scientists, and laboratory technicians. Generally, technicians are those professionals that have degrees or certificates from school of technologies or the equivalent. The size of the target populations were as follows; medical doctors 279, nurses 479, pharmacists 41, and medical laboratory scientists 61.

Sampling Method and Procedure

Sampling method or procedure is the process used to select a sample, which is a unit of targeted and defined population, for a study (Banerjee & Chaudhury, 2010;

Trochim & Donnelly, 2007). The sampling method should be scientific enough to ensure selection of representative sample, from which generalization and inference can be accurately made (Banerjee & Chaudhury, 2010). A representative sample or a random sample entails that each individual of the target population has equal, independent and “mutually exclusive chance” of being selected for the study (Banerjee & Chaudhury, 2010, p. 62; Setia, 2016).

In this quantitative study, a simple random sampling method (see Banerjee & Chaudhury, 2010; Setia, 2016) was employed to select a random sample from each of the target populations, which included the medical doctors, the nurses, pharmacists, and laboratory scientists irrespective of their further subclassifications according to cadre. A list of each of the target populations of the medical professions, known as the sample frame, was obtained from the administrative unit of the hospital according to their area of medical specialization and departments. There are five areas of medical specialization in the hospital, which equates to five practicing wards and medical departments, where medical doctors and nurses carry out their daily routine health activities and ward rounds. These specializations for the sake of this study were broadly grouped as medicine, surgery, obstetric and gynecology, pediatrics, community medicine; in addition to a specialized care unit referred to intensive care unit (ICU) or emergency care department, bringing it to a total of six areas of specialties or practicing units. Other subspecialties such as orthopedic, otolaryngology, referred to in Nigeria as ear, nose and throat (ENT), and maxillofacial were grouped under surgery, whereas dermatology was grouped under medicine for the purpose of this study. Nurses are equally deployed to each of the units,

wards or specialties as their primary place of assignments or duty posts. A number was assigned to each of the medical doctors captured in the departmental lists, and to each of the nurses enlisted in the different wards and/or the specialized units. A calculated sample size, each for the medical and nursing professions, was proportionately distributed according to the various medical departments, wards, or units from where the desired numbers of participants were sampled using simple random sampling technique. Similar sample frames were obtained for the departments of pharmacy and the laboratory science, and simple random sampling method was also applied for the selection of the professionals. However, sampling of the pharmacists and the medical laboratory scientists was done at their respective departments since they are not majorly deployed to cover any specialized medical department, wards, or units, like the medical doctors and nurses.

Eligibility: Inclusion and Exclusion Criteria

The study participants were limited to those healthcare professionals who are under the employment of Enugu State University Teaching Hospital on a full-time basis, and/or as honorary consultants or as residents in the case of doctors; and are at the time of this study actively practicing either as medical doctors, nurses, pharmacists, or medical laboratory scientists. Those under obligatory national services, like those new medical graduates doing housemanship, and those serving under the auspices of the National Youths Services Corps were not eligible for inclusion. Medical, nursing, pharmacy, and laboratory science students were equally excluded. At the point of selection, those participants eligible under the stated criteria but who were not able to give written

informed consent for culturally sensitive reasons were not excluded based on the assumption that by agreeing to fill the questions they have given implied consent. Additionally, those healthcare professionals with less than 2-years experience were not eligible for inclusion. The 2-year bench mark was because at 2 years, the employees should have gained substantial knowledge of the nature of interprofessional collaborative practice at the health institution, and their appointment would have been regularized and confirmed by their employers.

Sample Size Determination

Calculating and achieving an adequate sample size is one of most important research activity or process of research design (Burkholder, n.d.). Sample size, along with alpha level and effect size, are the most important statistical concept or things that affect or influences power (Burkholder, n.d.). Sample size has the potential to influence effect size and alpha level errors. It has been reported that many negative research studies have inadequate sample sizes and thus less powers to detect real effect (Jaykaran & Tamoghna, 2013). Statistical power is the ability of a statistical test to detect a real effect; whereas an effect size by definition is the mean difference divided by the standard deviation (Jaykaran & Tamoghna, 2013). Alpha level is associated with statistical errors referred to as Type I error and Type II error, which respectively refers to the chance of finding a significant treatment effect in the absence of none, and the chance of not finding a significant treatment effect when it actually exists (Burkholder, n.d.).

To ensure adequate sample size for the quantitative study, I estimated the sample size using one of the two techniques suggested by Burkholder (n.d.). The involve the use

of correlation range of -0.05 to 0.37 between team factors found in a study of attitudes of clinician educators towards interprofessional education and collaborative practice using two interprofessional scales, 14-item attitudes toward health care teams scale, and 15-item readiness for interprofessional learning scales (see Sik Yin, Tan, Knab, Farrel, Wee, 2017). Using the estimated population of the study population as received from the personnel department of Enugu State University Teaching hospital, the nurses' population was 479, doctors 279, medical laboratory scientists was 61, and pharmacists 41. I assigned a correlation of 0.20 for nurses, 0.25 for medical doctors, approximately 0.40 for medical laboratory scientists, and 0.45 for pharmacists in view of their respective populations. At a standard power of 80% (0.80), assumed alpha of 0.05, and 2-tailed tests, the estimated sample size from the standard sample size table provided by Burkholder was 193 for nurses, 122 for doctors, 46 for medical laboratory scientists, and 35 for the pharmacists. As a security check for possible drop outs, attrition or incomplete responses, the samples sizes were increased by 10%, resulting to 212 for nurses, 134 for doctors, 50 for the medical laboratory scientists, and 38 for the pharmacists, giving a total sample size of 396 participants for the study.

Recruitment, Participation, and Data Collection Procedures

Access to the study participants, who composed of health care professionals from the purposefully selected medical disciplines, the physicians, nurses, pharmacists, and laboratory scientists, was obtained after receiving permissions from the Walden University Institutional Review Board and Enugu State University Hospital-based Ethical Review Committee. Simple random sampling technique was used as the method for the

recruitment of the participants. Participants were recruited using the departmental lists through their various departments, wards, and/or units where they carry out their routine daily medical practice. I, with two research assistants, visited each of the departments or practicing wards on particular assigned days, and using the list of the participants sampled through simple random sampling, contacted the participants and sought for written informed and/or implied consent. Potential participants that willingly gave written informed consent and/or implied consent were recruited; and the survey questionnaires with assigned identifier were self-administered to the participant in convenient sitting positions. The informed consent forms were thoroughly reviewed with the participants by the researcher, to ensure comprehensiveness and thorough understanding of the participant's privileges and rights, full assurance of the confidentiality of the whole survey information, and unpressured informed consent, devoid of coercive languages, false claims, promises, and benefits.

However, participants that chose to complete the survey questionnaire at their later own convenient period were allowed to do so, and the questionnaires were sealed in an envelope, with the participants and the researcher agreeing on the date of retrieval of the completed survey instrument. At the agreed date of retrieval, the self-completed questionnaires were returned and reviewed for completeness and correctness by the researcher. Maximum flexibility was allowed in the distribution and collection of the completed questionnaire from the participants if it was still within the stipulated period of data collection. The demographic information that was sought and collected included the

age, gender, discipline, cadre/designation, years in practice, and years in the employment of the health institution.

The participants were informed that the research study will formerly end, after the data collected have been successfully analyzed, and the research findings compiled, and along with the other sections of the dissertation, submitted and accepted as a completed dissertation work by the Walden University. The participants were also briefed on the length of time, and/or the period the research study would cover during the administration of the informed consent and data collection; and were also informed that they were free to leave the study at any time without any liability or penalty. After the research was completed and accepted, the participants were debriefed regarding the findings of the research in a congregate conference setting, before they were finally exited from the study. There was no follow up data collection after the primary data collection and after completion of the research study.

Pretest and Pilot of the Survey Instrument

Pretesting is a simulation exercise, which involves administering of the data collection instrument on a small group with similar characteristics to the target groups with the view to identifying practical challenges associated with the data collection instrument, the process, sessions and methodology; and to make necessary revisions before the formal data collection (Hurst, Arulogun, Owolabi, Akinyemi, Uvere, Warth, & Ovbiagele, 2015). The quantitative survey instrument was pretested among four members in a similar target population; a member each from the physicians, the nurses, pharmacists, the laboratory scientists from another tertiary health institution. The

pretesting was done on individual basis to enable the researcher record in writing what each participant says about each of the questions; as well as to observe how the participant completed the survey, noting points of delays, hesitations, and cancellations, which could suggest poor understanding and need for clarity. Pretest allowed identification of problem areas, and subsequent reviews to ensure clarity, relevance, and consistency of the final survey instrument. Additionally, after the pretest, the instrument was piloted using about 40 participants from similar target group in another tertiary health institution. The pilot testing process included training of data collectors, giving and receiving informed consent, distribution and collection of the survey data, entering the completed survey into the database, and testing of the planned descriptive and analytical procedures. As an iterative process, with potential to self-correct and align the research design with the implementation activities, piloting and pretesting of the study enhanced the opportunity for achieving reliability through the rigor in research inquiry and data analysis procedures (see Hurst, et al., 2015).

Instrumentation and Materials

A researcher-developed survey instrument with standardized questions, purposely designed to provide answers to the research questions were employed in assessing the degree and the extent of interprofessional collaboration, and the implications to the health institutions' intervention effectiveness, and healthcare providers' work efficiency and satisfaction (Appendix A). The quantitative instrument is composed of three sections. Section A was used to assess the demographic information; section B assessed the extent of Interprofessional collaboration among professional groups; whereas section C assessed

the relationship of the nature and extent of the collaborative practice to the organizations' intervention effectiveness in terms of patient mortality outcome, healthcare professionals' performance efficiency, job satisfaction, and interprofessional conflict experiences within the practice environment.

Extensive literature review of interprofessional collaborative concepts and frameworks (see D'Amour, et al., 2005; Martin-Rodriguez et al., 2005; Pype, et al., 2013; Weller, et al., 2011); and the review of standard questionnaires for assessing interprofessional collaboration among various groups, their perceptions and attitudes towards collaborative practices at various settings guided the construction of the survey instrument (see Hojat, et al., 2015; Kenaszchuk, Reeves, Nicholas, & Zwarenstein, 2010; Nuno-Solinis, Zabalegui, Arce, Rodriguez, & Polanco, 2013; Orchard, King, Khalili, & Bezzina, 2012).

Interprofessional collaborative concepts that were measured by the instrument were divided into six subscales of collaboration, cooperation, participation/shared decision-making, partnership, communication, and coordination (see Weller, et al., 2011). Except for the demographic information section where open-ended questions were included, the quantitative survey instrument used close-ended pattern. Both close-ended and open-ended survey instruments have their pros and cons, which largely depends on the study purpose, research methodology and design. Close-ended questionnaires was used in this study for reasons of quick responses, limited resources, and higher test score reliability, standardizing data collection, and for obtaining representative data for study comparison (Friborg & Rosenvinge, 2013).

The responses of the participants for the quantitative closed-ended questions were scored using five point Likert-scoring systems, which ranged from score 1 (strongly disagree) to score 5 (strongly agree). The questions were positively worded such that lower scores represented negative or unfavorable responses to the questions on the extents of collaborative practice; whereas higher scores represented positive or favorable responses to the questions on the relationship of the extents of collaborative practice and the organizational implications. Although Likert-type instrument has been frequently and usefully employed as a popular psychometric item scoring system in medical education research for quantifying levels of perceptions, opinions, performance evaluation, attitude and behaviors, extra carefulness was undertaken in analyzing and interpreting data from Likert-type scales, in view of the controversy surrounding its usage as ordinal or interval measurement scales (Bishop & Herron, 2015; Boone & Boone, 2012; Sullivan & Artino, 2013). I understood that by its design, Likert-type items or questions are referred to as Likert-type data, and fall into ordinal measurement scale; and thus required particular analysis procedures such as the use of central tendencies of median or mode, and expression of variability through the use of frequencies, and test of associations using Chi square statistics (see Boone & Boone, 2012). Likert-type items, on the other hand is referred to as Likert-scale data when the items are grouped into four or more Likert items types as was done in this study, and thus were calculated as composite scores by getting the sum or the mean of the grouped items. As recommended, the composite scores for the Likert-scale were treated as interval measurement scale; and descriptive statistics such as the mean for central tendency, standard deviation for variability; and analytical statistics

such as Pearson's r for associations, t -test of the differences in means, ANOVA, and regression were all used (see Boone & Boone, 2012).

The quantitative survey instrument were largely self administered after thorough explanation of the nature and objectives of the study, assurance of confidentiality of information given, signing of written informed consent; or given of orally informed consent for some participants that were culturally sensitive to signing written informed consent, and for some other reasons declined signing the informed consent . Where oral consent was the preferred choice for any participants based on cultural issues and sensitivity, an implied consent was assumed to have been given, as was clearly stated at the top of the survey instrument, but with the participants still retaining his or her research rights. The instrument was attached as an appendix A in this study, and the raw data were kept in safe keeping for easy accessibility, but only available upon request for purely academic and research purposes.

Reliability and Validity of Survey Instrument

Ensuring scale reliability and validity is necessary in research to avoid proneness to erroneous results and conclusions (Creswell, 2009). Reliability is established when an instrument yields consistent results after repeated measures; and thus the result is dependable, reliable, and repeatable (Creswell, 2009; Warner, 2013). Validity define the level or degree by which a measure reflect what it is purported to measure; or by which the scores provide useful and meaningful information similar to or related to the principal concept, construct, or theoretical variable that underpins the study or intended measurement (Warner, 2013).

The reliability of this quantitative study was established by administering the instrument to the same participants at two close time points, a type referred to test-retest reliability. I carried out a test-retest correlation by computing Pearson's correlation coefficient (r) between the first and second results (Creswell, 2009; Warner, 2013), with significant difference set at value equal to or less than 5%. Pearson's r showed the stability or consistency of the scores across the two time points (see Warner, 2013). Measurement reliability of Pearson's r between 0.70 and 0.80 was the preferred determinant of the instrument reliability in this study as recommended by Warner; as increasing the reliability to higher level may result to saturation and diminishing return (2013). However, measurement reliability between 0.90 and 0.95 was recommended to be accepted, even though it is more useful for medical diagnostic measurements, where individual decisions may have serious and important health implications (see Warner, 2013). Additionally, I ensured the reliability of the instrument for this study by the use of multiple-item test purposefully constructed for this study, and by calculating the Cronbach's alpha (internal consistency) for each of the composite subscale pretest responses using SPSS version 21. Reliability was also improved by ensuring that the instrument has "consistent item responses across the constructs" being measured; and that there was "consistency in test administration and scoring"; the processes which scholars believe reduces errors associated with carelessness (see Creswell, 2009, P.149-150).

Validity of the self-reported instrument was assessed in two ways in this study. First is the content validity, which seeks to ascertain whether the items in the questionnaire "measure the content they were intended to measure" (Creswell, 2009,

p.149; Warner, 2013). The second validity is the criterion-oriented validity, which examines correlation of test scores across similar or related variables in the instrument to see if the test truly measures the purported constructs or concept (Warner, 2013). The content validity were measured by having three independent expert medical researchers decide on the completeness, coverage, sufficiency and appropriateness of the test contents; and by systematically aligning the contents with elements of a standard theoretical framework for the study (Warner, 2013). Criterion-oriented validity (predictive rather than concurrent) of the researcher self constructed instrument was measured by correlating the scores of the pretest with scores on other related variables from standard scales. In this study correlation was made with a standard questionnaire to assess interprofessional collaboration between two different care levels developed by Nuno-Solinis, Zabalegui, Arce, Rodriguez, and Polanco (2013), which reported Cronbach's α coefficient of 0.866 for the 10 items matrix for internal consistency; and the Jefferson Scale of Attitudes toward Interprofessional Collaboration (JeffSATIC), with Cronbach's α coefficient ranging from 0.84 to 0.90 in the three sample students from three universities (Hojat, et al., 2015). All the stages of data collection methods and analysis were accurately and clearly reported in detail for easy of understanding and to enhance validity as well as improve reliability (Creswell, 2009).

Data Analysis

Data Cleaning and Screening Procedure

I used SPSS IBM statistics version 24 for the quantitative data entry, organization, and analysis. Data cleaning as a three stage iterate process of screening, diagnosing and

editing suspected abnormal data, messy or faulty data (Broeck, Cunningham, Eeckels, & Herbst, 2005). According to Broeck, et al. (2005), although incidental detection of erroneous data is possible, it is better to have a planned way to search for and detect data errors. Data errors can be detected by the investigator close monitoring or screening of survey questionnaires, computer databases, or analysis datasets.

I carried out two phased data cleaning and screening. The first phase, referred to as pre-data cleaning process was done to ensure correctness and completeness of the information supplied by the participants through double checking of the responses in the questionnaire. The first checking of the completeness and correctness of the questionnaire was carried out after the participant has completed the questionnaire before submitting the same to the researcher. Clarifications were sought from the participating respondent for incomplete or erroneous information detected and corrections were effected immediately. The second check for correctness and completeness of information supplied by the participants was carried out en mass before data was entered, transformed, and analyzed. Questionnaires with erroneous, incomplete or incorrect information were discarded, and were reported in chapter 4 as percent incompleteness.

The main data cleaning stage was carried out by the researcher in liaison with the data entering clerk, after the system has produced data output. The process involved screening, diagnosis, and editing of data. Screening involved systematic search for odd or suspect features in the assessment questionnaire, databases or analysis data. The odd data searched for included lack or excess data, outliers and inconsistencies, suspect patterns and suspect analysis results (Broeck, et al., 2005). Screening methods employed in this

study included cross-checking of questionnaires, validating of data entry, printing out and cross-checking inconsistent and over range variables, and checking out on the frequency distributions, cross-tabulations, and summary statistics (Broeck, et al., 2005).

Diagnosis involved several reviews of the respondents' answers in its entirety or a cross section of the responses to ascertain issues under investigation. The sources of such errors are usually multiple, and for this study could come from wrong filling of the questionnaires, processing errors, data entry errors, during data extraction or transfer from the questionnaire, ineligible or unreadable writing, misspelling or incorrect word spellings, and missing data or unfilled fields (see Broeck, et al., 2005). Thus, missing data, errors from typos or wrongly misunderstood questions and answers, extreme values or outliers, and incorrectly entered record or data were all sought for during the process (see Broeck, et al., 2005).

Three methods of data treatment that were usually employed include leaving the data unchanged, especially if the suspected data is one or few in number, and with larger sample size as was the case in this study. Other recommended methods of data treatment clued correcting the data where the respondents' intents or original answers could be determined; and deleting where the value is far from the literature norms as to affect seriously the descriptive and analytical statistics (see Broeck, et al., 2005). However, in this study, data cleaning exercise carried out by screening and diagnosis revealed no odd or suspect features in the assessment questionnaire, databases or analysis data.

As stated in chapter 1, the research questions and hypotheses that guided the type of statistical analysis employed were as follows:

1. What is the association between the extent of interprofessional collaborative practice and patient's mortality outcome in Enugu State University Teaching Hospital?

Ho1: There is no association between the extent of interprofessional collaborative practice and patient's mortality outcome

Ha1: There is an association between the extent of interprofessional collaborative practice and patient's mortality outcome

2. What is the relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction?

Ho2: There is no relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction

Ha2: There is a relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction

3. What is the association between the extent of interprofessional collaborative practice and healthcare professionals' performance?

Ho3: There is no association between the extents of interprofessional collaborative practice and healthcare professionals' performance

Ha3: There is an association between the extents of interprofessional collaborative practice and healthcare professionals' performance

4. What is the relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts experience in the hospital practice environment?

Ho4: There is no relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts in the hospital practice environment

Ha4: There is a relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts in the hospital practice environment

Based on these research questions, statistical tests that were employed for the analysis of the quantitative data include descriptive statistics of the mean values, t-test statistics, chi-square tests, Pearson correlation coefficient r , and multiple linear regressions (Green & Salkind, 2014; Warner, 2013). The Likert-type items, were collected as Likert type data, and scored using five point Likert-scoring systems, ranging from score 1 (strongly disagree) to score 5 (strongly agree). The Likert-type items were grouped into six groups of Likert-type scales data, and each of the group was calculated as composite scores by getting the sum or the mean of the grouped items. This grouping enabled the Likert type items to be treated as interval measurement scale, rather than ordinal measurement scale; thus allowed the use of analytical statistics of mean, standard deviations, and Pearson's r for associations.

During the data analysis, the traditional hypothesis approach, that is null hypothesis of no relationship or that no significant difference exists between the independent and dependent variables were assumed (see Creswell, 2009). Logistic regression as a multivariate analysis method was used to assess the strength of association between a dependent variable, and two or more independent variables as adjusted odd ratios (Nayak & Hazra, 2011). In this study, each dependent variable, patient mortality, health professionals performance, job satisfaction or interprofessional conflict experience was taken at a time, to assess the association with two or more independent variables, from the 6 interprofessional collaboration collaborative domains, which relational collaboration, cooperation, participation/shared decision-making, partnership, communication, and coordination (see Weller, Barrow, & Gasquoine, 2011).

Pearson (Product moment correlation coefficient) correlation r , was used to test the strength of the association between the means of each of the independent variables of the Likert type scale data as numerical data (collaboration, cooperation, shared decision-making/participation, partnership, communication and coordination), and each of the means of the dependent variables of the Likert type scale data, also as numerical data (patient mortality, health professionals performance, job satisfaction, and interprofessional conflict experience). According to Nayak & Hazra (2011), the strength of the association between each two variables, expressed as correlation coefficient r , can be inversely correlated, depicted by a minus sign, or can vary from 0, indicating no correlation at all, to 1, indicating perfect correlation. However, if perfect correlation is indicated in the analysis, it may indicate causality, but does not necessarily mean that

there is causality (Nayak & Hazra, 2011). The differences in means of the Likert type scale data in this study were calculated using the Student T-test of means.

Covariates are the necessary demographic variables that describe the length and breadth of the experience of the participants, and have the potential to influence perception and attitude of the participants toward interprofessional collaborative practice at the health institution. However, in this study, because years of employment in the services of the study institution was used as a bench mark for inclusion into the study, and there was no age or gender differentiation in relation to the study and the research questions, these covariates were not considered essential in the data analysis. The results were interpreted using the following key parameters: mean standard deviations, confidence intervals, and odd ratios for the logistic regression analysis; and correlation coefficient, and P-values for determining significant findings.

Threats to Validity

There were zero threats or minimal threats to internal and external validity in this study. This statement was considered to be true because the study is a non-experimental study, devoid of validity threats relating to testing reactivity, interactional effects of experimental variables, multiple treatment interferences, maturation effects, instrumentation testing and measurements, experimental mortality (attrition), and selection-maturation interactions. I employed the following strategies to reduce threat to internal validity, a) probability sampling to ensure representative sample; b) cross-sectional design to shorten the period of the study to avoid attrition; c) on the spot check of the self-administered questionnaire for completeness, d) careful designed questionnaire

to avoid tendency toward band wagon effect, e) close monitor of the questionnaires to ensure complete retrieval; and f) ensuring absence of maturation effects and instrumental changes over time all combined to reduce threats to internal validity (see Shadish, Cook, & Campbell, 2002).

Additional to reduce threats to validity, this quantitative study systematically followed scientific method of research as described in the methodology section; which is thus capable of reducing the chances of error, and increasing the internal validity. Again, the specific focus of the study on the degree of interprofessional collaborative practice, and its implications to organizational goal effectiveness and professionals' efficiency, was to ensure thorough and skillful description of the phenomenon, and to enhance internal validity. The Likert item questions were grouped into scales or categories, so as to narrow the independent variables to one composite variable, extent of interprofessional collaboration; as well as to equally reduce the independent variables to manageable numbers, all undertaken to enhance internal validity, and reduce the possibility of cofounders.

External validity, which considers the issue of whether causal relationships as established can be generalized beyond the study participants and settings to different individuals, measurements, settings, and over a period of times, were pursued (see Steckler & McLeroy, 2008). The recruitment and selection of study participants were carried out through probability sampling method as described in the sampling procedure to ensure representative sampling from different services delivery settings (Steckler & McLeroy, 2008). The involvement of multiple healthcare providers, the doctors, nurses,

pharmacists and laboratory scientists, who are directly involved in the provision of clinical services, is in line with the World Health Organization (2010) definition of interprofessional collaboration, as multidisciplinary approach to healthcare provision. The multidisciplinary approach equally enhanced the external validity of the study. Again, the involvement of group of professionals in the study, who were similar to other health professionals involved in the day-to-day clinical services provision in other medical settings in Nigeria, outside the study site, added value to the external validity of the study. I also ensured a higher level of consistency in the methodology implementation across the various program components, settings and time period (Steckler & McLeroy, 2008). Other external validity information that were incorporated as already described in the positive social change implication section, included the proposed impact of the outcomes on various segments of the society, especially to the patient's quality of life, the practitioners' performance and satisfaction; and the hopeful use of the interprofessional database, a product of the research study, to enhance decision making and future program implementations and evaluations (see Steckler & McLeroy, 2008). Although the study was non-experimental in design, the methodology guaranteed reduced participants attrition at the levels of health professionals involved, and follow up on the expected impacts through dissemination of results and expansion of the study in the future to other healthcare settings (see Steckler & McLeroy, 2008)

Threats to Statistical Conclusion Validity

Statistical conclusion validity is said to hold whenever the conclusions of a research is made on an adequate and accurate statistical analysis of the data, not just

based on its ability to answer the research questions. Thus, certain conclusion drawn on a research based on faulty or inadequate data analysis may not hold (Garcia-Perez, 2012). Three common threats to statistical conclusion validity usually occur when the researcher as recommended traditionally, carries out repeated testing with optional stopping without controlling for Type -1 and Type 11 error rates; checking statistical assumptions of statistical tests; and use regression routinely whenever a bivariate relation or its equivalence between two variables are being studied (see Garcia-Perez, 2012). These three common errors that could lead to threats to statistical conclusion were avoided in this quantitative study. In this present study, fixed sampling approach was assumed; and preliminary testing of the correlation statistics test assumptions was not conducted nor tested, because the assumptions were not violated by the data characteristics in this study. Additionally, Pearson correlation coefficient r , and multiple linear regression analysis were used in his study, instead of using regression as the means to investigate bivariate relations of all type of data (see Garcia-Perez, 2012). A recommended alternative to the repeated testing with optional stopping without control applications that threatens statistical conclusion validity is the use of sequential sampling, which though has problems of determining suitable stopping rule, and finding along the line suitable test statistics and its sampling distribution. Thus, adhering to fixed sampling assumption of statistical tests as was done used in this study is also advocated (see Garcia-Perez, 2012). The recommendation for avoidance of the Type 1 and 11 errors associated with testing or not testing of test statistics assumption, is to avoid two stages testing where assumptions are tested, before subsequent testing of the Null hypothesis. The recommendation is to

use statistical methods that align with the data characteristics, which do not violate the test assumptions (see Garcia-Perez, 2012). Regarding the use of regression as a means to investigate relations of all types, it is recommended that statistical conclusion validity will improve if structural relations instead of regression equations were to be fitted whenever variables will be measured with error (see Garcia-Perez, 2012). All these recommendations were considered in this study, and the statistical methods utilized were well aligned with the characteristics of the study data.

Threats to Construct Validity

Factors that are recognized to pose threat to construct validity include inexact definition of constructs; mono-operation bias; reducing levels of measurements of constructs; mono-method bias; treatment-sensitive factorial structure; and construct confounding (see Goodwin, 2009; Shadish, Cook, & Campbell, 2002; Cook & Campbell, 1979; Trochim, 2006). In this study, the constructs were well defined in the literature and in the section on definitions of terminologies in chapter one, and were also referenced. Since the present study was not experimental study, operational definitions of concepts or constructs for easy of measurements, that might lead to inadequate definitions were not made. Again, the problem of mono-operational bias could not have risen in this study because both the independent and dependent variables were assessed through multiple Likert items, and thereby taking into considerations the different aspects of each of the variables, which rather improved construct validity, than constituting a threat.

There could be a possibility of construct validity threat from mono-method bias as this study is a quantitative method, with cross-sectional design, using questionnaire

instrument only for data collection. However, the involvement of multiple participants from the various health disciplines in assessment of the same constructs, and the use of multiple statistical methods, may have provided comparative measure for the same construct, and may have reduced the threat of mono-method bias. However, the best way to reduce this threat however, is the use of multiple methods, and thereafter to assess the convergent validity of the two methods to ascertain if the measure same construct. This study however, in view of the purpose, and the research questions was designed as quantitative study, with cross-sectional design.

The threat to construct validity resulting from reducing levels of measurement of constructs was not applicable in this study. Rather than affecting construct validity, the measurement that was employed in this study rather enhanced construct validity. Reducing levels of measurement of constructs occurs when variables that are better measured as continuous variables are operationalized as nominal variables. In this study, the measurements of the degree or extents or levels of interprofessional collaboration, which were determined through Likert type items, and constructed as ordinal measurement scale, were composited into Likert Scale data to allow better measurement as interval scales.

Since this study is not interventional study and do not involve administration of any sort of treatment to the participants that could change their perception or understanding of the constructs, treatment-sensitivity factorial structure threat to construct validity was not applicable to this study. The last factor that could constitute a threat to construct validity is the construct confounding; which concerns how different

constructs relate to one another, and the whether the different constructs have clear boundaries so as to avoid overlap. The construct confounding could constitute threat to validity in this study in view of the possible overlaps in the definition of the constructs, and in the items that measure each of the construct. However, I made a deliberate attempt to minimize ambiguity in the definitions of the different constructs offered in chapter one of this study, and to delineate one construct from the other; so as to avoid overlap, and the probability of the results of the study being confounded.

Role of the Researcher

My role as principal investigator, supervisor, primary data collector, and data analyst focused on conducting quality human research, making objective analysis of the data collected from the multiple sources, and making solid inferences to serve as evidence based, validated, and substantiated information (see Creswell, 2009), that can be generalized to other population or settings in the case of quantitative data. These roles were guaranteed by securing approval of the Institutional Review Board (IRB) before the research was conducted, and I ensured the protection of the rights, safety, and privileges of the participants; and maintained ethical discipline in research (see University of California Office of Research, n.d.).

As a principal investigator and as a “primary data collection instrument”, knowledge, awareness, and identification of my personal values, perspectives, beliefs, assumptions and biases on the subject matter of interprofessional collaboration were all done in good faith, to ensure sincerity and sensitivities to the challenges associated with playing these roles, and ensuring quality result (see Creswell, 2009, p.196). Having

knowledge of the standard interprofessional collaboration, previous experiences working with health professionals and awareness of the personal biases helped perform these roles ethically; and to know how to work with the informant heterogeneous and dichotomous healthcare providers, who accidentally have their biases with regard to collaboration within the healthcare setting. All conscious efforts were made to ensure objectivity in carrying out these roles, including use of “peer debriefer” reviewer and “external auditor” that respectively reviewed, asked questions, and sought answers and clarifications about the entire study; and provided objective evaluation of the entire project and the researchers’ conclusions from the lay man’s point of view (see Creswell, 2009. P.192). I had at the back of my mind while starting this dissertation work, that examining interprofessional collaboration in the hospital setting in Nigeria is tedious task, especially the difficulty associated with unraveling the truth associated with the practice, and sincerity of purpose among the informants in giving unbiased answers to the research questions.

Measures for Ethical Protection of participants

Ethical principles for human research, respect for persons, beneficence, justice and ethical guidelines (U.S. Department of Health and Human Services), were strictly adhered to in all the research process, including the administration of the questionnaire survey. Approval from the Walden Institutional Review Board (IRB) and Enugu State University Teaching Hospital Ethical Review Committee were sought and obtained before commencement of data collection. Participants were assured that their participation in the research, was voluntary, and that they were free to withdraw any time,

and that their withdrawal will by no means jeopardize their interest and relationships in the hospital. The researcher added 10% to the calculated sample size to cater for possible attrition, non-responses and withdrawals from the study. The subjects' willingness and volunteerism to participate were evidenced by the signed written informed consent forms (Appendix B), which guaranteed active and explicit consents.

The informed consent has the three elements of information, comprehension, and voluntariness, and was morally based on the principle of respect for persons (U.S. Department of Human and Health Services, 2016). The consent forms contained participants' rights, and privileges; anonymity, and confidentiality of the responses, including safety and security of the data after the research. Additionally, the participants were assured that the identity of their persons and responses were not indicated or suggested by the survey documents, which were actually coded; and the reporting and presentation of data was done in groups and in aggregate settings. The hard copies of the research documents were kept by the researcher and locked in a file cabinet designated for that purpose, and will be kept for about five years, and later be destroyed by combined shredding and burning in an enclosure. Personal computers and laptops of the researcher were used for all data management and analysis; and third parties involved in the data management, the research assistant and the data clerk, signed informed written consent to safeguard and not divulge any privileged information and access to survey data.

There was no known conflict of interest in this study. The research was personally sponsored by the researcher. The researcher is not an employee of the health institution,

and has no authority or power whatsoever over the participants. The participants were not given any incentives for participating in the study; rather were informed of the potential benefits of the study outcome in terms of the planned use of the findings to inform decision-making at the services delivery points and policy making levels. The participants were informed of the potential benefits to the patients in terms of use of the findings to improve patient health outcomes and experience, through promotion of quality interprofessional collaborative practice and team work, and creating enabling, conflict and stress-free environment that will promote the organizational goal effectiveness and services efficiency.

Summary and Transition Statement

This chapter three proposal has described the quantitative research method or approach, with descriptive cross-sectional design, which was employed in studying the extent and implications of interprofessional collaborative practice among professional healthcare providers in the hospital settings in Nigeria. I have further justified the choice of the design and explained in detail the sampling approach, characteristics of the study participants, types of survey instruments, validity and reliability issues, recruitment processes and procedures, data analysis approaches, and measures for ethical protection of participants. The next chapter of the dissertation, which is chapter 4, is the result section, which contained all the findings of the survey study in a systematic format.

Chapter 4: Presentation and Data Analysis

Introduction

The purpose of this quantitative cross-sectional descriptive study was to describe the extents of interprofessional collaborative practice among major health professionals in a tertiary hospital setting in Nigeria and the implications of the extent of the collaborative practice on patient mortality, health professionals' performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. The four major health professionals that were studied included the doctors, nurses, pharmacists, and laboratory scientists. The extent of interprofessional collaborative practice was assessed and described under six collaborative domains or dimensions, which included collaboration, cooperation, participation/shared decision making, partnership, communication, and coordination. I also assessed and described the implications of each of these domains on patient mortality, health professionals' performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. Although, standard practice of interprofessional collaboration has been beneficially implemented in levels of healthcare in the resource-rich countries (Harris, et al., 2016; Peduzzi, et al., 2015; Rice, et al., 2010; Supper, et al., 2014; World Health Organization, 2013), the extent of the practice in the Nigeria hospital setting has not been fully described nor has its implications to patient mortality outcome, healthcare professionals' work performance, job satisfaction, and interprofessional conflicts and strike actions being assessed and described. This study has provided a clear description of the extent of the practice of interprofessional collaboration in a tertiary hospital setting in Nigeria and its relationship

to patients' mortality, professionals' work performance, job satisfaction, and frequency of interprofessional conflicts.

Four research questions and hypotheses that guided the study were:

1. What is the association between the extent of interprofessional collaborative practice and patient's mortality outcome in Enugu State University Teaching Hospital?

H_01 : There is no association between the extent of interprofessional collaborative practice and patient's mortality outcome

H_a1 : There is an association between the extent of interprofessional collaborative practice and patient's mortality outcome

2. What is the association between the extent of interprofessional collaborative practice and healthcare professionals' performance?

H_02 : There is no association between the extents of interprofessional collaborative practice and healthcare professionals' performance

H_a2 : There is an association between the extents of interprofessional collaborative practice and healthcare professionals' performance

3. What is the relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction?

H_03 : There is no relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction

H_a3 : There is a relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction

4. What is the relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts experience in the hospital practice environment?

H_04 : There is no relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts in the hospital practice environment

H_a4 : There is a relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts in the hospital practice environment

In Chapter 4, the overall data analysis and results of both the pilot study and the main dissertation study are presented in tabular form, and in descriptive format for some appropriate statistical tests. Pilot study results are reported and evaluated in terms of its benefits and potential impacts on the main study. However, comprehensive and more detailed tabular reports of the pilot study results are presented in Appendix B. Data collection processes, including participants' rates and relevant demographic characteristics, were evaluated in relation to the plan in Chapter 3. The results of the main study are presented in tables, using descriptive and analytical statistics. The descriptive analysis of the participants' demographic characteristics and responses regarding the extent of interprofessional collaborative practice and its implications to the patients, health professionals and the organizations' healthy work environment are reported in Tables 1-11. The analytical tests of associations and relationships, including t test of means, correlations, regressions, and Chi-square tests are presented in Tables 12- 23.

Salient and significant statistics and explanatory sentences to enhance fuller understanding of the tabular results are written below each table as appropriate.

Pretest of the Survey Instrument

As stated in Chapter 3, the survey instrument was administered to four health professionals, a doctor, nurse, pharmacist and laboratory scientist selected from the University of Nigerian Teaching Hospital, a similar tertiary health institution to the study site, Enugu State University Teaching Hospitals, Enugu, Nigeria. The health professionals reported that the explanations and the instructions on the questionnaire were clearly understood, and that the questions were nonambiguous, standard, concise, and easy to follow. However, the participating health professionals complained that the questionnaire document itself was lengthy with detailed survey information, instructions, and definition of terminologies. I explained to health professionals that the essence of the detailed information is to ensure comprehension of the concept of interprofessional collaboration, and to equip participants with adequate knowledge to make informed decision, and to provide accurate, reliable, and quality data. Thus, no changes were made in the approved proposal survey instrument.

Pilot Study

Pilot study was conducted using 40 health professionals, 10 from each of the four medical disciplines, medicine, nursing, pharmacy, and medical laboratory science, from the University of Nigerian Teaching Hospital, a similar tertiary health institution to the study site, Enugu State University Teaching Hospital. Although 30 health professionals were proposed in Chapter 3 to participate in the pilot study, 40 instead were selected and

studied. The choice of 40 health professionals was based on the expert opinions from previous literature that pilot study sample size should be 10% of the sample projected for the parent study (Waweru, & Omwenga, 2015). The pilot testing processes included training of three research assistants as data collectors, recruitment of the health professionals, seeking and signing of informed consent forms, administering and collecting the survey data, entering the retrieved survey data into SPSS computer software, and conducting of descriptive and analytical data analysis. The pilot study did not elicit any practical challenges relating to the use of the survey instrument, or to the feasibility of implementing the entire study. Rather, the pilot study offered me an opportunity to test the study method and design, the hypotheses, and the planned descriptive and analytical procedures. Conducting the pilot study also provided me with implementation skills that lead to avoidance of potential errors, saving time and money.

Pilot Study Analysis and Results

The extent of interprofessional collaborative practice among the health professionals at the health institution was assessed under the following six collaborative domains: collaboration, cooperation, participation/shared decision making, partnership, communication, and coordination. The implications of the extent of the collaborative practice on the patients, health professionals, and on the organizations' practice environment were assessed under the following four subscales dimensions: patient mortality, health professionals' job satisfaction, health professionals' performance, and frequency of interprofessional conflicts and strike actions.

Each of the subscale was assessed with four questions scored using Likert Scale items scoring system, strongly agree (SA) = 5; agree (A) =4; neutral (N) =3; disagree (D) =2; and strongly disagree (SD) =1. In order to have a uniform assessment of the strength of responses, a mean value that is below 3.0 indicates low and negative rating, between 3.0 and 4.0 is moderately high and positive rating, whereas a mean value of 4.0 and above indicates very high and positive rating. Descriptive (frequency, percentages, mean (μ), standard deviations (σ or *SD*), and analytical statistics (Chi-square χ^2 , *t* test of means, Person product-moment correlation coefficient *r*, and logistic regression) were appropriately used.

A total of 40 health professionals participated in the pilot study, 10 (25.0%) each from doctors, nurses, pharmacists, and medical laboratory scientists. The age of the responding health professionals ranges from 33 years to 57 years, with the majority between ages 38 years to 47 years (24, 60.0%), males 17 (42.5%), and females 23 (57.5%). The years of practice in the medical profession after graduation or certification were between 3-32 years, with the majority clustering between 18-22 years (32, 80.0%). The years in the employment of the health institution for the health professionals ranges from 2-31 years, with majority between 2-16 years (34, 85.0%). The mean (μ) age, years in practice, and years in the employment of the health institution, with the standard deviations (σ or *SD*) were 42.75 ± 5.908 , 16.05 ± 6.280 , and 10.93 ± 7.447 respectively (Table 1 Appendix B).

The means and the standard deviations for the responses of the health professionals to each of the four questions assessing the extent of interprofessional collaborative practice

under each of the six collaborative domains of collaboration, cooperation, participation/shared decision-making, partnership, communication, and coordination were presented in Tables 2-7, respectively (Appendix B). The mean ranges from 1.90 to 2.55, with the standard deviation (*SD*) 1.105 to 1.381 for collaboration; 2.18 to 2.83, with *SD* 1.196 to 1.355 for cooperation; 2.10 to 2.28 with *SD* 1.067 to 1.150 for participation/shared decision-making; 2.48 to 3.48 with *SD* 1.143 to 1.281 for partnership; 2.38 to 2.65 with *SD* 0.987 to 1.131 for communication; and 1.98 to 2.93 with *SD* 0.997 to 1.192 for coordination domain. Except for the mean (3.48) in the question number one in the partnership domain (Table 5 Appendix B), the mean response for each of the four questions in each of the six collaborative dimensions is below 3.0; indicating low and negative rating for the practice of interprofessional collaboration at the health institution.

The means and standard deviations regarding the implications of the extent of the extent of interprofessional collaborative practice at the health institution on patients' mortality, health professionals work performance, job satisfaction, and healthy practice environment were presented in Tables 8- 11, respectively (Appendix B). The mean responses for each of the four questions covering each of the four subscale implications of the extent of interprofessional collaborative practice in all the tables range from 3.45 to 4.55, with *SD* range of 0.679 to 1.280; indicating moderately high to very high positive ratings for the association between the extent of interprofessional collaborative practice at the health institution and the stated organizational implications.

The relationship or association between the extents of interprofessional collaborative practice and organizational implications in terms of patient mortality outcome, health professionals work performance, job satisfaction, and frequency of interprofessional conflicts and strikes were presented in Tables 12-18, with the values for *t* test of means, *p*-values, and the 95% confidence intervals (Appendix B). The overall mean of each of the six interprofessional collaborative domains was compared with the overall mean of each of the four organizational outcome implications using student *t* test to determine if the mean difference is significant at $P \leq 0.05$. The mean differences between the means of each of the six collaboration domains and the means of each of the four organizational implications were statistically significant ($P=0.000$), with positive and moderately high confidence intervals.

The Pearson product-moment correlation coefficient *r*, which measures the strength of a linear association between two variables, in this case, the key questions for each of the collaborative domains as independent variables and the key questions for each of the organizational implications as dependent variables were presented in Tables 19 and 20 (Appendix B). As reported in each of the tables, the results showed less than zero values for the Pearson correlation coefficient *r*, between collaboration, cooperation, participation/or shared decision making, partnership, communication, and coordination, and between patient mortality, health professionals work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. The correlation values of less than zero indicate negative associations or relationships between the extents of the practice of interprofessional collaboration, and patient mortality, health professionals'

work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. The negative association in this study indicates that the level of practice of interprofessional collaboration in the study health institution has negative implications to the organizational goal effectiveness, human resources efficiency, and healthy work environment.

Chi-square test of associations between each of the six collaboration dimensions or domains and each of the four organizational implications were presented in Tables 21-24 (Appendix B). In order to conduct a chi-square test of association, the frequencies of the health professional responses for each of the questions under each of the interprofessional collaborative and organizational outcome implication domains were grouped as positive and negative responses. In the Likert scale system, strongly agree and agree were grouped as positive responses, whereas strongly disagree, disagree, and neutral were grouped as negative responses. Each of the six interprofessional collaborative domains was compared with each of the four organizations' outcome implications. The reports showed highly statistically significant differences ($P=0.000$) between each of the six collaboration domains and each of the four organizations' implications, indicating that the extents of interprofessional collaborative practice have great implications for patient's mortality, professionals work performance, job satisfaction, and frequency of interprofessional conflicts.

A logistic regression analysis was conducted to predict the implications of the extent of interprofessional collaborative practices on each patient mortality, health professional work performance, job satisfaction, and frequency of interprofessional

conflicts and strike action at the health institution with the sample of 40 health professionals, using the six domains of interprofessional collaborative practice, which include collaboration, cooperation, participation/shared decision-making, partnership, communication, and coordination as predictors (Appendix B).

Patient mortality outcome as dependent variable

The test of the full model, shown in the SPSS output in the omnibus test of model coefficient table against a constant only model, patient outcome mortality, was statistically significant (chi square=178.072, $p=0.000$ with $df=5$), indicating that the predictors as a set reliably distinguishes between the implications of the extents of interprofessional collaborative practice and organizational goals.

Nagelkerke's R_2 of 0.948 indicated a highly strong relationship between the predictors and prediction. Prediction success overall was 97.5% (91.8% for negative response and 100.0% for positive response). The Wald criterion shown in the SPSS output variables in the equation demonstrated that none of the six predictor variables made any significant contribution to the prediction ($P=1.000$). Exp (B) value for the collaboration, participation/decision-making, communication and coordination dimensions is one each (odd ratio 1), indicating that the odds of an outcome occurring is constant at one. However, the Exp (B) for cooperation and partnership dimensions each is in thousands, indicating that raising any of these dimensions by one unit, the odds ratio would be similarly thousand times as large, and thousand times more likely to produce desired outcome.

Health professionals work performance as dependent variable.

The test of the full model, shown in the SPSS output in the Omnibus test of model coefficient table against a constant only model, health professionals work performance, was statistically significant (chi square=173.050, $p=0.000$ with $df=6$), indicating that the predictors as a set reliably distinguishes between the implications of the extents of interprofessional collaborative practice, and organizational goals.

Nagelkerke's R_2 of 1.000 indicates a perfect fit and a highly strong relationship between the predictors and prediction. Prediction success overall was 76.9% (0.0% for negative response and 100.0% for positive response). The Wald criterion shown in the SPSS output variables in the equation demonstrated that all the six predictor variables made significant contribution to the prediction ($P=0.000$). Exp (B) value of 3.324 for the dimensions (odd ratio 3), indicates that when any of the 6 dimensions is raised by one unit, the odd ratio is 3 times as large and therefore the health professional work performance is 3 more times likely to affected.

Health professionals job satisfaction as dependent variable.

The test of the full model, shown in the SPSS output in the Omnibus test of model coefficient table against a constant only model, health professionals job satisfaction, was statistically significant (chi square=171.171, $p=0.000$ with $df=6$), indicating that the predictors as a set reliably distinguishes between the implications of the extents of interprofessional collaborative practice and organizational goals.

Nagelkerke's R_2 of 0.983 indicates moderate to high strong relationship between the predictors and prediction. Prediction success overall was 98.8% (94.9% for negative

response and 100.0% for positive response). The Wald criterion shown in the SPSS output variables in the equation demonstrated that none of the six predictor variables made any significant contribution to the prediction ($P=1.000$). Exp (B) value for cooperation, participation/decision-making, partnership and coordination dimensions is one each (odd ratio 1), indicating that the odds of an outcome occurring is constant at one. However, the Exp (B) for collaboration and communication dimensions each is in thousands, indicating that raising any of these dimensions by one unit, the odds ratio would be similarly thousand times as large, and thousand times more likely to produce desired outcome.

Healthy work environment as dependent variable.

The test of the full model, shown in the SPSS output in the Omnibus test of model coefficient table against a constant only model, healthy work environment, was statistically significant (chi square=92.911, $p=0.000$ with $df=6$), indicating that the predictors as a set reliably distinguishes between the implications of the extents of interprofessional collaborative practice and organizational goals.

Nagelkerke's R_2 of 0.815 indicates a moderately relationship between the predictors and prediction. Prediction success overall was 95.6% (100.0 % for negative response and 95.0% for positive response). The Wald criterion shown in the SPSS output variables in the equation demonstrated that none of the six predictor variables made any significant contribution to the prediction ($P=1.000$). Exp (B) value of 6.519 for the dimensions (odd ratio 6), indicate when any of the 6 dimensions is raised by one unit, the

odd ratio is 6 times as large and therefore the healthy work environment is 6 more times likely to affected.

Null (H₀) and Alternative Hypotheses (H_A).

H₀: There is no association between the extents of interprofessional collaborative practice and patient's mortality outcome, health professional work performance, job satisfaction, and healthy practice environment.

H_a: There is an association between the extents of interprofessional collaborative practice and patient's mortality outcome, health professional work performance, job satisfaction, and healthy practice environment.

The *t* test of means, Pearson correlation coefficient, the chi-square test of association, and the logistic regression analysis were performed on the pilot survey data, to test the association and relationship between the 6 domains of interprofessional collaborative practice, collaboration, cooperation, participation/or shared decision-making, partnership, communication and coordination; and the 4 domains of organization implications, patient outcome, health professional work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. The result showed that there are statistically significant differences ($P=0.000$) between the extents of interprofessional collaborative practices and patient outcome, health professional work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. The Pearson correlation coefficient is below zero, indication negative and inverse relationship. Therefore, the Null hypothesis of no difference (H_0) is rejected and alternative hypothesis of significant difference or association accepted (H_A).

Reliability and Validity of the Survey Instrument

Test-Retest Reliability

Test-retest reliability was conducted among five homogenous health professionals covering two weeks between the first and the second administration of the same survey instrument. As stated in the proposal chapter 3, test-retest correlation by computing Pearson's correlation coefficient (r) between the first and the second results was conducted (see Creswell, 2009; Warner, 2013), with significant value set at equal to or less than 5%; and Pearson's r between 0.70 and 0.80 chosen as the preferred measure (see Warner, 2013).

The SPSS output for the test-retest reliability for each of the 5 participants showed Pearson's correlation coefficient (r), ranging from 0.845 to 0.987, with p -value of 0.000 each. The test-retest Pearson r for the first to the fifth participants was 0.845, 0.987, 0.856, 0.955, and 0.893 respectively. This served as my evidence of high test-retest reliability of the measurement instrument.

Additionally, the multiple-item test used for each of the variables was to ensure reliability. Also, as stated in chapter 3 of the proposal, Cronbach's alpha (internal consistency) was calculated for each of the composite subscale pretest responses using SPSS version 24. The results indicated a high level of reliability (internal consistency) for the whole scale, Cronbach's alpha of 0.807. The Cronbach's alpha for each of the composite subscale is as shown in table 25 (Appendix B). None of the items in the scale was deleted; because removal of any of the items lowered the Cronbach's alpha or minimal and non-significantly raised the Cronbach's alpha.

Validity of the Instrument

As stated in chapter 3, content validity and criterion-oriented validity were measured (see Warner, 2013). Content validity was measured by three independent expert medical researchers, referred to in this content as three raters. Each of the four questions in each of the subscale collaboration domains, was rated on a 4-point Likert scale of item to determine its appropriateness to the domain, and scored as not being very relevant (1), somewhat relevant (2), quite relevant (3), and highly relevant (4), and with scores 3 and 4 considered appropriate for inclusion (see Denise & Cheryl, 2006; Larsson, Tegern, Monnier, Skoglund, Helander, Persson, et al., 2015). Thus, maximum score of 12 and minimum of 9 points for each question in the subscale; and 64 and 48 respectively for each subscale were acceptable. The minimum expected score for item-level content validity index (I-CVI) and for scale-level index (S-CVI) acceptability was 0.75. In this study, the calculated S-CVI for each of the 10 subscales ranged from 0.80 to 0.94, indicating excellent content validity and agreement among raters. An S-CVI of 0.75, 0.80 or higher is generally the accepted level (see Denise & Cheryl, 2006; Larsson, Tegern, Monnier, Skoglund, Helander, Persson, et al., 2015, Yaghmale, 2003).

Criterion-oriented validity (predictive rather than concurrent) was measured by correlating the scores of the pretest with scores on other related variables from standard scales. The standard questionnaire to assess interprofessional collaboration between two different care levels (see Nuno-Solinis, Zabalegui, Arce, Rodriguez, & Polanco, 2013), which reported Cronbach's α coefficient of 0.866 for the 10 items matrix for internal consistency; and the Jefferson Scale of Attitudes toward Interprofessional Collaboration

(JeffSATIC), with Cronbach's α coefficient ranging from 0.84 to 0.90 in the three sample students from three universities (see Hojat, et al., 2015). The Cronbach's alpha for the pretest in this study ranged from 0.708 to 0.867, with the overall Cronbach's α of 0.807.

Main Survey Study

Data Collection

Data was collected using a researcher constructed and validated survey instrument, containing mainly closed-ended Likert-type quantitative questions, and few open-ended questions that enabled collection of some demographic data (Appendix A). The survey instrument was self-administered to the health professionals at their various departments, during departmental meetings and conferences, and at their various practicing wards and clinics, after obtaining and signing of written informed consent. Self-administered method was adopted during this data collection because the health professionals were quite educated, knowledgeable enough, and understood the questions as to provide quality responses. Therefore was no negative methodological implication to the use of self-administered survey instrument. A total population of 396 health professionals was selected through simple random sampling strategy. The compositions of the professionals were as follows, 134 doctors, 212 nurses, 50 medical laboratory scientists, and 38 pharmacists. A total of 388 questionnaires were returned, completely and correctly filled, giving a 98% response rate. Response rates among the different medical disciplines were, doctors (110, 82.1%), nurses (198, 93.4%), medical laboratory scientists (44, 88.0%), and pharmacists (36, 94.7%). The survey period lasted for 6

weeks, including periods of recruitment, distribution of the survey instrument, and retrieval of the completed surveys.

Demographic and Descriptive Statistics

The demographic variables of the health professionals were presented in table 1. Majority of them were within the age range 31-40 years (182, 46.9%), with preponderance of female gender (274, 70.6%). The higher proportion of female gender is a reflection of the fact that the nursing profession is largely a female profession in Nigeria, and nursing profession constitute 51.0 % of the entire health professionals in this study. Larger proportion of the health professionals had been in the employment of the health institution between 2 to 11 years (301, 77.6%), and similarly had between 2 to 11 years of practice experience (227, 58.5%). Understandably, the health professionals in the age range 51 to 60 years (31, 8.0%), and 61 years and above (4, 1.0%), constituted the lowest frequencies because they fall under the retirement age range. The mean age in years was 38.35, with standard deviation 8.184; mean years in practice 11.64 years, standard deviation 7.793; and mean years in the employment of the institution was 8.09, with standard deviation 6.133.

Table 1

Demographic variable of the participating health professionals

Variables	Frequency	Percentage
Age		
21 - 30yrs	78	20.1
31- 40yrs	182	46.9
41 - 50yrs	93	24.0
51 - 60yrs	31	8.0
61 & above	4	1.0
Total	388	100.0
Gender		
Male	114	29.4
Female	274	70.6
Total	338	100.0
Staff profession		
Medicine	110	28.4
Nursing	198	51.0
Pharmacy	36	9.3
Laboratory science	44	11.3
Total	388	100.0
Years in practice		
2yrs - 6yrs	123	31.7
7yrs - 11yrs	104	26.8
12yrs - 16yrs	76	19.6
17yrs - 21yrs	38	9.8
22yrs - 26yrs	24	6.2
27yrs-31yrs	14	3.6
31yrs & above	9	2.3
Total	388	100.0
Years of employment		
2yrs - 6yrs	186	47.9
7yrs - 11yrs	115	29.6
12yrs - 16yrs	53	13.7
17yrs - 21yrs	16	4.1
22yrs - 26yrs	11	2.8
27yrs-31yrs	6	1.5
31yrs & above	1	0.3
Total	388	100.0

Note: Mean age (yrs) \pm *SD* = 38.35 \pm 8.184; Mean years in practice \pm *SD* = 11.64 \pm 7.793
Mean years in employment \pm *SD* = 8.09 \pm 6.133

Responses of the health professionals regarding the extent of interprofessional collaborative practice at the health institution were collected and analyzed under the 6 subscale interprofessional collaborative domains, collaboration, cooperation, participation/shared decision-making, partnership, communication, and coordination. The mean and standard deviation for each of the four questions under each collaborative domain are respectively reported in tables 2 to 7. Table 2 showed that the mean and standard deviation for the collaboration domain ranged from 2.37 to 2.64, and 1.324 to 1.397 respectively. The mean responses for the cooperation domain ranged from 2.46 to 2.74; while the standard deviation values ranged from 1.264 to 1.292 (Table 3). Participation and/or shared decision-making mean values ranged from 2.33 to 2.36, with standard deviation range of 1.226 to 1.311 (Table 4). Table 5 indicate that the mean and the standard deviation values for partnership ranged from 2.62 to 3.31, and 1.188 to 1.305 respectively; whereas that of the communication domain ranged from 2.52 to 2.71, and 1.179 to 1.204 respectively (Table 6). Table 7 showed that coordination domain has mean value ranging from 2.17 to 2.72, with standard deviation range of 1.152 to 1.301. Except for the partnership domain, which recorded a mean value of 3.31 for one of the 4 questions, all of the other 5 interprofessional collaborative domains have mean values less than the cut off score point of 3.0; indicating that the health professionals uniformly rated the extent of interprofessional collaborative practice at the health institution low and negative.

Table 2

Survey responses by the health professionals regarding collaboration among the professions

Statements	M	SD	N
1. There is a well defined interprofessional collaborative team in my institution comprising of different healthcare professionals working together to provide patient centered care	2.64	1.395	388
2. Professional groups jointly carry out ward health activities such as ward rounds, bedside case discussions, and minor bedside surgical procedures for the collective interest of achieving patient treatment success	2.37	1.324	388
3. Professional groups undertake educational activities such as weekly mortality and morbidity conference for effective patient management	2.48	1.326	388
4. Professional groups undertake continuing educational activities such as scientific meetings, seminars, and conferences together for the collective interest of developing competencies for effective patient management	2.51	1.397	388

Table 3

Survey responses by the health professionals regarding cooperation among the professions

Statements	M	SD	N
1. Interprofessional groups while working as a team freely shares knowledge, skills and exchange information among each other to enhance patient effective management	2.70	1.292	388
2. Inteprofessional groups have mutual respect of each other's Perspectives, opinions and views regarding best management Protocol for each patient	2.58	1.266	388
3. Interprofessional groups working as a team cooperates with patients and relatives to enhance group performance and overall patient outcome	2.74	1.290	388
4. Interprofessional groups show respect and trust, as well as recognizing each other's strengths and weaknesses	2.46	1.264	388

Table 4

Survey responses by the health professionals regarding participation/shared decision-making among the professions

Statements	M	SD	N
1. Interprofessional team members are equally and actively involved in decision-making toward tea, goal and objective setting	2.36	1.311	388
2. Interprofessional team members share leadership roles and responsibilities and are equally held accountable to any decision failures	2.35	1.306	388
3. Patient management decisions are made among team members through dialogue and consensus building	2.49	1.232	388
4. Interprofessional team members are equally and actively involved in decision-making regarding operational management plans	2.33	1.226	388

Table 5

Survey responses by the health professionals regarding partnership among the professions

Statements	M	SD	N
1. Interprofessional groups have defined roles and responsibilities among members in delivering patient centered healthcare	3.31	1.229	388
2. Interprofessional groups partner with each other in setting the agenda for the care and management of the patient	2.64	1.188	388
3. Interprofessional team sought, obtain and considers patients opinions and wishes when making final decision on patient management	2.62	1.257	388
4. Interprofessional team involve patients families and relatives and relatives in decision-making regarding care intervention choices, including advantages and disadvantages of each options	2.67	1.305	388

Table 6

Survey responses by the health professionals regarding communication among the professions

Statements	M	SD	N
1. Members of the interprofessional groups eagerly communicate With each other and gives feedback information in a timely and regular manner	2.55	1.181	388
2. Members of the interprofessional groups ensure honest, accurate and open communication among each other	2.71	1.179	388
3. Members of the interprofessional groups use problem-solving communication approach rather than blaming to share patients information and health condition	2.52	1.204	388
4. Interprofessional team members consistently/frequently communicate with each other regarding patient's health condition and best care approach	2.59	1.203	388

Table 7

Survey responses by the health professionals regarding coordination among the professions

Statements	M	SD	N
1. Interprofessional team members meet regularly to discuss patient care and management challenges	2.17	1.301	388
2. There is definitive and clear hospital guidelines, protocols and policies on interprofessional collaborative activities and teamwork	2.43	1.204	388
2. Interprofessional team receives leadership support from the hospital administration for effective functions and coordinative patient care	2.68	1.153	388
4. Interprofessional team members coordinate healthcare functions, activities and services to improve patient care	2.72	1.152	388

Summary of Tables 8 to 11

Responses of the 388 health professionals regarding the implications of the extents of interprofessional collaborative practice at the health institution on patient health outcome in terms of mortality, health professionals work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions were collected and analyzed. Each of the four outcome implications were addressed with 4 concept questions, with one of the questions directly framed to align with the specific outcome. The mean responses of the health professionals on the implications of the extents of interprofessional collaborative practice on these four organizational goals were presented in tables 8 to 11. Regarding implication of the extent of the practice of interprofessional collaboration on patient's mortality, table 8 showed mean responses ranged from 3.36 to 3.71, with standard deviation ranged from 1.103 to 1.159. Similarly, the mean responses for the implications of the extents of the practice of interprofessional collaboration ranged from 3.48 to 3.91, with standard deviation range of 1.108 to 1.182 for the implications on the health professionals work performance (Table 9); mean ranged 3.70 to 4.02, with standard deviation 1.088 to 1.128 for the implications on the health professionals job satisfaction (Table 10); and mean responses ranged 3.61 to 3.96, with standard deviation ranged 1.052 to 1.188 for the implications on health work environment (Table 11).

Table 8

Survey responses by the health professionals regarding extent of interprofessional collaborative practice and patient outcome experience

Statements	M	SD	N
1. The extent of interprofessional collaborative practice in our institution contributes to high patient mortality outcome	3.36	1.159	388
2. The extent of practice of interprofessional collaboration in this hospital is associated with increased length of patient's hospital stay	3.71	1.148	388
3. The extent of practice of interprofessional collaboration in this health institution contributes to treatment delays	3.81	1.114	388
4. The extent of practice of interprofessional collaboration in this health institution is associated with medical or treatment errors	3.61	1.103	388

Table 9

Survey responses by the health professionals regarding extent of interprofessional collaboration and professionals work performance

Statements	M	SD	N
1. The extent of practice of interprofessional collaboration in this hospital negatively affects healthcare professionals' work performance	3.91	1.182	388
2. The extent of interprofessional team climate in this hospital negatively affects healthcare professional's competencies	3.48	1.108	388
3. The extent of practice of interprofessional collaboration in this hospital do not encourage skills development and continuing professional development	3.72	1.112	388
4. The extent of practice of interprofessional collaboration in this hospital do not enhance provision of patient-centered care	3.65	1.160	388

Table 10

Survey responses by the health professionals regarding extent of interprofessional collaboration and healthcare professionals job satisfaction

Statements	M	SD	N
1. The extent of practice of interprofessional collaboration in this hospital negatively affects healthcare professionals' job satisfaction	4.02	1.128	388
2. The extent of interprofessional practice in this hospital contributes to professionals' intention to leave	3.35	1.088	388
3. The extent of practice of interprofessional collaboration in this hospital do not promote positive attitude to work	3.70	1.119	388
4. The extent of practice of interprofessional collaboration in this hospital do not promote realization of individual motives/ or values for work and fulfillment	3.75	1.109	388

Table 11

Survey responses by the health professionals regarding *extent of interprofessional collaborative practice and healthy practice environment*

Statements	M	SD	N
1. The extent of interprofessional collaborative practice in this hospital is associated with high frequency of interprofessional conflicts and strikes	3.61	1.188	388
2. The extent of the practice interprofessional collaboration in this hospital affects healthy work environment	3.96	1.136	388
3. The extent of interprofessional collaboration in this hospital affects healthy interprofessional relationships and interactions	3.84	1.070	388
4. The extent of interprofessional collaborative in this discourages team consensus building	3.79	1.052	388

Results and Statistical Analysis Findings

Independence sample T-test, Pearson Correlation (Product Moment Correlation coefficient) r , and Chi-square test of associations were the analytical statistics as stated in chapter 3 that were appropriately applied in testing the relationships and/or associations between the independent variables, collaboration, cooperation, participation/or shared decision-making, partnership, and coordination; and the dependent variables, patient mortality, health professionals work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. In the testing of the associations, collaboration was taken to mean the presence of well defined functional interprofessional collaborative team/teamwork. Cooperation, the mutual respect of each other's opinions/perspectives regarding management protocol; and participation, the situation where team members were equally and actively involved in decision-making. Partnership was said to be in existence when team members have defined roles and responsibilities in the delivery of patient centered care. Communication was defined as adequate when team members communicate with each and give feedback regularly and timely. By coordination, it was meant that team members jointly coordinate functions, activities and services to improve patient care. The findings are as organized below according to the research questions and hypotheses, using appropriate tabular presentations.

Research Question 1

What is the association between the extent of interprofessional collaborative practice and patient's mortality outcome in Enugu State University Teaching Hospital?

Ho: There is no association between the extent of interprofessional collaborative practice and patient's mortality outcome

Ha: There is an association between the extent of interprofessional collaborative practice and patient's mortality outcome

The primary aim of this research question was to describe the relationship between the extent of interprofessional collaborative practice, defined by the extent of collaboration, cooperation, participation/or shared decision-making, partnership, communication, and coordination among health professionals with patient mortality. Independent Sample T-test was the test statistic applied in comparing the mean responses of the health professionals to each of the collaborative domains with the mean response to patient mortality (Table 12). The mean score of the responses greater than the cut off score of 3 were compared with the mean score responses less than 3. Tables 12 -13 showed that the mean differences between each of the 6 collaborative domains and patient mortality were statistically significant ($P=0.000$); with negative t-tests values and confidence intervals suggestive of negative implications to patient mortality. The finding supports the rejection of Null Hypothesis (*Ho*) of no difference and acceptance of Alternative Hypothesis (*Ha*) that there is an association between the extent of the practice of interprofessional collaboration and patient mortality. The rejection of the Null Hypothesis of no difference was further supported with the findings from the Pearson Moment Product Correlation test (Tables 21 & 22), Chi-square test of association (Tables 23-26), and Regression analysis statistics. The nature and the strength of the association were fully described in the sections on correlation and regression analyses.

The exact *t* test values and the corresponding 95% confidence intervals for each of the 6 interprofessional collaborative domains and patient mortality were as reported in tables 12 and 13 presented immediately below.

Table 12

Relationship between extent of interprofessional collaborative practice and patient's mortality outcome

Patient Mortality	Mean	SD	T-test	P-value	95% CI
Collaboration: ≥ 3 (N=173)	3.05	1.261			
			-4.982	0.000	-0.718 to -0.346
< 3 (N=215)	3.62	1.002			
Cooperation: ≥ 3 (N=168)	3.04	1.278			
			-4.920	0.000	-0.794 to -0.341
< 3 (N=220)	3.61	0.994			
Participation/ Shared decision: ≥ 3 (N=138)	3.06	1.289			
			-3.928	0.000	-0.711 to -0.237
< 3 (N=250)	3.53	1.064			

Note: \geq indicate responses greater than or equal to the cutoff point score of 3

< indicate responses less than the cutoff point score of 3

Table 13

Relationship between extent of interprofessional collaborative practice and patient's mortality outcome

Patient Mortality	Mean	SD	T-test	P-value	95% CI
Partnership: ≥ 3 (N=280)	3.23	1.196			
			-3.855	0.000	-0.751 to -0.244
< 3 (N=108)	3.72	0.975			
Communication: ≥ 3 (N=145)	3.11	1.339			
			-3.367	0.000	-0.640 to -0.168
< 3 (N=243)	3.51	0.010			
Coordination: ≥ 3 (N=194)	3.19	1.221			
			-2.964	0.003	-0.574 to -0.116
< 3 (N=194)	3.54	1.068			

Research Question 2

What is the association between the extent of interprofessional collaborative practice and healthcare professionals' work performance?

Ho: There is no association between the extents of interprofessional collaborative practice and healthcare professionals' performance

Ha: There is an association between the extents of interprofessional collaborative practice and healthcare professionals' performance

Similar to the first research question, research question 2 also sought to describe the relationship between the extent of interprofessional collaborative practice and health professionals work performance. Similar to the reports in tables 12 and 13, table 14 and 15 , which recorded the responses of the health professionals on the implications of the extent of practice of interprofessional collaboration on health professionals work performance, showed that majority of the professionals rated each of the collaborative domains below the cut off score 3, with higher ratings for the implications on work performance, with statistically significant differences ($P=0.000$). This rating with the statistically significant difference ($P=0.000$), again showed that there is an association between the extent of interprofessional collaborative practice and health professionals performance, and supports the rejection of Null Hypothesis and acceptance of Alternative Hypothesis.

Table 14

Relationship between extent of interprofessional collaborative practice and professionals work performance

Professionals Performance	Mean	SD	T-test	P-value	95% CI
Collaboration: ≥ 3 (N=173)	3.34	1.259			
			-9.482	0.000	-1.246 to -0.818
< 3 (N=215)	4.37	0.881			
Cooperation: ≥ 3 (N=168)	3.38	1.256			
			-8.311	0.000	-1.148 to -0.709
< 3 (N=220)	4.31	0.944			
Participation/ Shared decision: ≥ 3 (N=138)	3.31	1.278			
			-7.945	0.000	-0.153 to -0.696
< 3 (N=250)	4.24	0.984			

Table 15

Relationship between extent of interprofessional collaborative practice and professionals work performance

Patient Mortality	Mean	SD	T-test	P-value	95% CI
Partnership: ≥ 3 (N=280)	3.70	1.222			
			-5.681	0.000	-0.985 to -0.478
< 3 (N=108)	4.44	0.878			
Communication: ≥ 3 (N=145)	3.34	1.287			
			-7.887	0.000	-1.136 to -0.682
< 3 (N=243)	4.25	0.969			
Coordination: ≥ 3 (N=194)	3.51	1.244			
			-7.117	0.000	-1.026 to -0.582
< 3 (N=194)	4.31	0.964			

Research Question 3

What is the relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction?

Ho: There is no relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction

Ha: There is a relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction

Research question 3 sought to describe the relationship between the extent of the practice of interprofessional collaboration and health professional's job satisfaction. The mean responses of the health professionals to the extent of the practice of each of the 6 interprofessional collaborative domains, and the implications to job satisfaction of the health professionals were presented in tables 16 and 17. The practice of each of the interprofessional collaborative domains was scored below 3, while the implications to job satisfaction were scored above 3 by the majority of the health professionals. The mean difference in each of the ratings was statistically significant ($P=0.000$), with negative t-test and below zero confidence interval values (Tables 16 & 17); indicating negative implications of the extents of the practice to health professionals' job satisfaction. The finding similarly showed that there is association between the extent of the practice of interprofessional collaboration and the health professionals job satisfaction; thus rejected Null Hypothesis of no difference, and accepted the Alternative Hypothesis.

Table 16

Relationship between extent of interprofessional collaborative practice and professionals' job satisfaction

Professional's Job satisfaction	Mean	SD	T-test	P-value	95% CI
Collaboration: ≥ 3 (N=173)	3.49	1.246			
			-9.181	0.000	-1.165 to -0.754
< 3 (N=215)	4.45	0.801			
Cooperation: ≥ 3 (N=168)	3.51	1.189			
			-8.484	0.000	-1.111 to -0.693
< 3 (N=220)	4.41	0.905			
Participation/ Shared decision: ≥ 3 (N=138)	3.42	1.243			
			-8.510	0.000	-1.152 to -0.720
< 3 (N=250)	4.36	0.904			

Table 17

Relationship between extent of interprofessional collaborative practice and professionals' job satisfaction

Professionals' Job satisfaction	Mean	SD	T-test	P-value	95% CI
Partnership: ≥ 3 (N=280)	3.86	1.157			
			-4.689	0.000	-0.828 to -0.339
< 3 (N=108)	4.44	0.931			
Communication: ≥ 3 (N=145)	3.47	1.191			
			-8.068	0.000	-1.101 to -0.669
< 3 (N=243)	4.35	0.948			
Coordination: ≥ 3 (N=194)	3.69	1.186			
			-6.066	0.003	-0.880 to -0.449
< 3 (N=194)	4.36	0.962			

Research Question 4

What is the relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts experience in the hospital practice environment?

Ho: There is no relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts in the hospital practice environment

Ha: There is a relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts in the hospital practice environment

Research question 4 sought to describe the relationship between the extent of interprofessional collaborative practice and healthy work environment, in terms of the frequency of interprofessional conflicts and strike actions among the health professionals at the health institution. Responses of the health professionals were recorded in tables 18 and 19. The report indicates statistically significant mean differences ($P=0.000$) between the mean scores of each of the interprofessional collaborative domains and frequency of interprofessional conflicts and strike actions among the health professionals; again with negative t-test values and 95% confidence intervals. The indication was that the extent of the practice of interprofessional collaboration negatively impacts on the frequency of interprofessional conflicts and strike actions among health professionals; thus rejecting the Null Hypothesis of no significant association.

Table 18

Relationship between extent of interprofessional collaborative practice and frequency of interprofessional conflicts and strike actions

Frequency of Conflicts/strikes	Mean	SD	T-test	P-value	95% CI
Collaboration: ≥ 3 (N=173)	3.26	1.279			
			-5.447	0.000	-0.868 to -0.407
< 3 (N=215)	3.90	1.027			
Cooperation: ≥ 3 (N=168)	3.24	1.306			
			-5.555	0.000	-0.882 to -0.421
< 3 (N=220)	3.90	1.004			
Participation/ Shared decision: ≥ 3 (N=138)	3.23	1.309			
			-4.835	0.000	-0.833 to -0.351
< 3 (N=250)	3.82	1.061			

Table 19

Relationship between extent of interprofessional collaborative practice and frequency of interprofessional conflicts and strike actions

Frequency of Conflicts/strikes	Mean	SD	T-test	P-value	95% CI
Partnership: ≥ 3 (N=280)	3.48	1.206			
			-3.758	0.000	-0.757 to -0.237
< 3 (N=108)	3.97	1.063			
Communication: ≥ 3 (N=145)	3.41	1.341			
			-2.666	0.008	-0.573 to -0.087
< 3 (N=243)	4.74	1.070			
Coordination: ≥ 3 (N=194)	3.39	1.247			
			-3.737	0.000	-0.677 to -0.210
< 3 (N=194)	3.84	1.084			

Statistical Assumption for the Independent Samples Test (Tables 12 to 19)

In the Independent Samples T test results presented in tables 12 to 19, which showed statistically significant differences ($P=0.000$ for t-test for equality of means) for each of the mean scores of the dependent variables, patient's mortality, health professionals work performance, job satisfaction, and frequency of interprofessional conflicts and strikes actions, against each of the independent variables, collaboration, cooperation, participation/or shared decision-making, partnership, and coordination; equal variances were assumed (referred to as Turkey or R-E-G-W-Q). However, because the overall F test was significant ($P=0.000$) for each of the dependent variables (Levene's Test for Equality of Variances), t test of means for unequal variances

assumed (referred to as Dunnett's C test) were equally reported in the SPSS output. The reports in the SPSS outputs indicated that the t tests of means for equal variances not assumed for each of the dependent variables was equally statistically significant ($P=0.000$); also with less than zero (negative) 95% confidence intervals of the difference. The reports indicate that the extent of interprofessional collaborative practice had significant negative implications on patient's mortality, work health professionals performance, job satisfaction, and frequency of interprofessional conflicts and strike actions at the health institution,

One-Way ANOVA Evaluation of Relationships

A one-way analysis of variance was conducted to further evaluate the relationship between each of the independent variables, collaboration, cooperation, participation/shared decision-making, partnership, communication, and coordination; and each of the dependent variables, patient mortality, health professionals work performance, job satisfaction, and frequency of interprofessional conflicts/strike actions. The ANOVA was significant at 0.05 level for each of the relationship evaluated. Regarding collaboration, the ANOVA was significant at the 0.05 level, $F(4,383) = 6.43$, $p = 0.000$ for patient mortality, $F(4,383) = 25.38$, $p = 0.000$ for work performance, $F(4,383) = 23.03$, $p = 0.000$ for job satisfaction, and $F(4,383) = 10.58$, $p = 0.000$ for interprofessional conflicts. At the cooperation level, the ANOVA was significant at the 0.05 level, $F(4,383) = 8.27$, $p = 0.000$ for patient mortality, $F(4,383) = 18.40$, $p = 0.000$ for work performance, $F(4,383) = 22.26$, $p = 0.000$ for job satisfaction, and $F(4,383) = 12.84$, $p = 0.000$ for interprofessional conflicts. For the extent of participation/shared decision-making, the ANOVA was significant at the 0.05 level, $F(4,383) = 3.99$, $p = 0.004$ for patient mortality, $F(4,383) = 18.53$, $p = 0.000$ for work performance, $F(4,383) = 20.88$, $p = 0.000$ for job satisfaction,

and $F(4,383) = 6.47, p = 0.000$ for interprofessional conflicts. At partnership level, the ANOVA was significant at the 0.05 level, $F(4,383) = 6.55, p = 0.000$ for patient mortality, $F(4,383) = 14.15, p = 0.000$ for work performance, $F(4,383) = 10.70, p = 0.000$ for job satisfaction, and $F(4,383) = 4.20, p = 0.002$ for interprofessional conflicts. Evaluating the relationship at the extent of communication, the ANOVA was significant at the 0.05 level, $F(4,383) = 3.07, p = 0.017$ for patient mortality, $F(4,383) = 16.09, p = 0.000$ for work performance, $F(4,383) = 18.37, p = 0.000$ for job satisfaction, and $F(4,383) = 2.98, p = 0.000$ for interprofessional conflicts. The relationship with the extent of coordination was similarly evaluated, and the ANOVA was significant at the 0.05 level, $F(4,383) = 4.01, p = 0.003$ for patient mortality, $F(4,383) = 14.96, p = 0.000$ for work performance, $F(4,383) = 17.06, p = 0.000$ for job satisfaction, and $F(4,383) = 7.74, p = 0.000$ for interprofessional conflicts.

In all the relationships evaluated, the overall F test was significant ($p=0.000$), and thus a post hoc follow up tests were conducted to evaluate pair wise differences among the means to control for type 1 error across the multiple pair wise comparisons. Although the standard deviations ranged from approximately 1.00 to 1.50, and the variances, which are the squared standard deviations ranged from 1.00 to 1.22, indicating no significant variations; yet the test of homogeneity of variances were significant ($p=0.000$) across the relationships evaluated, which implied that there could be differences in the population variances despite the large sample size, and the high power usually associated with larger sample size. Thus, Dunnett's C test that does not assume equal variances among different groups was conducted for each of the responses, despite the results of the Turkey and R-E-G-W-Q tests that were significant ($p<0.05$) at the various levels of the relationships evaluated. Similar statistically significant differences to the

Turkey and R-E-G-W-Q results were reported for the Dunnett's C test. The 95% confidence intervals for the ANOVA, the means and the standard deviations for each total response are reported in table 20.

Table 20

One-Way ANOVA descriptive statistics for the relationship between interprofessional collaborative domains and patient mortality, health workers performance, job satisfaction, and frequency of conflicts/strike actions

Variables	Total: Mean	SD	95% CI
Patient Mortality outcomes:	3.36	1.159	3.25 - 3.48
Health professional's work performance:	3.91	1.182	3.79 - 4.03
Health professional's job satisfaction:	4.02	1.128	3.91- 4.14
Frequency of Interprofessional Conflicts and strike actions:	3.61	1.188	3.49-3.73

Summary Table 21 and 22

The Pearson product-moment correlation coefficient (Pearson correlation coefficient) r , which measures the strength of a linear association between two variables, the defining survey questions for each of the collaborative domain as independent variables, and the defining questions for each of the organizational implications as dependent variables are presented in Tables 21 and 22.

Tables 21 and 22 show less than zero values each for the Pearson correlation coefficient r , between collaboration, cooperation, participation/or shared decision-making; and each of the organizational implications, patient mortality, health professionals work performance, job satisfaction, and frequency of interprofessional conflicts/strike actions. The correlation value of less than zero indicates a negative association between each of the extents of practice of interprofessional collaboration, and patient outcome, work performance, job satisfaction, and healthy practice environment. The negative association in this study indicates that the extent of the practice of interprofessional collaboration in the study health institution has negative implications to the organizational intervention effectiveness, and human resources efficiency, and health practice environment.

Table 21

Correlation test analysis for the key collaboration dimension questions as dependent variables and patient outcome, work performance, job satisfaction, and frequency of conflicts and strikes as independent variables

Key collaboration dimension	Pearson (Product Moment Correlation coefficient) r			
	Patients mortality	Work performance	Job satisfaction	Frequency conflicts and strikes
	r (p -value)	r (p -value)	r (p -value)	r (p -value)
Collaboration: Defined as functional interprofessional collaborative team/team work	-0.238(0.000*)	-0.443(0.000*)	-0.413(0.000*)	-0.296(0.000*)
Cooperation: Interprofessional groups have mutual respect of each others perspectives, opinions and views regarding patient best management protocol	-0.281(0.000*)	-0.387(0.000*)	-0.414(0.000*)	-0.329(0.000*)
Participation/Shared decision-making Interprofessional team members are equally and actively involved in decision-making toward team goals and objectives	-0.190(0.000*)	-0.367(0.000*)	-0.414(0.000*)	-0.232(0.000*)

*Correlation significant at the 0.01 level (2-tailed)

Table 22

Correlation test analysis for the key collaboration dimension questions as dependent variables and patient outcome, work performance, job satisfaction, and healthy practice environment as independent variables

Key collaboration dimensions	Pearson (Product Moment Correlation coefficient) r			
	Patients Mortality r (p -value)	Work performance r (p -value)	Job satisfaction r (p -value)	Frequency conflicts and strikes r (p -value)
Partnership:				
Interprofessional groups have defined roles and responsibilities among members in delivering patient centered healthcare	-0.238(0.000*)	-0.331(0.000*)	-0.285(0.000*)	-0.198(0.000*)
Communication:				
Members of interprofessional groups eagerly communicate with each other and gives feedback information in a timely and regular manner	-0.172(0.001*)	-0.337(0.000*)	-0.351(0.000*)	-0.166(0.001*)
Coordination				
Interprofessional team members coordinate healthcare functions, activities and services to improve patient care	-0.194(0.000*)	-0.347(0.000*)	-0.339(0.000*)	-0.256(0.000*)

*Correlation significant at the 0.01 level (2-tailed)

Summary of Tables 23 to 26

Chi-square test of associations between each of the 6 collaboration domains, collaboration, cooperation, participation/shared decision-making, partnership, communication, and coordination; and each of the 4 organizational implications, patient mortality, work performance, job satisfaction, and frequency of conflicts/strike actions were presented in Tables 23 to 26. In order to conduct a chi-square test of association, the frequencies of the health professional responses for each of the questions under each of the interprofessional collaborative and organizational outcome implication domains were grouped as positive, neutral, and negative responses. In the Likert scale system, strongly agree and agree were grouped as positive responses, neither agree nor disagree as neutral responses, and strongly disagree, disagree as negative responses. Each of the 6 interprofessional collaborative domains was compared with each of the 4 organizations' outcome implications. The reports showed highly statistically significant differences ($P=0.000$) between each of the 6 collaboration domains and each of the 4 organizations' implications; thus rejecting the Null Hypothesis of no difference, and supporting the Alternative Hypothesis that there were relationships between the extents of interprofessional collaborative practice, and patient mortality, work performance, job satisfaction, and interprofessional conflicts/strike actions.

Table 23

Chi Square test of association between extents of interprofessional collaboration and patient mortality

Key domains of Collaborative practice: n=388	Patient mortality						χ^2	df	P
	+Ve	-Ve	Neutral	+Ve	-Ve	Neutral			
Collaboration:	127	215	46	213	97	78	289.593	5	0.000
Cooperation:	104	220	64	213	97	78	276.162	5	0.000
Participation/									
Shared decision:	94	250	44	213	97	78	292.678	5	0.000
Partnership:	213	108	67	213	97	78	155.402	5	0.000
Communication:	101	243	44	213	97	78	367.485	5	0.000
Coordination:	118	194	76	213	97	78	206.853	5	0.000

+ve represent total positive responses; -Ve represent total negative response

Table 24

Chi Square test of association between extents of interprofessional collaboration and health professionals work performance

Key domains of Collaborative practice: n=388	Work performance						χ^2	df	P
	+Ve	-Ve	Neutral	+Ve	-Ve	Neutral			
Collaboration:	127	215	46	299	63	26	674.549	5	0.000
Cooperation:	104	220	64	299	63	26	661.028	5	0.000
Participation/									
Shared decision:	94	250	44	299	63	26	776.544	5	0.000
Partnership:	213	108	67	299	63	26	640.268	5	0.000
Communication:	101	243	44	299	63	26	752.351	5	0.000
Coordination:	118	194	76	299	63	26	591.719	5	0.000

+ve represent total positive responses; -Ve represent total negative responses

Table 25
*Chi Square test of association between extents of interprofessional collaboration and
 health professionals' job satisfaction*

Key domains of Collaborative practice: n=388	Job satisfaction						χ^2	df	P
	+Ve	-Ve	Neutral	+Ve	-Ve	Neutral			
Collaboration:	127	215	46	304	55	29	700.392	5	0.000
Cooperation:	104	220	64	304	55	29	686.961	5	0.000
Participation/ Shared decision:	94	250	44	304	55	29	802.477	5	0.000
Partnership:	213	108	67	304	55	29	666.201	5	0.000
Communication:	101	243	44	304	55	29	778.284	5	0.000
Coordination:	118	194	76	304	55	29	617.652	5	0.000

+ve represent total positive responses; -Ve represent total negative responses

Table 26

Chi Square test of association between extents of interprofessional collaboration and frequency of conflicts/ strikes among health professionals

Key domains of Collaborative practice: n=388 (N=1552)	Frequency of conflicts/strikes						χ^2	df	P
	+Ve	-Ve	Neutral	+Ve	-Ve	Neutral			
Collaboration:	127	215	46	242	81	65	388.036	5	0.000
Cooperation:	104	220	64	242	81	65	400.505	5	0.000
Participation/ Shared decision:	94	250	44	242	81	65	490.121	5	0.000
Partnership:	213	108	67	242	81	65	353.845	5	0.000
Communication:	101	243	44	242	81	65	465.928	5	0.000
Coordination:	118	194	76	242	81	65	305.296	5	0.000

+ve represent total positive responses; -Ve represent total negative responses

Logistic Regression Analysis Interpretation

A logistic regression analysis was conducted on the data collected among the 388 hospital based health professionals to predict the implications of the extent of interprofessional collaborative practices on each of the health organizations' goal effectiveness and healthy practice environment variables. The extents of interprofessional collaborative practice, as the predictor variables were assessed using the six interprofessional collaborative dimensions, collaboration, cooperation, participation/shared decision-making, partnership, communication, and coordination as predictors; whereas the health organizations' goals effectiveness and healthy practice environment, as the dependent variables were assessed using patient mortality outcome, health professional work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions.

Patient mortality outcome as dependent variable

The test of the full model, shown in the SPSS output in the Omnibus test of model coefficient table against a constant only model, patient outcome mortality, was statistically significant (Chi square=338.035, $p=0.000$ with $df=6$), indicating that the predictors as a set reliably distinguishes between the implications of the extents of interprofessional collaborative practice and organizational goals' effectiveness.

Nagelkerke's R_2 of 0.778 indicated a highly strong relationship between the predictors and prediction. Prediction success overall was 88.1% (73.7% for negative response and 100.0% for positive response). The Wald criterion shown in the SPSS output variables in the equation demonstrated that none of the six predictor variables

made any significant contribution to the prediction ($P=1.000$). Exp (B) values for cooperation, partnership, and communication dimensions are 1.8, 0.0, and 3.7 respectively, equivalent to odds ratios, indicating that raising any of the dimensions by one unit, the odds would be similarly as large, and approximately 2, 0, and 4 more likely to produce desired outcome respectively. However, the Exp (B) value for collaboration, participation, and coordination dimensions each is in thousands, indicating that raising any of these dimensions by one unit, the odds ratio would be similarly a thousand times as large, and a thousand times more likely to produce desired outcome.

Health professionals work performance as dependent variable

The test of the full model, shown in the SPSS output in the Omnibus test of model coefficient table against a constant only model, health professionals work performance, was statistically significant (Chi square=171.309, $p=0.000$ with $df=6$), indicating that the predictors as a set reliably distinguishes between the implications of the extents of interprofessional collaborative practice and organizational goals' effectiveness.

Nagelkerke's R_2 of 0.542 indicates moderately strong relationship between the predictors and prediction. Prediction success overall was 85.3% (36.0% for negative response and 100.0% for positive response). The Wald criterion shown in the SPSS output variables in the equation demonstrated that none of the six predictor variables made significant contribution to the prediction ($P=1.000$). Exp (B) 12.728 (odd ratio 13) for collaboration, and 1.192 (odd ratio 1) for communication indicates that raising each by one unit, the odd ratio is 13 and 1 times as large, and therefore the health professional work performance is 13 and 1 more times likely to affected respectively. Exp (B) of

0.000 each for partnership and coordination indicate odd ratio of zero, and that raising each of the dimensions by one unit would have no effect on the work performance.

However, cooperation and participation/shared decision making have Exp (B) 39137481.67 and 428595388.1 respectively, indicating odd ratios running in millions, and significant effect on the work performance if any of the dimensions is raised by one unit.

Health Professionals Job Satisfaction as Dependent Variable

The test of the full model, shown in the SPSS output in the Omnibus test of model coefficient table against a constant only model, health professionals job satisfaction, was statistically significant (Chi square=174.816, $p=0.000$ with $df=6$), indicating that the predictors as a set reliably distinguishes between the implications of the extents of interprofessional collaborative practice and organizational goals' effectiveness.

Nagelkerke's R_2 of 0.560 indicates moderately strong relationship between the predictors and prediction. Prediction success overall was 86.6% (38.1% for negative response and 100.0% for positive response). The Wald criterion shown in the SPSS output variables in the equation demonstrated that none of the six predictor variables made any significant contribution to the prediction ($P=1.000$). Exp (B) values for collaboration and communication are 18.036 (odd ratio 18) and 1.545 (odd ratio 2), indicating that raising any of the dimensions by one unit would be 18 and 2 times more likely to produce desired effect on the health professionals job satisfaction respectively. Exp (B) values for partnership and coordination are 0.000 each (odd ratios 0 each), indicating that raising either of the dimensions by one unit would have no significant

effect on the job satisfaction. However, the Exp (B) values for cooperation and participation/shared decision making are 36161322.52 and 239329630.1, equivalent to the odd ratios, indicating that raising any of these dimensions by one unit, the odds ratio would be similarly a million times as large, and a million times more likely to produce desired outcome.

Frequent conflict/strike action as dependent variable

The test of the full model, shown in the SPSS output in the Omnibus test of model coefficient table against a constant only model, frequent conflicts and strike actions, was statistically significant (Chi square=322.744, $p=0.000$ with $df=6$), indicating that the predictors as a set reliably distinguishes between the implications of the extents of interprofessional collaborative practice and organizational goals' effectiveness.

Nagelkerke's R_2 of 0.769 indicates a moderately strong relationship between the predictors and prediction. Prediction success overall was 88.8% (69.2 % for negative response and 100.0% for positive response). The Wald criterion shown in the SPSS output variables in the equation demonstrated that none of the six predictor variables made any significant contribution to the prediction ($P=1.000$). Exp (B) values of 0.169 for collaboration (odd ratio 0), 0.884 for participation/shared decision making (odd ratio 1), 0.000 for partnership (odd ratio 0), and 1.232 for coordination (odd ratio 1) indicate that raising these dimensions by one unit each would similarly effect each of the desired outcomes as much. Exp (B) values for cooperation and communications are 339667298.0 and 3.554E+10 respectively, indicating equivalent odd ratios, and that when either is raised by one unit, the odd ratios would be a million times as large, and therefore the

frequency of conflicts and strike actions would be a million times more likely to be effected.

Chapter 4 Summary

Summarily, I have presented the data collected and analyzed according to the study plan set out in chapter 3 of this dissertation work. The closed ended survey instrument was pretested, and the study piloted among 40 health professionals, before it was administered to a study population of 396 (388, 98% response rate) health professionals, doctors, nurses, pharmacists, and medical laboratory scientists at the site institution. Descriptive and analytical statistics, which included percentages, means, and standard deviations, t-test of means, ANOVA, Pearson correlation, logistic regression, and Chi-square test of association, were applied in the data analysis. As reported at the appropriate tables and sections chapter 4, all the statistical tests showed that there are statistically significant differences between the extents of interprofessional collaborative practice and patient's mortality; health professionals work performance, job satisfaction, and frequency of strike actions at the health institution. The findings support the rejection of Null Hypothesis of no association/relationship, and acceptance of the Alternative Hypothesis, which stated that there are statistically significant differences between the variables. The interpretations of the findings were elaborated in chapter 5, as well as relating the results with the relevant literatures in chapter 2, and the theory that grounded the study.

Chapter 5: Summary, Conclusion, and Recommendations

Introduction

A quantitative study, with cross sectional descriptive design, was conducted among doctors, nurses, pharmacists and medical laboratory scientists who are directly involved in patient care in a tertiary hospital setting in Nigeria, The purpose of the study was to describe the extent of interprofessional collaborative practice and the implications thereof to patient mortality, health professionals' performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. The extent of the practice of interprofessional collaboration was described on the background of the global standard that collaborative practice is evidenced by the presence of well-defined interprofessional team and teamwork; a platform whereby multiple healthcare professionals effectively collaborative and cooperate with each other, participate in a shared decision making in the spirit of partnership, and coordinate functions through effective communication ties (Weller, Barrow, & Gasquoine, 2011; World Health Organization, 2010). Despite the successful implementations, and the widely acknowledged benefits of the standard practice of interprofessional collaboration globally, the extent of the practice and the potential implications in the Nigerian healthcare delivery settings have not been fully described. Therefore, by describing the extent of the practice of interprofessional collaboration in the Nigerian hospital settings, and its relationships to patient mortality, health professionals' performance, job satisfaction and frequency of interprofessional conflicts and strike actions; this study may provide the much needed data and information

on the nature and the potential impacts of interprofessional collaboration on the major stakeholders at the services delivery arm of healthcare in Nigeria.

The study was guided by four research questions which focused on establishing the relationships between the extents of interprofessional collaborative practice and each of the following organizational outcomes: patient mortality, health professionals' performance, job satisfaction and frequency of interprofessional conflicts and strike actions. In Chapter 5, I summarized the key research findings, interpreted and discussed the findings; described the relationship of the findings in the context of the peer-reviewed literature, and the conceptual and theoretical frameworks. Additionally, in this final chapter, I presented the limitations of the study, recommendations for future research, implications for positive social change, and the take home messages in the form of conclusion.

Summary of the Key Findings

The key findings were summarized in the context of the four research questions that guided the study.

1. What is the association between the extent of interprofessional collaborative practice and patient's mortality outcome in Enugu State University Teaching Hospital?
2. What is the association between the extent of interprofessional collaborative practice and healthcare professionals' performance?
3. What is the relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction?

4. What is the relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts experience in the hospital practice environment?

First and foremost, the extents of interprofessional collaboration practice among the health professionals were established using 5-point Likert-type items or questions under six subscales of interprofessional collaborative domains: collaboration, cooperation, participation/shared decision-making, partnership, communication, and coordination. The Likert scoring system for the health professional's responses was as follows: strongly agree (SA) scored 5, agree (A) 4, Neutral (N) 3, disagree (D) 2, and strongly disagree (SD) 1. A score of 3 was the cut off score for positive agreement or response to a question. The questions that were used to assess the extent of the practice of each of the six collaborative domains were in group of four Likert-type questions, referred to as Likert-scale data, which enabled the calculation of the mean of the groups as composite scores. Each of the four questions in each of the six collaborative domains received a mean score greater than 2, but less than 3, with standard deviations range between 1.0 and 1.3. Only one question for the partnership domain that the health professionals rated a mean value of 3.31; which could not change the overall mean score for the partnership domain. These ratings of the extents of interprofessional collaborative practice by the health professionals indicate a uniform agreement among the professionals that the practice of collaboration was low and negative. The low and close range of the standard deviations indicate that most of the data moderately clustered

around the mean, and that the health professionals had a common agreement regarding the extents of the practice of interprofessional collaboration at the health institution.

Research Question 1 was used to describe the association between the extents of interprofessional collaborative practice and patient outcomes, with particular reference to patient's mortality experience. Each of the four questions that were used to assess the association between the extents of interprofessional collaboration and patient outcome experience received a mean score between 3 and 4. Association of the extents of the practice of interprofessional collaborative practice with patient mortality had a mean score of 3.36; association with increased length of stay was scored 3.71, treatment delays 3.81 and medical or treatment errors 3.61. With these high mean scores, the health professionals agreed that the extents of interprofessional collaborative practice as assessed under the six domains of collaboration, cooperation, participation/shared decision making, partnership, communication, and coordination significantly and negatively affected patients' outcome experience, including patient mortality, the focus of the first research question. Although the health professionals rated the questions on the association of the extents of interprofessional collaborative practice and patient mortality with a moderate mean score of 3.36 compared with the means of the other outcomes; it is still above the cut off score of 3, and thus still indicate an existence of association.

To further describe the nature and the level of the association between the extents of the interprofessional collaborative practice and patient's mortality, the data were subjected to higher statistical analysis using an independent sample *t* test, one-way ANOVA, Pearson product-moment correlation test, chi-square test, and regression

analysis. The *t*-test statistic was used to compare the mean responses of the health professionals to each of the six collaborative domains (collaboration, cooperation, participation/shared decision-making, partnership, communication, and coordination), with the mean responses to the question on patient mortality. The mean differences between each of the collaborative domains, and patient mortality were statistically significant ($P=0.000$). The values of the *t* tests for each of the comparison and the 95% confident intervals were less than zero, indicating negative implications to patient mortality.

A one-way analysis of variance (ANOVA) conducted for each of the six collaborative domains as independent variables, and patient mortality as dependent variable, was each significant at the 0.05 level ($P=0.000$), with moderately high *F* values for each. Post hoc follow up test for the homogeneity of variance was significant ($P=0.000$); and the subsequent Dunnett's C test of equal variances not assumed was also statistically significant ($P=0.000$). Pearson correlation coefficient *r*, for each of the six collaborative domains and patient mortality demonstrated negative values with statistically significant differences ($P=0.000$). The negative *r* values indicate negative associations, which implied that the extents of the practice of interprofessional collaboration at the health institution have negative implications to patient mortality. The health professionals' responses for each of the questions under the six collaborative domains and patients' mortality were grouped as positive, negative and neutral to allow for the chi-square test of association. The chi-square test of association between each of the collaborative domain and patients' mortality was highly statistically significant

($p=0.000$), with very high chi-square values; which again indicate that the extents of interprofessional collaboration have high implication for patient mortality.

Logistic regression analysis conducted to predict the implication of the extents of interprofessional collaboration as independent variables on patient's mortality as dependent variable showed statistically significant ($\chi^2 = 338.04$, $P=0.000$) in the omnibus test of model coefficient, indicating predictors reliability. The Nagelkerke's R^2 of 0.778, indicated a highly strong relationship between the predictors and the prediction, with 88.1% overall success. Exp(B) values for each of the collaborative domains, which are equivalent to odds ratios, indicated that raising any of the domains by one unit, would similarly raise the odd ratios as large, and as large more likely to produce the desired outcome in terms of patient's mortality.

For Research Questions 2, 3, and 4; I, as was done in Research Question 1, described the association and/ or the relationship between each of the six collaborative domains and health professionals' performance, job satisfaction, and frequency of interprofessional conflicts and strike actions respectively. As earlier reported, the health professionals' mean responses to the practice of each of the six interprofessional collaborative domains were below the cut off mean score of 3 for positive responses. Contrastingly, the health professionals mean responses for the implications of the extents of the practice of each of the six collaborative domains to the professionals' work performance, job satisfaction, and frequent interprofessional conflicts and strike actions each was quite above the cutoff point score of 3, and closer to 4.0 score. However, one question that directly addressed the relationship between the extents of interprofessional

collaboration and health professionals' job satisfaction had a spike mean score of 4.02.

The high mean scores recorded for the association between the extents of interprofessional collaborative practice and work performance, job satisfaction, and frequency of interprofessional conflicts each, indicated that the health professionals unanimously agreed that the extents of interprofessional collaboration have great implications for work performance, job satisfaction, and interprofessional relationships.

As was done for the Research Question 1, independent sample *t* tests, one-way ANOVAs, Pearson product-moment correlation tests, chi-square tests, and regression analyses were equally conducted to better described the relationship between the extents of interprofessional collaboration and each of the outcomes, health professionals work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. Statistically significance difference ($P=0.000$) was equally reported each for the association between the extents of interprofessional collaboration and health professionals work performance (Research Question 2), job satisfaction (Research Question 3), and frequency of interprofessional conflicts and strike actions (Research Question 4). Similar to the statistical findings in Research Question 1, the values of the *t* tests for each of the comparison between the extents of interprofessional collaboration and health professionals work performance, job satisfaction, and frequency of interprofessional conflicts was negative, with statistically significant difference ($P=0.000$), indicating negative implications and relationships. An ANOVA conducted for each of the six collaborative domains as independent variables, and health professionals work performance, job satisfaction, and interprofessional conflicts as dependent

variables, was each significant at the 0.05 level ($P=0.000$), with a high F value. The test of homogeneity of variance was significant ($P=0.000$) for each; and the subsequent Dunnett's C test of equal variances not assumed was also statistically significant ($P=0.000$) for each of the domains.

Pearson correlation coefficient r , for each of the six collaborative domains and health professionals work performance, job satisfaction, and interprofessional conflicts had negative values with statistically significant differences ($P=0.000$). The negative r values again indicate negative associations, which implied that the extents of the practice of interprofessional collaboration at the health institution have negative implications to health professionals work performance, job satisfaction, and interprofessional conflicts and/or strike actions. Additionally, the chi-square test of association between each of the collaborative domains and health professionals' work performance, job satisfaction, and interprofessional conflicts was highly statistically significant ($p=0.000$), with very high chi-square values, indicating that the extents of interprofessional collaboration have high implications for work performance, job satisfaction, and frequency of interprofessional conflicts.

Logistic regression analysis was similarly conducted to predict the implication of the extents of interprofessional collaboration as independent variables on health professionals work performance, job satisfaction, and frequency of interprofessional conflicts as dependent variables. Statistically significance differences ($P=0.000$) in the omnibus test of model coefficient were demonstrated, indicating that predictors as a set reliability predict the outcomes. High Nagelkerke's R^2 was found for each of the

variables, which indicated moderately strong relationship between the predictors and the prediction, with overall 80% success for each. The Exp (B) values for each of the collaborative domains, which are equivalent to odds ratios, indicated that raising any of the domains by one unit, would similarly raise the odd ratios as large, and thus would be as large more likely to produce the desired outcomes in the health professionals work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions.

Summarily, the health professionals rated the extents of interprofessional collaboration at their health institution low with mean scores less than cut off point score of 3. All the analytical statistical tests conducted similarly showed statistically significant differences between the extents of interprofessional collaborative practice and patient's mortality; health professionals work performance; job satisfaction; and frequency of strike actions at the health institution. These findings unanimously support the rejection of null hypotheses that there are no associations/relationships between the extents of interprofessional collaborative practice, and patient's mortality experience, health professionals' work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. Thus, the alternative hypotheses, that there are statistically significant differences between the extents of interprofessional collaborative practice and patient's mortality, health professionals work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions are accepted.

Interpretation of Findings

The findings of this study were interpreted using the four research questions and on the on the context of conceptual frameworks of collaboration and the relational coordination theory that grounded the study. The core elements or domains of collaborative frameworks that formed the basis for determining the extents of interprofessional collaborative practice include collaboration (shared goal), cooperation (mutual understanding), participation (shared decision making), partnership (rights and responsibilities), communication (timely and regular), and coordination (harmonious/interdependency) (Bridges et al., 2011; Gittell, et al., 2013; Weller, et al., 2011). RCT, which is geared toward task integration for effective organizational performance, is reinforced through quality communication ties, shared goals, shared knowledge, shared decision-making and partnership, mutual understanding, and respect (Gittell et al., 2013).

Research Question 1

What is the association between the extent of interprofessional collaborative practice and patient's mortality outcome in Enugu State University Teaching Hospital?

According to World Health Organization (2010), collaborative practice is evidenced when multi- health workers, with differing professional backgrounds, skills, and competence, work as a team, and together with the patients and other stakeholders to deliver highest quality patient-centered care. The common platform that enables team work is the presence of well defined, adequately constituted, and effective interprofessional team, with competent, experienced, and committed team members

(Bridges, et al., 2011; Interprofessional Education Collaborative Expert Panel, 2011; Martin-Rodriguez, et al., 2005; World Health Organization, 2010). Based on the findings of lower mean scores for the practice of each of the 6 collaborative domains that jointly defined the extent of interprofessional collaborative practice, it was obvious that the health professionals within the context of the institutional structure do not have standard collaborative practice in place. In the absence of well defined interprofessional team and effective team work, it appeared that the health professionals placed more emphasis on silos practice created by traditional and culturally defined bureaucratic structures, which emphasized territorial protection and rivalries, rather than cross-functionality and interprofessional collaboration that promotes quality patient-centered care. The lack of well defined interprofessional team and team work, and the poor practice of the key domains of interprofessional collaboration sharply negate the conceptual and theoretical frameworks of collaboration and relational coordination theory (Gittell, et al., 2013). The relational coordination theory, similar to interprofessional collaboration, emphasizes interprofessional team practice, based on strong relational ties of collaboration, cooperation, participation, partnership, communication, and coordination, aimed at promoting quality care evidenced by better patient health outcomes and experience (Gittell, et al., 2013; Gittell & Suchman, 2013; Weller, et al., 2011). In consideration of the finding of higher mean value on the association between the extent of interprofessional collaborative practice and patient's mortality outcome, it can be concluded that the present level of the practice of interprofessional collaboration in the

study health institution did not promote better patient outcome experience, rather contributed to high patient mortality outcome.

According to Gittell and Suchman (2013), the effectiveness of the interprofessional collaborative team is evidenced by better patient health outcomes' experience; in terms of decreased mortality, morbidity, and average hospital length of stay (Elsevier, 2016; Mast, et al., 2014). This statement of fact gave credence to the finding in this study that the inadequate practice of interprofessional collaboration among the health professionals was associated with mortality outcome experience of the patients. Additionally, the findings by different researchers applying different methodological approaches under similar hospital settings also favorably compared with the findings in this study that interprofessional collaboration is related to quality care and patient's outcome experience (Boykin, Wright, Stevens, & Gardner, 2018; Hutchison & Hash, 2012; Hwang, Gums, & Gums, 2017).

Although most studies on interprofessional collaboration among health professionals in the Nigerian hospital settings focused largely on knowledge, perception, and attitudes toward interprofessional collaboration, thorough review of the contents of these studies support the findings in this present study. A questionnaire based cross-sectional study involving convenient sampling of a single medical professional, obstetrician and gynecological doctors, conducted in two teaching hospitals in Nigeria, showed that the existing health practice promotes professional boundaries, segregation, and rivalries, and inadvertently affected clinical services delivery outcomes (Iyoke, et al., 2015). Similar cross-sectional studies among pediatric surgeons by Okoro and Amen

(2012) related poor patient outcomes to inadequate collaboration among doctors and other medical specialties. Onyekwere (2013) in a cross-sectional survey study to examine the relationship between inter-professional collaboration and efficiency in healthcare service deliver among seven different medical professional groups in 21 functional secondary facilities in Rivers State, Nigeria, related professional interdependence with team cohesiveness and patient satisfaction with health care. The study further revealed that professional diversity was inversely associated with team cohesiveness; and that there was an existing discipline or intra-group professionalism, which encouraged the struggle for dominance, autonomy, and control, rather than collegiality and cohesion (Onyekwere, 2013). Similarly, Okoronkwo, Aniche, Chiweuba, and Ndu (2013) in a descriptive cross-sectional study of the enhances and hindrances of doctor-nurse interdisciplinary collaborative practice in Nigeria, revealed absence of interprofessional team, team planning, and teamwork as limiting factors; which have been found to undermine patient centered care, and continuum of care, with devastating health outcomes (Okhakhu, et al., 2014). In a similar cross-sectional descriptive study on perceived influence of interdisciplinary collaboration on industrial harmony among multiple healthcare professionals at the University of Nigerian Teaching Hospital, Goodman, Okoronkwo, Nwodo, Epraim and Moses (2017) observed that other healthcare professionals with prerequisite expertise were invited by doctors to provide care for the patients in an adhoc manner; a practice which fail short of the global standard of interprofessional collaborative practice, with negative implications to organization's health outcomes. These findings in the Nigerian hospital-based studies revealed the low

level of practice of interprofessional collaboration, and the negative implications to patient's health outcome experience; and thus compared favorably with the findings in this present study, where the health professionals associated the extent of interprofessional collaborative practice to high patient mortality outcome experience.

Research Question 2

What is the association between the extent of interprofessional collaborative practice and healthcare professionals' performance?

Research question 2 was used to describe how the extent of interprofessional collaboration at the health institution impacted upon the health professionals' job performance. Historically, interprofessional collaboration was promulgated and promoted globally as an evidenced-based initiative to overcome the health sector challenges of poor performance, through the enhancement of professional competencies and strengthening of collaborative health activities (Elsevier, 2016; Gaboury, et al., 2011; Gougeon, et al., 2017; Mast, et al., 2014; Pfaff, et al., 2014; Robson & Kitchen, 2007; WHO, 2013). Thus, interprofessional collaboration has been used not only to improve patient health outcomes experience, but also the overall organization effectiveness, through the enhancement of the team and team members competencies, performance efficiency, and satisfaction (Babiker, et al., 2014; Gittell & Suchman, 2013). However, the findings of high mean values in the analysis of the relationship between the extent of interprofessional collaboration and the health professionals work performance, with negative values for the t-test of means and the confidence intervals for each of the collaborative domains indicated negative and inverse influence on work performance. The derivable conclusion

was that the extent of interprofessional collaboration at the health institution does not promote professionals competency and performance. It could also be concluded that the extent of practice of interprofessional collaboration was below the global standard, that it fail to achieve among others, the goal of improving health professionals' competencies and work performance (Gittell & Suchman, 2013). The finding of negative effect of the practice of interprofessional collaboration on work performance in this study is inconsistent with the varied successes recorded in many resources-rich countries (Harris, et al.,2016; Peduzzi, et al., 2015; Rice, et al., 2010; Supper, et al. , 2014); and where interprofessional collaborative initiative was usefully implemented at the various levels of care (World Health Organization, 2013; Gaboury, et al., 2011;), and for varied diseases entities, with positive outcomes and efficiency in health services delivery (Gougeon, et al., 2017; Mast, et al., 2014). As an initiative aimed at strengthening health system performance (WHO, 2010), interprofessional collaborative practice should among other targeted achievements, improve health professional's competencies and skills; capacities paramount to promoting and facilitating effective and efficient healthcare delivery, with evidenced better patient outcomes' experience, improved performance and job satisfaction (Gittell & Suchman, 2013). Thus, similar to the conclusion drawn from the findings in research questions 1; the extent of the practice of interprofessional collaboration in the study institution, negatively affected the professionals work performance and the organizations' goal practice outcomes. The negative relationship do suggest that the health professionals at the study institution have not yet fully embraced the standard practice of interprofessional collaboration, with extension to care

coordination, which is the primary focus of relational coordination theory. Both the interprofessional collaboration and the relational theory are based on the health professionals' conscious efforts to provide patient centered care, through the concerted efforts of multiple partners, with multiple competencies, and strong relational ties (Gittell, et al., 2013; Weller, et al., 2011).

Research Question 3

What is the relationship between the extent of interprofessional collaborative practice and healthcare professionals' job satisfaction?

Health professionals' job satisfaction is one of the evidential outcomes for proving the effectiveness of interprofessional collaboration, in promoting effective and efficient healthcare services (Gittell & Suchman, 2013). Interprofessional collaboration has been shown to enhance health professionals' satisfaction and healthy work environment, for the benefits of providing better health outcomes experience to the patients, cost efficiency in services delivery efficiency, and stress free practice environment for the organization (Zheng, Sim, & Choon-Huat Koh, 2016). The fundamental conclusion from the findings in the research question 3 was that the extent of the interprofessional collaborative practice grossly impacted on the health professionals' job satisfaction. This conclusion was evidenced from the high mean values, with the associated negative t-test of means, confidence intervals, and statistically significant p-values, all pointing to a strong relationship. Again, just as in the other findings, it could also be concluded that the practice of interprofessional collaboration at the study health institution fail short of the recommended standard practice, and thus

could not achieved the goal of improving job satisfaction for the health professionals. However, the negative finding was in contrast to the finding in a prospective cross-sectional study, where Zhang, Huang, liu, yan, and Li (2015), demonstrated the role of interprofessional collaboration in improving job satisfaction among the physicians and nurses in a Chinese dental clinic, using questionnaire based instrument. In the Chinese study, correlation was positive between job satisfaction and the physician-nurse collaborative scores, but was negative between physician-nurse scores and the intentions to leave the current job (Zhang, et al., 2015). The reason for the differences may not be unconnected to the nature of the interprofessional collaborative practice in relation to the recommended standard approach. According to Korner, Goritz, and Bengel (2014), interprofessional teamwork is a key factor to health professionals' job satisfaction and effective and efficient patient treatment. In the survey of 272 employees in 15 rehabilitation clinics in Germany, Korner, et al. (2014) demonstrated positive relationship between interprofessional collaboration and job satisfaction, but with significant differences between the perception of the physicians and the other health workers. The positive relationship demonstrated between interprofessional collaborative practice and job satisfaction among health workers in the Germany clinics, contrasted the findings in the present study. The contrasted findings may not be unconnected to the inadequate practice of interprofessional collaboration as found in this study in relation to the prescribed global standard (World Health Organization, 2010).

Research Question 4

What is the relationship between the extent of interprofessional collaborative practice and frequency of interprofessional conflicts experience in the hospital practice environment?

This final research question was to describe how the extent of interprofessional collaborative practice at the study health institution relates to work environment in terms of the frequency of conflicts and strike experiences of the health professionals.

According to Gittell and Suchman (2013), the effectiveness of the interprofessional collaborative team is evidenced by better patient health outcomes' experience, improved healthcare professionals performance, job satisfaction, conflict free environment and resolution ability. In relation to this research question, the findings of high mean values, negative t-test scores, significant *P*-values, lower and negative confidence intervals for the comparison of the mean score for each of the 6 collaborative domains, with the mean score for the frequency of conflicts and strike actions indicated negative relationship and outcome experience. Simply interpreted, the findings showed that the extent of the practice of interprofessional collaboration greatly influenced the frequency of interprofessional conflicts and strike actions at the health institution. The overall mean score for all the four Likert type questions that sought to find out the relationship between the extent of the collaborative practice and healthy practice environment was 3.8. The single most important question that directly sought to find out the relationship between the practice of collaboration and frequency of conflicts and strike actions had a mean score of 3.61; a score that is still quite above the mean score cut off point of 3.0. The fundamental conclusion in relation this research finding was that the extent of

interprofessional collaboration at the health institution could not produce the expected outcome, in terms of promoting conflict free environment; and thus could be said to be ineffective, and below the recommended global standard of interprofessional collaborative practice(see World Health Organization, 2010).

The findings in this final research question compared favorably with the findings in a cross-sectional descriptive study of nurses, doctors, pharmacists, and medical laboratory scientists in a Nigeria teaching hospital, where it was found that the practice of interdisciplinary collaboration fail short of the standard that it could not promote industrial harmony (Goodman, Okoronkwo, Nwodo, Ephraim, & Moses, 2017). The study additionally revealed that health professionals with requisite expertise were invited to provide care for ailing patients only on an adhoc basis, and were not incorporated into the mainstream of the team that cares for the patients (Goodman, et al., 2017). This practice of collaboration on an adhoc basis was still in the spirit of territorial traditional method of collaboration, rather than the new method of independency, and shared mental model of interprofessional collaboration and team work (Germany, Korner, Goritz, and Bengel, 2014). Germany et al. (2014) further reported that only the doctors had a supportive overall mean of 3.2 in the questions to ascertain whether other health professionals were involved in the management of patients, although the mean score was minimally above the cutoff point; whereas the medical laboratory scientists had the lowest mean score of 2.52; indicating minimal agreement. The importance of interprofessional collaborative practice in reducing conflicts among health professionals was demonstrated in a cross-sectional study of doctor-nurse conflict in Nigerian

hospitals, including the causes and modes of expression by Ademola, Asuzu, & Taiwo (2015). The results revealed that limited opportunity for staff interactions, desire for autonomy by the doctors, and desire for influence by the nurses had statistically significant odds for conflicts (Ademola, et al., 2015). These attributes among others are offered in an environment, where standard interprofessional collaborative practice takes place, and thus limits the opportunity for the experiencing of undesired outcomes, such as frequent conflicts and strike actions (Gittell & Suchman, 2013; Weller, et al., 2011). In contrast to the findings of this present study, Zheng, Sim, & Choon-Huat Koh (2016) in across-sectional descriptive study of the attitudes of doctors and nurses toward interprofessional collaboration in Singapore observed that interprofessional collaborative practice has been used to improve health professionals satisfaction, and health practice environment for the benefits of all the stakeholders, including the patients, members of interprofessional team, and the health organization. Thus, the contrasting findings in the present study may not be unconnected to the nature and the extent of interprofessional collaboration that were being practiced at the health institution.

Null (H_0) and Alternative Hypotheses (H_a) for the Research Questions

Summarily, the accompanying null hypothesis for the four research questions stated that there is no association between the extents of interprofessional collaborative practice and patient's mortality outcome, health professional work performance, job satisfaction, and healthy practice environment. The alternative hypothesis stated that there is an association between the extents of interprofessional collaborative practice and patient's mortality outcome, health professional work performance, job satisfaction, and

healthy practice environment. All the statistical tests applied in the analysis of the relationships, which included the *t* test of means, Pearson correlation coefficient, the chi-square test of association, and the logistic regression analysis showed that there were statistically significant differences ($P=0.000$) between the extents of interprofessional collaborative practices and patient mortality outcome, health professional work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. The values for *t*-test of means and Pearson correlation coefficient were below zero, indication negative and inverse relationship, with negative implications to the stated outcomes. Therefore, for each of the hypothesis for the four research questions, the null hypothesis of no difference (H_0) was rejected, and the alternative hypothesis (H_a) that there was significant difference or association accepted.

Limitations of the Study

The key limitations of the study as described in chapter 1 could arise from the nature of the study design, issues pertaining to the generalization of the findings, validity and reliability. Quantitative study with cross-sectional design has a limited scope, thus cannot fully explore the phenomenon, interprofessional collaboration, as would qualitative study; neither does it have the dual capacity to confirm and/or disconfirm findings, like a mixed methods study (see Creswell, 2009). These deficiencies may have limited comprehensive investigation and interpretation of the research findings. Another distinguishing feature of cross-sectional design that could constitute a limitation is the issue having no time bound, reliance on the existing subject differences, and non-randomization of the subjects into groups, unlike intervention studies (see University of

Southern California, 2018). However, I employed strategies that have helped to increase the scope and the strength of the study. These strategies included the large sample size, use of random sampling method in the selection of the subjects, established confidentiality of information, and the questionnaire that was designed to capture experienced information.

Secondly, the non-inclusiveness of all the health professionals from allied disciplines that are involved the clinical management of the patients due to time and logistic constraints may constitute barrier to the generalization of the findings. A whole population study may have yielded encompassing findings that can be generalized beyond the geographical boundary of the study area. In order to mitigate this limiting factor to generalization, I included representative sample of the major health professionals directly involved in the overall management of patients, and that were capable of providing necessary and quality information regarding the practice of interprofessional collaboration at their practicing environment.

Limitations to internal validity that could have risen due to the non-inclusion of all the health professionals as obtained in the whole population study may have been drastically reduced by the inclusion of the majority of the health professionals that have direct involvement in the management of patients. Thus, the multidisciplinary nature of the health professionals included in the study and their similarity to other clinical settings could have enhanced internal validity of the study. Additionally, the non-experimental nature of the study design; the use of probability sampling; the stability over time and design of the survey instruments, and strict observance of the scientific method of doing

research in a systematic way in this study, were all combined to reduced threat of internal validity.

The issue of ensuring external validity of the study, in terms of the generalization of the established relationships, was fathomed into the study design. The use of probability sampling method in the subject recruitment to ensure representative sample, and the inclusion of multidisciplinary study professionals, who were comparable and similar to other medical settings, were all intended to enhance external validity of the study. Consistency in the implementation of the study methodology throughout the research period was a booster to external validity. The grouping of Likert items or questions into scales categories and non-inclusion of dichotomous responses may have reduced the external validity threats, in addition to the use of on the spot check strategy in checking the returned questionnaire for completeness. Despite the benefits of Likert-type of scale in assessing degrees and intensities of perceptions through the mean scores, and application of quality, sensitive, and specific analytical statistics, its use could constitute a limitation if participants were tempted to follow a particular pattern of thought in responding to questions. Reversal of the questions could have reduced this limitation, but it would have required extra analytical re-arrangements, which could have also resulted to analytical error if not carefully done. However, I employed the right descriptive and analytical statistics to synergize findings, and paid extra carefulness in the interpretation of the findings, bearing in mind this possible limitation.

Recommendations for Future Research

The following recommendations are strongly made based on the limitations of this study. First and foremost, there is a great need for the qualitative survey of the extent of interprofessional collaboration and the organizational implications thereof to be conducted at the same institution, designed and based on the findings of the quantitative survey. Such qualitative survey will allow for fuller exploration of the collaborative practice, and afford the researcher an opportunity to confirm, disconfirm, or streamline the findings for use in the design of a national survey of the practice of interprofessional collaboration at all levels of care (see Creswell, 2009).

Secondly, a total population study, in terms of expanding the survey to include all health professionals involved in the care of patients, and using a more comprehensive and standardized survey instrument, could be conducted at the health institution. Such a total population study, if systematically and scientifically conducted, may improve the internal and external validity of the study, and enhance the generalization of the findings.

Additionally, based on the findings of the current study, an intervention study could be carried out to compare the baseline data and post intervention data. An intervention study may be able to show the impact of interprofessional collaborative practice in relation to the organizational health goals and outcomes, and will serve as an advocacy tool for demanding for policy change, promulgation, promotion and implementation of this evidence based initiatives for strengthening the Nigerian health system.

Implications

Positive Social Change

As was fully described in chapter 1, interprofessional collaborative practice has been proven as an evidence based health initiative for addressing global health priorities of improving access, coverage, and quality of health services(Adams et al., 2002; World Health Organization , 2017), strengthening health systems and improving health outcomes (World Health Organization, 2010). At the micro level of care, the effectiveness of the initiative has been demonstrated in improving patient outcome experience (Pfaff, et al., 2014; Robson & Kitchen, 2007); reducing mortality, morbidity, and average hospital length of stay (Elsevier, 2016; Mast, et al., 2014); reducing the global health workforce crisis by increasing staff retention, reducing the intention to leave, and improving job satisfaction (WHO, 2010).

Despite the practical implementation and proven effectiveness of interprofessional collaborative practice in achieving health priorities in resources-rich countries, there was no clear description of the extent of the practice and its potential implications to the Nigerian health system, especially at the tertiary services delivery point. Yet, Nigerian health system was rated very low and poorly performing in comparison to other systems globally (Adrian, 2015; Anekoson, 2013; Onyeniran, & Onikosi-Alliyu, 2015), and has been challenged with incessant interprofessional conflicts (Ademola, et al. 2015; Akpabio, et al., 2016). Thus, this study has multiple implications for driving social change at all levels, including the study health institution with the individual services users, health professionals as services providers; the family, organization, state, national

and the societal levels at large. At the institutional administrative level, the study will serve as a useful document for policy initiation, provision of guideline for policy implementation and evaluation, advocating for policy change, and provision of useful information for responding appropriately to the challenges of interprofessional conflicts and for enhancing healthy, stress free, work environment. The study document will serve as a baseline data for the organization in evaluating interprofessional collaborative services efficiency, intervention effectiveness, and health professionals' satisfaction with the associated intentions to leave and possible workforce crisis related to the extent of the practice of interprofessional collaboration. The health professionals will find the study document and the findings useful and handy tool for advocating and negotiating for policy change toward the practice of interprofessional collaboration, better patient centered care services provision, and for promotion of healthy work environment for competency enhancement, value fulfillment, and job satisfaction. The patients or health services users and their families will also beneficially use the findings of this study to press home their rights for better patient centered health care , demand for stakeholder's involvement, quality interaction and improved relationship with services providers.

At the state and national policy making levels, the document will serve as prerequisite database for the state and federal ministries of health, in providing new policy directives, charters and guidelines, and for evaluating policy implementations. These policy activities will all aim at promoting the practice of effective interprofessional collaboration for the benefits of the patients in terms of improved outcomes and health experience; the health organization in terms of achieving effective and efficient services

delivery, and provision of stress free practice environment (Zheng, et al., 2016). At the larger societal level, the data generated in the study may form a prerequisite database that will guide policy making at the federal ministry level toward promulgation, implementation, and evaluation of interprofessional collaborative practice at the Federal Ministry of Health, Nigeria. The overall aim of such policy toward interprofessional collaboration at the federal ministry level will be to promote the strengthening of Nigerian Health System, in line with the provisions of the Nigerian National Health Policy (Federal Ministry of Health [FMOH], 2016). The Nigerian National Health Policy among other priority goals advocates for collaboration and partnership at all levels of priority health programs implementation, and among relevant health authorities; to ensure mutual accountability, and involvement of the patients, family members, and communities in healthcare planning, implementation, and evaluation (FMOH, 2016).

Methodological Implications

A quantitative method of study, with descriptive cross-sectional design was used in this study (see Creswell, 2009). According to Maxwell (2005), a good study design should mitigate operational failures, but yet promote efficiency, quality, and acceptable outcomes. This design was the preferred choice for the study on interprofessional collaborative practice in the Nigerian local context for several reasons. Firstly, data on nature of interprofessional collaborative practice and its organizational implications in Nigerian hospital setting was scarce, and thus there was the need to fully describe and advance knowledge on the extent of the practice and its potential implications, before undertaking an in depth exploration of the new initiative. Thus, the use of quantitative

method, with deductive approach, which simply described associations and relationships between the variables using the lens of available theoretical framework, was essential to better describe and provide answers to the research questions. Secondly, the design is resources effective in the context of resource-constraint country of Nigeria, and therefore enabled feasibility, and mitigates implementation failures. However, the implication is that in the presence of basic statistical data on interprofessional collaboration, as is the case in many developed economies or resources-rich countries, an alternative methodological approach, such as qualitative and intervention methodologies will be seriously considered the best the approach. Therefore, there is still a window of opportunity for an in-depth explorative and analytical study based on the outcomes of the present study. It is also important that researchers fully understand the methodological implications concerning the use of Likert type items or questions and Likert scale data in terms of their statistical treatment as ordinal and interval measurement scales respectively; and ensure appropriate use of statistics and interpretation as the case may be. When considered and used as ordinal scale in its natural form, statistics such as median or mode, frequencies and chi-square test of association applies; but when the Likert type items are grouped to generate a composite scores, in situation referred as Likert scale data, different statistics such as mean, standard deviations, Pearson's correlations r for association, t test, ANOVA, and regression analysis applies (see Boone & Boone, 2012). Thus, appropriateness of the different statistical analyses, and the relative subjective nature of these data generated in relation to the possible different interpretations to the Likert type questions by the participants should be borne in mind,

while interpreting the findings of such study with caution. Another methodological issues concerns whether to use an odd or even numbers of responses, in view of the values of providing or not providing a midpoint for the participants; and whether the assumption of normal probability distribution on a data that is ordinal rather than continuous is justifiable (Sandiford & Ap, 2003). In this study, the Likert type questions were grouped as composite scores, and treated as interval measurement scale, rather than ordinal scale, and appropriate statistics applied.

Another possible methodological challenge was the use of self-administered method of data collection, instead of the proposed interviewer administered strategy. In the initial study plan, interviewer administered method of data collection was proposed. However, during the main data collection, the survey instrument was self-administered upon request by the health professionals, who were knowledgeable enough that they understood clearly the questions, and were able to give quality responses. Possible methodological implication was that there could be incomplete and incorrect responses if some of the questions were not clearly understood. However, bearing this possibility in mind, I made myself fully available during these process of data collection to explain any gray areas or challenges that the health professionals may have had, and equally scrutinized the returned questionnaires on the spot for completeness and correctness.

Recommendations for practice and Action

The key findings for the study were that standard and globally recognized practice of interprofessional collaboration as recommended by the World Health Organization was not fully in place in the survey health institution; and thus standard interprofessional

team was not in place, and teamwork was not fully practiced. Although on adhoc basis, some of the domains of interprofessional collaborative practices such as collaboration, cooperation, participation/shared decision-making, partnership, communication and coordination were partially practiced. Additionally, because the extent of the practice of interprofessional collaboration fail short of the recommended standard, the health organization and the stakeholders did not realize the full benefits of the initiative; which included improved patient health outcome experience in the form of reduced mortality, improved health professionals work performance, job satisfaction, and reduction in the frequency of interprofessional conflicts and strike actions. Therefore, for a more effective interprofessional collaboration, the health institutions' policy makers should provide the enabling environment and support, both in the form of positive actions, guidelines, and policies, to promote the implementation of effective and standard interprofessional collaboration at the institution. At the local health level also, respective health professionals should show commitment, dedication, and willingness to jointly work together as a team with other medical professions, as could be inferred from the responses to the survey questions that there was still some form of territorial protection, silos practice, and supremacy ideation. By so doing, the multiple benefits of interprofessional collaborative practice, which include better patient outcomes and health experience, improve health professionals performance and satisfaction, enhanced healthy work environment, as well as achieving efficiency in services delivery, and provision of stress free practice will be fully realized (Zheng, et al., 2016).

At the state and federal levels, the ministries entrusted with the responsibility of ensuring citizen's health, such as the state ministry of health, federal ministry of health, states and federal legislatures, should enact guidelines, policies, edicts, and laws that will guide effective implementation of interprofessional collaboration at the various levels of health care. There is also the need to establish both at the local and state levels, implementation and monitoring interprofessional health committee, whose responsibility among others will be to sensitize, create awareness, and ensure full compliance to the implementation policies, as well as to address any concerns that might arise in the process. When these structures are fully in place and implemented, the overwhelming benefits of interprofessional collaboration, in view of its capacity to promote health systems strengthening, and enhance achievement of health priority goals will be realized (see WHO, 2010, 2013).

Summary

Following the clarion call by the World Health Organization for the promulgation and implementation of interprofessional collaboration, in view of the complexities in diseases processes, and the need for evidence based innovative strategies that will provide a platform for health systems strengthening (WHO, 2013); several researchers in the resources-rich countries have conducted studies on the practice of interprofessional collaboration, with demonstrable effectiveness and efficiency in services delivery (Gougeon, et al., 2017; Mast, et al., 2014; World Health Organization, 2013). Yet, in the resources-constrained African countries, with Nigeria in focus, little research exists, and thus data is scarce on the extent of the practice and its organizational implications. This

study presented a description of the extent of the practice of interprofessional collaboration in a tertiary hospital setting in Nigeria, and the potential implications on the patients, health professionals, and the organizations' practice environment.

Four research questions were addressed by the participating health professionals. These include finding the relationships and associations between the extents of the practice of interprofessional collaboration, under the 6 domains of collaboration, cooperation, participation/shared decision-making, partnership, communication and coordination; and organization's outcomes in terms of patient mortality experience, health professionals work performance, job satisfaction, and frequency of interprofessional conflicts and strike actions. The study employed quantitative method, with descriptive cross-sectional design. The survey instrument was largely self-administered, on face-to-face basis, with clarifications from the researcher when and where required. Relational coordination theory provided the theoretical frameworks that guided the study.

Findings of the study indicated that the extent of the practice of interprofessional collaboration, evidenced by the mean scores of each of the 6 collaborative domains, was low and below the positive responses cut off, set at 3.0 mean score. Secondly, findings indicated strong negative associations between the extents of interprofessional collaboration and organizations' outcomes, with high means scores and negative statistical values, and statistically significant differences with p-values <0.001. These findings have strong implications for positive social change, for interprofessional collaborative practice, future research, and for policy formulations and implementations.

Recommendations were made for promoting effective interprofessional collaborative practice at the local health organizations' level; and at the state and federal ministerial levels, for policy to ensure full promulgation and implementation of this evidence based strategic initiative for health systems strengthening to the benefits of all the stakeholders.

Conclusion

The results of this study made an immense scholarly contribution on the potential benefits of having in place effective interprofessional collaborative practice at the tertiary care levels, and by extension at all levels of care in Nigeria; and the possible negative implications on the health systems of countries that have not promulgated and implemented the recommended evidence based strategic initiative for promoting health systems strengthening, in view of the complex diseases processes and the complexity in diseases management. The quantitative cross-sectional descriptive design employed for the study was useful in describing the practice of interprofessional collaboration in consideration of the scarcity of baseline data at the local context. This study have demonstrated that the practice of interprofessional collaboration in line with the global standard, as defined by the presence of interprofessional collaborative team and practice of team work, was not fully in place in the studied tertiary level of health care in Nigeria. Secondly, the absence of effective practice of interprofessional collaboration, as demonstrated in this Nigerian study, could have negative consequences on the overall organizational health goals of improving health outcomes; in terms of patient's mortality experience, health professionals' work performance and job satisfaction, and healthy

work environment, as it relate to frequency of interprofessional conflicts and strike actions.

Additionally, this quantitative descriptive cross-sectional approach to the study would contribute to the baseline data that will serve as prerequisite database for comparative studies and for future in-depth qualitative and interventional studies on interprofessional collaboration, especially in the African local health context. Firstly, this is true in view of the fact that there is dearth of data and literature on the extents of the practice of interprofessional collaboration and the organizational implications; and the results of this study would contribute greatly to filling this knowledge gap. Secondly, the findings that most of the studies on interprofessional collaboration as reviewed in chapter 2 concentrated on the resources-rich and middle income countries of the world, and utilized more of qualitative and interventional methodological designs, would make the contributions of this study in the body of knowledge unique. Stretching this contribution further to the Nigeria local health context, virtually all the available studies on interprofessional collaboration at the time of this study concentrated on eliciting the perception, knowledge and attitudes of health care professionals about interprofessional collaboration, with less emphasis on the nature and/or the extent of the practice. There was at the time of this study no documented description of implications of the extent of the interprofessional collaborative practice to the organizations' health outcomes.

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Appendix A: Surveys

QUESTIONNAIRE SURVEY QUANTITATIVE

Surveys Instrument for Assessing Interprofessional Collaborative Practice at the Enugu State University Teaching Hospital, Enugu, Nigeria. By completing this questionnaire, it is implied that you have given an informed consent to participate in the study, but have not waived your rights as a participant.

Section A**Demographic Information**

Please check [] the category you belong to/fill in as appropriate:

1. Gender:Male []Female []

Age: _____ Years

2. Discipline categories:Medicine (Physician) []Nursing []Pharmacy []Laboratory Science []**3. Staff Designation: please check [] in front accordingly****Medicine:** Professor/consultant [] Doctor/consultant [] Doctor/Resident []Doctor/House officer []

Nursing: Deputy Director Nursing [] Assistant Director Nursing []

Chief Nursing Officer []

Assistant Chief Nursing Officer [] Principal Nursing Officer []

Senior Nursing Officers [] Nursing Officer []

Pharmacy: Deputy Director Pharmacy [] Assistant Director Pharmacist []

Chief Pharmacist [] Deputy Pharmacist [] Senior Pharmacist []

Pharmacist []

Laboratory Scientist: Deputy Director Laboratory Scientist []

Assistant Deputy Director Laboratory Scientist []

Chief Laboratory Scientist [] Laboratory Scientist []

Laboratory Technician []

Others (specify)_____

4. Years in Practice (after achieving license to practice)_____

5. Years in the employment of Enugu State University of Science and
Technology_____

Section B

Assessment of the Extent of Interprofessional Collaboration among Professional Groups

Instructions:

Please read carefully over each of the statements and circle the appropriate number representing your best level of agreement to the statement that describe the current status of the practice of interprofessional collaboration in your health institution, and how you

as a member of healthcare team work with other members of the healthcare team. Please give only ONE response to each item question as follows:

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

General Introduction:

In order to have the same understanding in the usage of the terms, interprofessional collaboration and team, the following standard explanatory definition applies:

Interprofessional collaboration occurs when multiple health workers from different professional backgrounds work together, and with patients, families, carers and communities to deliver the highest quality of care (WHO, 2010, p.7).

Interprofessional team is formed or exists when two or more different healthcare professionals interactively work together in a complementary manner and on a regular basis, for the defined, specified and mutually accepted primary goal of providing patient care, and meeting the needs of the patients, families, or community (Aschenbrener, 2011; Institute of Medicine, 1972; Orchard, King, Khalili, & Bezzina, 2012).

This questionnaire extent of interprofessional collaboration is constructed based on the key domains or characteristics of a quality healthcare team: partnership, shared decision-making/participation, collaboration, coordination, cooperation, and communication (Weller, Barrow, & Gasquoine, 2011).

Collaboration

Collaboration in this case referred to working together of different professional groups aimed at achieving organizational goals including good patient outcome and better healthcare experience

Q.1 There is a well defined interprofessional collaborative team in my institution, comprising of different healthcare professionals working together to provide patient-centered care

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.2 Professional groups jointly carry out ward health activities such as ward rounds, bedside case discussions, and minor bedside surgical procedures for the collective interest of achieving patient treatment success

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q. 3 Professional groups undertake educational activities such as weekly mortality and morbidity conference for effective patient management

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

.Q. 4 Professional groups undertake continuing interprofessional educational activities such as scientific meetings, seminars, and conferences together for the collective interest of developing competencies for effective patient management

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Cooperation

Cooperation in this study is defined as working together with mutual understanding according to expectations, in a common front and efforts for common benefits

Q.1 Interprofessional groups while working as a team freely shares knowledge, skills and exchange health information among each other to enhance patient effective management

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.2 Interprofessional groups have mutual respect of each other's perspectives, opinions and views regarding best management protocol for each patient

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.3 Interprofessional groups working as a team cooperate with each other, patients and relatives to enhance group performance and overall patient outcome

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.4 Interprofessional groups show respect and trust, as well as recognizing each other's strengths and weaknesses

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Participation/Shared Decision-Making

For the purpose of the study, participation has to do with involvement of individual or group members in the entire program and decision-making process; contributing own quota for the successes of the program and effective decision-making

Q.1 Interprofessional team members are equally and actively involved in decision-making toward team goal and objective settings

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.2 Interprofessional team members share leadership roles and responsibilities and are equally held accountable to any decision failures

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.3 Patient management decisions are made among the team members through dialogue and consensus building

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.4 Interprofessional team members are equally and actively involved in decision regarding operational management plans

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Partnership

In this context, partnership involve formal relationship between two or more persons or groups, with accruable rights and responsibilities

Q.1. Interprofessional groups have defined team roles and responsibilities among members in delivering patient centered healthcare

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.2. Interprofessional groups partner with each other in setting the agenda for the care and management of the patients

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree

5 Strongly Agree

Q.3 Interprofessional team sought, obtain and considers patients opinions and wishes when making final decision on patient management protocols

1 Strongly Disagree

2 Disagree

3 Neutral (Neither disagree nor agree, unsure)

4 Agree

5 Strongly Agree

Q.4 Interprofessional team involve patients families and relatives in decision-making regarding care intervention choices , including advantages and disadvantage of each option

1 Strongly Disagree

2 Disagree

3 Neutral (Neither disagree nor agree, unsure)

4 Agree

5 Strongly Agree

Communication

For the sake of this study communication involve two way information sharing and free flow of information among individuals in different professions or within interprofessional groups

Q.1 Members of the interprofessional groups eagerly communicate with each other and gives feedback information in a timely and regular manner

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q. 2 Members of the interprofessional groups ensure honest, accurate and open communication among each other

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q. 3 Members of the interprofessional groups use problem-solving communication approach rather than blaming to share patients information and health condition

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.4 Interprofessional team members consistently/frequently communicate with each other regarding patient's health condition and best care approach

- 1 Strongly Disagree

- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Coordination

Coordination in this study is defined as working together harmoniously and functionally with all stakeholders for more effective outcomes or results

Q.1 Interprofessional team members meet regularly to discuss patient care and management challenges

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.2 There is definitive and clear hospital guidelines, protocols and policies on interprofessional collaboration to enhance collaborative care activities and team work

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.3 Interprofessional team receives leadership and managerial support from the hospital administration for effective team functions and coordinative patient care

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.4 Interprofessional team members coordinate healthcare functions, activities and services to improve patient care

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Section C

The extent of Interprofessional Collaboration at the Health Institution and Relationship to Organizational Intervention Effectiveness, Provider's Work Efficiency, and Healthy Practice Environment

Instructions:

Please read carefully over each of the statements and circle the appropriate number representing your best level of agreement to the statement that describe your perception and attitude toward the current status of the practice of interprofessional collaboration in your health institution. Please give only ONE response to each item question as follows:

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Introduction

In this study, organization effectiveness entails producing desired health effect; in this case, improved health status, good patient health outcomes in terms of reduction in morbidity, mortality, average length of stay, and better healthcare experience.

Efficiency refers to having the ability to satisfactorily produce the desired effect or to be productive without undue waste, which is enhanced by the provision of enabling and conducive working environment

Healthy Practice Environment, formerly referred to as health work environment is defined in this study as an organizational environment or work setting that facilitates professionalism, harmonious coexistence, quality healthcare and better patient outcome experience

Extent of Interprofessional Practice and Patient Outcomes Experience

Q.1 The extent of interprofessional collaborative practice in our institution contributes to high patient mortality outcome

- 1 Strongly Disagree
- 2 Disagree

- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.2 The extent of practice of interprofessional collaboration in this hospital is associated with increased length of patient's hospital stay

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q. 3 The extent of practice of interprofessional collaboration in this health institution contributes to treatment delays

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q. 4 The extent of practice of interprofessional collaboration in this health institution is associated with medical or treatment errors

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Extent of Practice of Interprofessional Collaboration and Healthcare Professionals

Work Efficiency

Q.1 The extent of practice of interprofessional collaboration in this hospital negatively affects healthcare professionals' work performance

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.2 The extent of interprofessional teamwork climate in this hospital negatively affects healthcare professionals' competencies

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree

5 Strongly Agree

Q.3 The extent of the practice of interprofessional collaboration in this hospital do not encourage skills development and continuing professional development

1. Strongly Disagree
2. Disagree
3. Neutral (neither disagree nor agree, unsure)
4. Agree
5. Strongly Agree

Q.4 The extent of practice of interprofessional collaboration in this hospital do not enhance provision of patient-centered care

1. Strongly Disagree
2. Disagree
3. Neutral (neither disagree nor agree, unsure)
4. Agree
5. Strongly Agree

Extent of Practice of Interprofessional Collaboration and Healthcare Professionals

Work Satisfaction

Q.1 The extent of interprofessional collaborative practice in this hospital negatively affects professionals' job satisfaction

- 1 Strongly Disagree
- 2 Disagree

- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.2 The extent of interprofessional collaborative practice in this hospital contributes to professionals' intention to leave

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.3 The extent of the practice of interprofessional collaboration in this hospital do not promote positive attitude to work

1. Strongly Disagree
2. Disagree
3. Neutral (neither disagree nor agree, unsure)
4. Agree
5. Strongly Agree

Q.4 The extent of practice of interprofessional collaboration in this hospital do not promote realization of individual motives/or values for work and fulfillment

1. Strongly Disagree

2. Disagree
3. Neutral (neither disagree nor agree, unsure)
4. Agree
5. Strongly Agree

Extent of Interprofessional Collaborative Practice and Healthy Practice

Environment

Q.1 The extent of interprofessional collaborative practice in this hospital is associated with high frequency of interprofessional conflicts and strike actions

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q.2 The extent of the practice of interprofessional collaboration in this hospital affects healthy work environment

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree

5 Strongly Agree

Q.3 The extent of interprofessional collaboration in this hospital affects healthy interprofessional relationships and interactions

- 1 Strongly Disagree
- 2 Disagree
- 3 Neutral (Neither disagree nor agree, unsure)
- 4 Agree
- 5 Strongly Agree

Q. 4 The extent of interprofessional collaborative practice in this hospital discourages team consensus building

1. Strongly Disagree
2. Disagree
3. Neutral (Neither disagree nor agree, unsure)
4. Agree
5. Strongly Agree

Appendix B: Tabular Results of the Pilot Study

Table 1B
Demographic variable of the participating health professionals

Variables	Frequency	Percentage
Age		
33 - 37yrs	8	20.0
38- 42yrs	14	35.0
43 - 47yrs	10	25.0
48 - 52yrs	4	10.0
53 - 57yrs	4	10.0
Total	40	100.0
Gender		
Male	17	42.5
Female	23	57.5
Total	40	100.0
Staff profession		
Medicine	10	25.0
Nursing	10	25.0
Pharmacy	10	25.0
Laboratory science	10	25.0
Total	40	100.0
Years in practice		
3yrs - 7yrs	2	5.0
8yrs - 12yrs	12	30.0
13yrs - 17yrs	9	22.5
18yrs - 22yrs	11	27.5
23yrs - 27yrs	4	10.0
28yrs – 32yrs	2	5.0
Total	40	100.0
Years of employment		
2yr - 6yrs	12	30.0
7yrs - 11yrs	13	32.5
12yrs -16yrs	9	22.5
17yrs - 21yrs	1	2.5
22yrs -26yrs	2	5.0
27yrs -31yrs	3	7.5
Total	40	100.0

Mean age (yrs) \pm *SD* = 42.75 \pm 5.908

Mean years in practice \pm *SD* = 16.05 \pm 6.280

Mean years in employment \pm *SD* = 10.93 \pm 7.447

Table 2B

Survey responses by the health professionals regarding collaboration among the professions

Statements	Mean	SD	N
1. There is a well defined interprofessional collaborative team in my institution comprising of different healthcare professionals working together to provide patient centered care	2.55	1.377	40
2. Professional groups jointly carry out ward health activities such as ward rounds, bedside case discussions, and minor bedside surgical procedures for the collective interest of achieving patient treatment success	2.20	1.381	40
3. Professional groups undertake educational activities such as weekly mortality and morbidity conference for effective patient management	1.90	1.105	40
4. Professional groups undertake continuing educational activities such as scientific meetings, seminars, and conferences together for the collective interest of developing competencies for effective patient management	2.15	1.350	40

Table 3B

Survey responses by the health professionals regarding cooperation among the professions

Statements	Mean	<i>SD</i>	<i>N</i>
1. Interprofessional groups while working as a team freely shares knowledge, skills and exchange information among each other to enhance patient effective management	2.40	1.355	40
2. Interprofessional groups have mutual respect of each other's Perspectives, opinions and views regarding best management Protocol for each patient	2.40	1.277	40
3. Interprofessional groups working as a team cooperates with patients and relatives to enhance group performance and overall patient outcome	2.83	1.338	40
4. Interprofessional groups show respect and trust, as well as recognizing each other's strengths and weaknesses	2.18	1.196	40

Table 4B

Survey responses by the health professionals regarding participation/shared decision-making among the professions

Statements			
1. Interprofessional team members are equally and actively involved in decision-making toward tea, goal and objective setting	2.10	1.150	40
2. Interprofessional team members share leadership roles and responsibilities and are equally held accountable to any decision failures	2.28	1.109	40
3. Patient management decisions are made among team members through dialogue and consensus building	2.18	1.107	40
4. Interprofessional team members are equally and actively involved in decision-making regarding operational management plans	2.13	1.067	40

Table 5B

Survey responses by the health professionals regarding partnership among the professions

Statements	Mean	<i>SD</i>	N
1. Interprofessional groups have defined roles and responsibilities among members in delivering patient centered healthcare	3.48	1.281	40
2. Interprofessional groups partner with each other in setting the agenda for the care and management of the patient	2.48	1.240	40
3. Interprofessional team sought, obtain and considers patients opinions and wishes when making final decision on patient management	2.78	1.143	40
4. Interprofessional team involve patients families and relatives and relatives in decision-making regarding care intervention choices, including advantages and disadvantages of each options	2.80	1.224	40

Table 6B

Survey responses by the health professionals regarding communication among the professions

Statements	Mean	SD	N
1. Members of the interprofessional groups eagerly communicate with each other and gives feedback information in a timely and regular manner	2.45	1.131	40
2. Members of the interprofessional groups ensure honest, accurate and open communication among each other	2.53	0.987	40
3. Members of the interprofessional groups use problem-solving communication approach rather than blaming to share patients information and health condition	2.38	1.125	40
4. Interprofessional team members consistently/frequently communicate with each other regarding patient's health condition and best care approach	2.65	1.051	40

Table 7B

Survey responses by the health professionals regarding coordination among the professions

Statements	Mean	SD	N
1. Interprofessional team members meet regularly to discuss patient care and management challenges	1.98	1.165	40
2. There is definitive and clear hospital guidelines, protocols and policies on interprofessional collaborative activities and teamwork	2.38	1.192	40
3. Interprofessional team receives leadership support from the hospital administration for effective functions and coordinative patient care	2.68	0.997	40
4. Interprofessional team members coordinate healthcare functions activities and services to improve patient care	2.93	1.289	40

Table 8B

Survey responses by the health professionals regarding extent of interprofessional collaborative practice and patient outcome experience

Statements	Mean	<i>SD</i>	N
1. The extent of interprofessional collaborative practice in our institution contributes to high patient mortality outcome	3.45	1.280	40
2. The extent of practice of interprofessional collaboration in this hospital is associated with increased length of patient's hospital stay	3.75	0.981	40
3. The extent of practice of interprofessional collaboration in this health institution contributes to treatment delays	3.95	0.959	40
4. The extent of practice of interprofessional collaboration in this health institution is associated with medical or treatment errors	3.63	1.055	40

Table 9B

Survey responses by the health professionals regarding extent of interprofessional collaboration and professionals work performance

Statements	Mean	SD	N
1. The extent of practice of interprofessional collaboration in this hospital negatively affects healthcare professionals' work performance	4.25	0.899	40
2. The extent of interprofessional team climate in this hospital negatively affects healthcare professional's competencies	3.75	1.104	40
3. The extent of practice of interprofessional collaboration in this hospital do not encourage skills development and continuing professional development	3.75	1.149	40
4. The extent of practice of interprofessional collaboration in this hospital do not enhance provision of patient-centered care	4.00	0.987	40

Table 10B

Survey responses by the health professionals regarding extent of interprofessional collaboration and healthcare professionals job satisfaction

Statements	Mean	SD	N
1. The extent of practice of interprofessional collaboration in this hospital negatively affects healthcare professionals' job satisfaction	4.40	0.900	40
2. The extent of interprofessional practice in this hospital contributes to professionals' intention to leave	3.68	0.971	40
3. The extent of practice of interprofessional collaboration in this hospital do not promote positive attitude to work	4.08	0.997	40
4. The extent of practice of interprofessional collaboration in this hospital do not promote realization of individual motives/ or values for work and fulfillment	3.98	0.947	40

Table 11B

Survey responses by the health professionals regarding extent of interprofessional collaborative practice and healthy practice environment

Statements	Mean	<i>SD</i>	N
1. The extent of interprofessional collaborative practice in this hospital is associated with high frequency of interprofessional conflicts and strikes	4.55	0.815	40
2. The extent of the practice interprofessional collaboration in this hospital affects healthy work environment	4.20	0.911	40
3. The extent of interprofessional collaboration in this hospital affects healthy interprofessional relationships and interactions	3.98	0.920	40
4. The extent of interprofessional collaborative in this Discourages team consensus building	4.28	0.679	40

Table 12B
 Relationship between overall mean collaboration domain and patient's outcome,
 healthcare professionals' performance, job satisfaction and healthy practice environment

Key Characteristics	Mean	SD	T-test	P-value	95% CI
Collaboration	2.20	1.303			
&			5.63	0.000	1.0564-1.9436
Mortality outcome	3.70	1.069			
Collaboration	2.20	1.303			
&			6.61	0.000	1.3020-2.1789
Work performance	3.94	1.035			
Collaboration	2.20	1.303			
&			7.21	0.000	1.4150-2.2650
Job satisfaction	4.04	0.954			
Collaboration	2.20	1.303			
&			8.39	0.000	1.5635-2.5365
Healthy practice environment	4.25	0.831			

Table 13B
 Relationship between overall mean Cooperation domain and patient's outcome,
 healthcare professionals' performance, job satisfaction and healthy practice environment

Key Characteristics	Mean	SD	T-test	P-value	95% CI
Cooperation	2.45	1.292			
&			4.71	0.000	0.7221-1.7779
Mortality outcome	3.70	1.069			
Cooperation	2.45	1.292			
&			5.69	0.000	0.9689-2.0111
Work performance	3.94	1.035			
Cooperation	2.45	1.292			
&			6.26	0.000	1.0844-2.0956
Job satisfaction	4.04	0.954			
Cooperation	2.45	1.292			
&			7.41	0.000	1.3164-2.2836
Healthy practice environment	4.25	0.831			

Table 14B
 Relationship between overall mean participation/shared decision-making domain and
 patient's outcome, healthcare professionals' performance, job satisfaction and healthy
 practice environment

Key Characteristics	Mean	SD	T-test	P-value	95% CI
Participation	2.17	1.108			
&			6.29	0.000	1.0454-2.0146
Mortality outcome	3.70	1.069			
Participation	2.17	1.108			
&			7.38	0.000	1.2927-2.2473
Work performance	3.94	1.035			
Participation	2.17	1.108			
&			8.09	0.000	1.4098-2.3302
Job satisfaction	4.04	0.954			
Participation	2.17	1.108			
&			9.50	0.000	1.6440-2.5160
Healthy practice environment	4.25	0.831			

Table 15B
 Relationship between overall mean partnership domain and patient's outcome, healthcare professionals' performance, job satisfaction and healthy practice environment

Key Characteristics	Mean	SD	T-test	P-value	95% CI
Partnership	2.89	1.222			
&			3.16	0.002	0.2989-1.3211
Mortality outcome	3.70	1.069			
Partnership	2.89	1.222			
&			4.15	0.000	0.5459-1.5541
Work performance	3.94	1.035			
Partnership	2.89	1.222			
&			4.69	0.000	0.6620-1.6080
Job satisfaction	4.04	0.954			
Partnership	2.89	1.222			
&			5.82	0.000	0.8948-1.8252
Healthy practice environment	4.25	0.831			

Table 16B
 Relationship between overall mean Communication domain and patient's outcome,
 healthcare professionals' performance, job satisfaction and healthy practice environment

Key Characteristics	Mean	SD	T-test	P-value	95% CI
Communication	2.50	1.074			
&			5.01	0.002	0.7230-1.6770
Mortality outcome	3.70	1.069			
Communication	2.50	1.074			
&			6.11	0.000	0.9705-1.9095
Work performance	3.94	1.035			
Communication	2.50	1.074			
&			6.78	0.000	1.0878-1.9922
Job satisfaction	4.04	0.954			
Communication	2.50	1.074			
&			8.15	0.000	1.3225-2.1775
Healthy practice environment	4.25	0.831			

Table 17B
 Relationship between overall mean coordination domain and patient's outcome,
 healthcare professionals' performance, job satisfaction and healthy practice environment

Key Characteristics	Mean	SD	T-test	P-value	95% CI
Coordination	2.49	1.161			
&			4.85	0.000	0.7132-1.7068
Mortality outcome	3.70	1.069			
Coordination	2.49	1.161			
&			5.90	0.000	0.9604-1.9396
Work performance	3.94	1.035			
Coordination	2.49	1.161			
&			6.52	0.000	1.0770-2.0230
Job satisfaction	4.04	0.954			
Coordination	2.49	1.161			
&			7.80	0.000	1.3106-2.2094
Healthy practice environment	4.25	0.831			

Table 18B
 Relationship between overall mean collaborative practice and patient's outcome,
 healthcare professionals' performance, job satisfaction and healthy practice environment

Key Characteristics	Mean	SD	T-test	P-value	95% CI
Collaborative practice	2.45	1.193			
&			4.94	0.000	0.7458-1.7642
Mortality outcome	3.70	1.069			
Collaborative practice	2.45	1.193			
&			5.97	0.000	0.9928-1.9872
Work performance	3.94	1.035			
Collaborative practice	2.45	1.193			
&			6.58	0.000	1.1092-2.0708
Job satisfaction	4.04	0.954			
Collaborative practice	2.45	1.193			
&			7.83	0.000	1.3423-2.2577
Healthy practice environment	4.25	0.831			

Table 19B
Correlation test analysis a collaborative dimension and organizational outcomes

Key collaboration dimension	Pearson (Product Moment Correlation coefficient) r			
	Patients mortality r (p-value)	Work performance r (p-value)	Job satisfaction r (p-value)	Healthy practice environment r (p-value)
Collaboration:				
Presence of well defined functional interprofessional collaborative team	-0.071(0.662)	-0.218(0.177)	-0.368(0.019)	-0.208(0.198)
Cooperation:				
Interprofessional groups have mutual respect of each others perspectives, opinions and views regarding patient best management protocol	-0.223(0.167)	-0.469(0.002)	-0.366(0.020)	-0.291(0.069)
Participation/Shared decision-making				
Interprofessional team Members are equally and actively involved in decision-making toward team goals and objectives	-0.177(0.292)	-0.248(0.123)	-0.139(0.393)	-0.443(0.004)

Table 20B

Correlation test analysis a collaborative dimension and organizational outcomes

Key collaboration dimension	Pearson (Product Moment Correlation coefficient) r			
	Patients mortality r (p -value)	Work performance r (p -value)	Job satisfaction r (p -value)	Healthy practice environment r (p -value)
Partnership:				
Interprofessional groups have defined roles and responsibilities among members in delivering patient centered healthcare	-0.134(0.411)	-0.440(0.005)	-0.258(0.108)	-0.306(0.055)
Communication:				
Members of interprofessional groups eagerly communicate with each other and gives feedback information in a timely and regular manner	0.323(0.042)	-0.126(0.439)	-0.315(0.048)	-0.181(0.263)
Coordination				
Interprofessional team members coordinate healthcare functions, activities and services to improve patient care	-0.197(0.224)	-0.360(0.023)	-0.283(0.077)	-0.350(0.027)

Table 21B

Chi Square test of association between extent of interprofessional collaboration and organizational implications

Key domains of Collaborative practice	Organizational implications of the extent of collaborative practice				χ^2	<i>P</i>
	Patient mortality		Patient mortality			
	Positive	Negative	Positive	negative		
Collaboration	40	120	111	49	63.213	0.000*
Cooperation	45	115	111	49	54.484	0.000*
Participation/ Shared decision	28	132	111	49	87.622	0.000*
Partnership	63	97	111	49	27.022	0.000*
Communication	37	123	111	49	68.837	0.000*
Coordination	42	118	111	49	59.621	0.000*

Positive=SA + A; Negative= Neutral + SD + D, * Statistically significant

Table 22B
 Chi Square test of association between extent of interprofessional collaboration and
 organizational implications

Key domains of Collaborative practice	Organizational implications of the extent of collaborative practice				χ^2	<i>P</i>
	Work performance		Work performance			
	Positive	Negative	Positive	negative		
Collaboration	40	120	123	37	86.143	0.000*
Cooperation	45	115	123	37	76.241	0.000*
Participation/ Shared decision	28	132	123	37	113.171	0.000*
Partnership	63	97	123	37	46.221	0.000*
Communication	37	123	123	37	92.450	0.000*
Coordination	42	118	123	37	82.093	0.000*

Positive= SA + A, Negative= Neutral + SD + D, * Statistically significant

Table 23B

Chi Square test of association between extent of interprofessional collaboration and organizational implications

Key domains of Collaborative practice	Organizational implications of the extent of collaborative practice				χ^2	<i>P</i>
	Job satisfaction		Job satisfaction			
	Positive	Negative	Positive	Negative		
Collaboration	40	120	121	39	82.06	0.000*
Cooperation	45	115	121	39	72.302	0.000*
Participation/						
Shared decision	28	132	121	39	108.626	0.000*
Partnership	63	97	121	39	43.018	0.000*
Communication	37	123	121	39	88.214	0.000*
Coordination	42	118	121	39	78.040	0.000*

Positive= SA + A, Negative= Neutral + SD + D, * Statistically significant

Table 24B
 Chi Square test of association between extent of interprofessional collaboration and
 organizational implications

Key domains of Collaborative practice	Organizational implications of the extent of collaborative practice				χ^2	<i>P</i>
	Healthy practice environment					
	Positive	Negative	Positive	negative		
Collaboration	40	120	139	21	124.265	0.000*
Cooperation	45	115	139	21	112.992	0.000*
Participation/ Shared decision	28	132	139	21	154.308	0.000*
Partnership	63	97	139	21	77.543	0.000*
Communication	37	123	139	21	131.364	0.000*
Coordination	42	118	139	21	119.674	0.000*

Positive= SA + A, Negative= Neutral + SD + D, * Statistically significant

Table 25B
Reliability Statistics for the composite subscales and dimensions of collaborative practice

Subscale/dimension	Cronbach's alpha based on standardized items	Cronbach's alpha	No of items
Overall scale	0.807	0.759	40
Collaboration	0.809	0.809	40
Cooperation	0.866	0.866	40
Participation/shared Decision-making	0.837	0.837	40
Partnership	0.808	0.810	40
Communication	0.867	0.869	40
Coordination	0.802	0.803	40
Patient outcome experience	0.790	0.802	40
Professionals work performance	0.708	0.698	40
Professionals' job satisfaction	0.749	0.748	40
Healthy practice environment	0.711	0.718	40