5-1-2016

Expanding Interprofessional Learning Opportunities: How Dental Hygiene Administrators And Faculty Perceive Interprofessional Education

Cristina Casa

University of New England

Follow this and additional works at: http://dune.une.edu/theses

Part of the Dental Hygiene Commons, Educational Assessment, Evaluation, and Research Commons, Educational Leadership Commons, Educational Methods Commons, and the Higher Education Commons

© 2016 Cristina Casa

Preferred Citation
Casa, Cristina, 'Expanding Interprofessional Learning Opportunities: How Dental Hygiene Administrators And Faculty Perceive Interprofessional Education' (2016). All Theses And Dissertations. 54.

http://dune.une.edu/theses/54

This Dissertation is brought to you for free and open access by the Theses and Dissertations at DUNE: DigitalUNE. It has been accepted for inclusion in All Theses And Dissertations by an authorized administrator of DUNE: DigitalUNE. For more information, please contact bkenyon@une.edu.
EXPANDING INTERPROFESSIONAL LEARNING OPPORTUNITIES:
HOW DENTAL HYGIENE ADMINISTRATORS AND FACULTY PERCEIVE
INTERPROFESSIONAL EDUCATION

By
Cristina Casa

AS (Farmingdale State College of New York) 2007
BS (Farmingdale State College of New York) 2008
MS (State University of New York Institute of Technology) 2011

A DISSERTATION
Presented to the Affiliated Faculty of
The College of Graduate and Professional Studies at the University of New England
In Partial Fulfillment of Requirements
For the Degree of Doctor of Education

Portland & Biddeford, Maine

May, 2016
EXPANDING INTERPROFESSIONAL LEARNING OPPORTUNITIES:
HOW DENTAL HYGIENE ADMINISTRATORS AND FACULTY PERCEIVE
INTERPROFESSIONAL EDUCATION

Abstract

The health care system has undergone transformation, implementing an interprofessional
approach to patient care. Professionals have formed collaborative practice groups that effectively
respond to the intricacies of today’s medical industry. Dental hygienists are underemployed in
these teams. This has a direct effect on dental hygiene academia because education is the basis
for practice. Interprofessional education (IPE) has been proposed as the strategy to adequately
address this issue; however, many dental hygiene programs do not focus on shared teaching and
learning.

This mixed methodology study documented the perspectives of dental hygiene
administrators and faculty at higher education institutions in the Northeast region of the United
States about the value of IPE within dental hygiene curricula. An electronic survey and a focus
group interview were utilized to obtain data. Descriptive statistics suggest that administrators and
faculty favor interprofessional pedagogy. Inferential statistics demonstrate and elucidate a
significant correlation between positive convictions towards IPE and one’s understanding of it,
as well as the extent to which this educational methodology is applied. Emergent qualitative
themes reinforced and explicited quantitative findings. Exposure to collaborative education
heightens the recognition of its worth. The sentiments of dental hygiene leaders prove to be in
alignment with the aspiration to expand interprofessional practices. Implementation will
effectively prepare dental hygiene students to become a part of modern health care groups, ultimately benefitting patients. This study supports the inclusion of IPE in dental hygiene curricula as a strategy to improve professional, student, and community needs.

*Keywords:* interprofessional education, dental hygienist, collaborative practice, dental hygiene education
University of New England

Doctor of Education
Educational Leadership

This dissertation was presented
by

Cristina Casa

It was presented on
April 11, 2016
and approved by:

Carey Clark, Ph.D
Lead Advisor
University of New England

John Lustig, Ed.D
Secondary Advisor
University of New England

Maureen Tsokris, Ed.D
Affiliated Committee Member
Farmingdale State College of New York
ACKNOWLEDGEMENTS

There are several people I would like to dedicate this dissertation to.

To each one of my parents, Mom, Dad, Lary, and Louise: I am beyond grateful for your love and support. You have taught me the importance of hard work and perseverance. Thank you for always believing in me.

To my siblings, Angelo and Gina: I am so appreciative of the special bond that we share. I could not have done this without you.

To my other half, Craig: thank you for encouraging me to advance my education and for being proud of my accomplishments. Your sense of humor has kept me smiling throughout this entire process. I am so fortunate to have you in my life.

To my dissertation committee, Dr. Clark, Dr. Lustig, and Dr. Tsokris, for your patience, guidance, and constant availability during this entire doctoral journey. Thank you for sharing your expertise and holding me to the highest standards.

Last but certainly not least, to my family and my friends, who have been my cheerleaders and a great support system since day one.
TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION ................................................................................................................1
  Statement of the Problem ................................................................................................................3
  Purpose of the Study ........................................................................................................................4
  Research Questions ..........................................................................................................................4
  Conceptual Framework ....................................................................................................................5
  Assumptions, Limitations, and Scope ..............................................................................................6
  Significance .......................................................................................................................................7
  Definitions of Terms ........................................................................................................................9
  Conclusion ........................................................................................................................................11

CHAPTER 2 REVIEW OF THE LITERATURE .......................................................................................13
  The Context of Interprofessional Education (IPE) ........................................................................14
    The origin of interprofessional education ..................................................................................15
    The role of interprofessional education ....................................................................................16
  Health Care Reform ........................................................................................................................18
    The evolution of interprofessional education ............................................................................18
    Motivating frameworks and theories .......................................................................................20
    The influence of interprofessional education ...........................................................................22
    Studies of current interprofessional education models ............................................................23
    Associated challenges of interprofessional education ...............................................................26
  Administration, Faculty, and Interprofessional Education .............................................................26
    Educational environment ............................................................................................................27
Administrative and faculty attitudes ................................................................. 28
Risks and benefits .............................................................................................. 30
Faculty barriers ................................................................................................. 31
Professional development .................................................................................. 32
The Connection between Dental Hygiene and Interprofessional Education ......... 33
Dental hygiene: A lacking component ............................................................... 35
Perceptions of dental hygienists ....................................................................... 36
A call for action .................................................................................................... 37
Conceptual Framework ....................................................................................... 40
Conclusion .......................................................................................................... 42
CHAPTER 3 METHODOLOGY ............................................................................... 44
Setting .................................................................................................................. 46
Participants/Sample ............................................................................................. 47
Stakeholders ........................................................................................................ 48
Data Collection ..................................................................................................... 49
Data Analysis ........................................................................................................ 52
Participant Rights ................................................................................................ 54
Potential Limitations and Biases ........................................................................ 55
Pilot Study ............................................................................................................. 56
Conclusion .......................................................................................................... 56
CHAPTER 4 RESULTS ......................................................................................... 58
Participant Demographics ................................................................................ 59
Analysis Method .................................................................................................. 60
LIST OF TABLES

Table 4.1: Demographic Information of Survey Participants .............................................59
Table 4.2: Demographic Information of Focus Group Participants ....................................60
Table 4.3: Summary on Mean Scores of Attitudinal Scales ...............................................64
Table 4.4: Spearman’s rho Correlation Coefficient Matrix ...............................................68
Table 4.5: Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale
   Item 1 ..................................................................................................................................70
Table 4.6: Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale
   Item 4 ..................................................................................................................................71
Table 4.7: Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale
   Item 8 ..................................................................................................................................72
Table 4.8: Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale
   Item 9 ..................................................................................................................................73
Table 4.9: Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale
   Item 10 .................................................................................................................................74
Table 4.10: Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale
   Item 12 .................................................................................................................................75
Table 4.11: Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale
   Item 13 .................................................................................................................................76
Table 4.12: Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the
   Academic Setting Scale Item 4 ............................................................................................77
Table 4.13: Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 5 .................................................................78
Table 4.14: Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 7 ........................................................................79
Table 4.15: Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 9 ........................................................................81
Table 4.16: Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 10 ........................................................................82
Table 4.17: Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 11 ........................................................................83
Table 4.18: Summary of Emergent Themes Linked to Literature Review Themes ..............84
Table C.1: Attitudes towards Interprofessional Education .........................................................133
Table C.2: Attitudes towards Interprofessional Learning in the Academic Setting ...............134
LIST OF FIGURES

Figure 4.1: Bar chart of factors explaining perspectives towards IPE........................................67
CHAPTER 1
INTRODUCTION

Collaborative practice is a health care movement that centers on the implementation of a team approach to patient care. The notion of joint treatment developed in part due to an increase in the prevalence of chronic illnesses, a shortage of practitioners, and the complexity of the modern health care system (Croker, Trede, & Higgs, 2012). Recognition of these problems has encouraged medical workers to join forces in an attempt to better comprehend patient conditions. Collaborative practice is defined as various health care individuals, with diverse areas of professional expertise, working together with patients, families, and communities to deliver high quality services (World Health Organization [WHO], 2010). This framework specifically aims to achieve health goals, fortify medical systems, and enhance well-being outcomes (WHO, 2010).

Over time, it is expected that interprofessional practice will continue to advance, requiring professionals to collaborate. Given the issues confronting today’s health care industry, teamwork among medical providers is crucial because it allows for comprehensive treatment and improved outcomes (Interprofessional Education Collaborative Expert Panel, 2011). One of the current challenges in medicine is the strong relationship between oral and systemic health. Because of this correlation, as well as a paradigm shift from uniprofessional to multiprofessional practice, dental hygienists should be trained using an interprofessional approach. Moore (2015) emphasized this by focusing on the need to bridge the gap between dentistry and other medical specializations.

Interprofessional education (IPE) is a teaching strategy that enables students from diverse disciplines to work alongside one another to foster learning and knowledge exchange. It supports
opportunities for collaborative practice, which is why there is such a strong demand for health science institutions to incorporate this teaching method within curricula.

Dental hygienists are clinicians who provide oral health services to diverse patient populations. Their primary role entails the assessment, diagnosis, implementation, evaluation, and documentation of care provided to improve and control oral diseases, positioning them to contribute invaluable knowledge to collaborative practice teams (American Dental Hygienists’ Association [ADHA], 2015b). However, there is minimal interprofessional learning opportunities within allied dental programs (Brame, Mitchell, Wilder, & Sams, 2015). The ADHA recognizes the magnitude of this problem, which is why it has created a transformative vision to advance dental hygiene education (ADHA, 2015c; Battrell, Lynch, Steinbach, Bessner, & Snyder, 2014). It includes the urgent need for dental hygiene academia to create experiences focused on connectivity, IPE, and the generation of health care teams that are as complex as the populations they will treat (Battrell et al., 2014).

Transformative efforts are needed to create a connection between education and health systems across curricula (Institute of Medicine [IOM], 2015). Value added outcomes realized through IPE allow students to develop high-quality thinking in regard to patient care, improve their team working skills, and enhance their collaborative abilities (Neocleous, 2014). Interprofessional learning begins with administrators and educators, which is why dental hygiene professionals that assume these roles are charged with generating and facilitating strategic plans to introduce IPE. Curran, Sharpe, and Forristal (2007) found that administrator and faculty attitudes are a primary factor in the adoption and execution of joint initiatives. Because educators’ perspectives influence advancement, it is beneficial to conduct research to attain a thorough understanding of their beliefs about IPE.
The intent of this study was to identify and understand dental hygiene administrator and faculty sentiments about the value of IPE within curricula. Results can be used in the educational environment “...to best prepare dental hygienists to serve the health and wellness needs of society by transforming the way dental hygiene graduates are prepared for the future” (ADHA, 2015c, p. 3). Findings can lead to change efforts that are in alignment with the ADHA’s vision for dental hygiene academia. Educators can utilize these results to fuse general medicine and dentistry in modern practice. This will increase the number of dental hygienists that are well prepared to enter the collaborative practice workforce, which in turn will improve patient outcomes and the quality of care provided.

**Statement of the Problem**

With the rise of collaborative practice, health science academia faces the responsibility of preparing students to enter this workforce. IPE is proposed as the solution to adequately meet this demand (WHO, 2010). The scope of the problem is that dental hygienists are underemployed in collaborative practice groups, which may be attributed to the fact that many allied dental programs do not focus on IPE (ADHA, 2015c; Brame et al., 2015; Swanson & Jaecks, 2009).

Administrators and faculty are accountable for the development and facilitation of IPE action strategies. However, these parties are the source of key challenges that threaten the success of initiatives, such as a lack of perceived value and commitment for this pedagogical method (Interprofessional Education Collaborative Expert Panel, 2011; VanderWielen, Vanderbilt, Dumke, Do, & Isringhausen, 2014). Viewpoints are the leading predictor of the desire to participate in IPE (Lash, Barnett, Parekh, Shieh, & Louie, 2014). Researchers recommend conducting more studies that touch on the perceptions of faculty and staff to encourage discussion and create opportunities for the development of interprofessional programs.
(Graybeal, Long, Scalise-Smith, & Zeibig, 2010). Assessment of attitudinal elements can result in transformation of behavior and policy (Loversidge & Demb, 2014). Analysis of the sentiments of dental hygiene administrators and faculty are appropriate because collaboration begins with them, and their perspectives influence efforts. There is minimal research that addresses their attitudes. Exploring convictions can offer a descriptive needs assessment, which can be utilized as the basis for future transformative plans.

**Purpose of the Study**

The purpose of this mixed methodology study was to document the perspectives of dental hygiene administrators and faculty at higher education institutions in the Northeast region of the United States about the value of IPE within dental hygiene curricula. The manner in which their attitudes influence their use of this pedagogical method was investigated. In addition, this study explored the reasons behind their reported feelings to offer a knowledge base that can be used in IPE implementation. Furthermore, relating attitudes to emergent themes was useful in identifying specific preparatory needs for transformative plans.

In an attempt to maintain its relevance in a health care field that implements a collaborative approach to patient care, dental hygiene education has been called to adopt IPE (ADHA, 2015c; Battrell et al., 2014). As a result, dental hygiene administrators and educators need to design interprofessional learning environments. This study achieved a concrete understanding of their perspectives in order to move towards the implementation of IPE.

**Research Questions**

The main research question guiding this study is as follows: *What are the attitudes of dental hygiene administrators and faculty towards IPE?* Related research questions are the following:
1. How do attitudes influence the utilization of IPE within dental hygiene curricula?

2. What is the basis for attitudes towards IPE?

3. How are these attitudes related to leadership support, knowledge and skill set, risks and benefits, training, professionalism, and perceived barriers?

Leadership attitudes that are in alignment with the aims of IPE objectives are requisite for initiating interprofessional strategic plans (Alfano, 2012). Brame et al. (2015) proposed that the absence of supportive perspectives could impede advancement, demonstrating the need to identify these viewpoints. It is important to understand the capacity to which feelings impact behaviors because successful IPE initiatives only occur with the commitment of administrators and faculty (Bridges et al., 2011). Documenting the perspectives about the value of IPE within dental hygiene curricula offers the information required to attain a comprehensive needs assessment for transformative efforts geared towards enhancing knowledge, skill sets, and positive views (Buring, Bhushan, Brazeau, Conway, and Hansen, 2009; Hall & Zierler, 2015).

**Conceptual Framework**

Social psychology and complexity theories assist in explaining the proposed argument that the attitudes of dental hygiene administrators and faculty must be examined in order to facilitate the adoption of IPE. Structural, organizational, and cultural changes are to be expected when developing projects. Social psychology theory suggests that societal structure, atmosphere, and intellectual processes are active and affect one another vigorously (Sargeant, 2009). This theory illuminates how subjective inference affects behaviors and attitudes. Additionally, it facilitates the discovery of factors that influence thoughts and beliefs.

Social psychology theory has given rise to the concepts of social identity and professionalism. Social identity describes the way in which individuals perceive themselves
(Sargeant, 2009). Professionalism reveals one’s feelings towards individuals from different professions (Sargeant, 2009). Understanding self-views and judgments of others facilitates the understanding of beliefs that support or oppose interprofessional teaching and learning.

 Complexity theory suggests that composite structures involve interaction among multiple components, resulting in emergent behaviors (Sargeant, 2009). This theory reinforces the assessment of perceptions related to the dynamic system of IPE. Exploring attitudes through this lens is useful in comprehending how administrators and faculty correspond to the intricacies of this pedagogical method.

 Without dental hygiene administrators and faculty embracing IPE, a paradigm shift from learning in silos to multidisciplinary processes will not be possible. Therefore, administrator and faculty barriers must be overcome. Because interprofessional opportunities begin with these leaders, their attitudes and the factors influencing their perspectives must be studied (Delnat, 2012; Loversidge & Demb, 2014).

**Assumptions, Limitations, and Scope**

It is assumed that research participants precisely construed all questions included on the questionnaire. It is further presumed that survey and focus group questions were answered in a frank and reflective fashion. Honest responses increase the accuracy of results. However, the reliability of the data is limited because it is self-reported. Curran et al. (2007) granted permission for use of the *Attitudes towards Interprofessional Education* subscale adapted from an instrument originally developed by Parsell and Bligh (1999), as well as the *Attitudes towards Interprofessional Learning in the Academic Setting* subscale adapted from an instrument originally developed by Gardner, Chamberlin, Heestan, and Stowe (2002). The primary tool from which the *Attitudes towards Interprofessional Education* subscale was adopted has “high
content validity” as well as an internal consistency of 0.9, making it “acceptable” (Parsell & Bligh, 1999, p. 99). The initial tool from which the *Attitudes towards Interprofessional Learning in the Academic Setting* was adopted has been tested for validity by a team of expert panels; “Three associate deans, each representing the various disciplines, and an expert from AHC formed the expert panel” for validating the instrument content (Gardner et al., 2002, p. 181).

Limitations of the study include the sampling unit being restricted to the Northeast region of the U.S., excluding states from other areas. Assessing a population that is strictly located within the Northeast prevents findings from being generalized to all U.S. dental hygiene programs. In addition, the qualitative portion of this study is limited to the responses of four faculty members. Therefore, the qualitative data are not representative of all dental hygiene educators. This study is restricted to dental hygiene and is therefore not reflective of all health science disciplines. Participation in the study was voluntary; this means that not all administrators and faculty members chose to complete the survey and take part in the focus group, which influenced the sample size. Participant attitudes and the basis for them reported during the focus group interview had the potential to be influenced by the responses of others.

The researcher’s passion and favorability towards IPE was also a concern. Conscious care and attention was made throughout the entire study to avoid bias. Personal attitudes were not disclosed at any point during the study to avoid influencing participants in any manner.

**Significance**

Health science education is responsible for efficiently preparing students to be high-functioning members of today’s interprofessional workforce (Interprofessional Education Collaborative Expert Panel, 2011). To meet the demands put forward, training must transition from a siloed to a multidisciplinary approach. IPE is proposed as the means for doing this. It has
been reported that diverse professions are at various developmental stages of integrating shared teaching and learning within existing curricula (Interprofessional Education Collaborative Expert Panel, 2011). Dental hygiene is a component that is specifically lacking in collaborative health care teams (ADHA, 2015c; Swanson Jaecks, 2009). Health science educators do not always welcome IPE; in fact, administrative and faculty attitudes are a primary barrier to it (Brame et al., 2015). Because this resistance has been an acknowledged issue specifically in regard to dental hygiene, a transformative vision with a focus on interprofessional pedagogy has been developed to advance the credibility of the profession (Battrell et al., 2014).

Bridges et al. (2011) detailed three best practice models of IPE; a main component of each infrastructure is high-level commitment and involvement from departmental leaders and educators. Development and execution begins with these individuals, which is why exploring dental hygiene administrator and faculty attitudes could lead to positive transformation.

The rationale for this study emanates from the researcher’s desire to promote collaborative pedagogy within dental hygiene education. To date, there is some research reporting on the sentiments of administrators and faculty towards IPE; however, these studies are not reflective of dental hygiene. This research includes studies conducted by Delnat (2012), Lash et al. (2014), and Loversidge and Demb (2014). Delnat examined the attitudes of administrators and faculty towards interprofessional education to identify elements affecting implementation. Findings reveal that discipline does not influence attitudes, but experience does. It was recommended that future studies should explore the factors influencing beliefs to create transformative plans focused on needs (Delnat, 2012). Lash et al. studied the differences in perceptions towards IPE among health science faculty members at one university. Data indicate that more training is warranted to expand interprofessional opportunities. Researchers have
suggested assessing the factors affecting faculty feelings in order to advance initiatives (Lash et al., 2014). Loversidge and Demb conducted a qualitative study assessing nursing and medical faculty perceptions of key elements in IPE. Results reveal that educators and administrators should make interdisciplinary pedagogy a priority, encourage collaboration between departments, and foster faculty engagement (Loversidge & Demb, 2014). Loversidge and Demb recommended further research exploring “...attitudinal and institutional factors underpinning fundamental change toward IPE” (p. 7).

Buring et al. (2009) highlighted methods for successfully implementing IPE within curricula and suggested that an environmental and faculty needs assessment must be completed prior to the development of strategic plans. Building off of previous research, this study allows for a needs assessment to be completed. It is based on an exploration of beliefs expressed by participants. Understanding the feelings of those expected to lead these transformative initiatives assists in creating a solid foundation for change. Furthermore, this study focused on dental hygiene administrators and faculty members, which is a population that has been minimally studied. Information gained can be used to generate interprofessional teaching and learning opportunities, overcome attitudinal barriers, increase IPE acceptance levels, and assist dental hygiene academia in remaining relevant in an ever-changing health care field. Increased understanding of attitudes can be used to make the ADHA’s transformative vision a reality.

**Definitions of Terms**

For the purposes of this study, the following key terms have been defined:

- *American Dental Hygienists’ Association (ADHA):* The national association for dental hygienists that is committed to assisting dental hygienists in achieving their maximum
potential, improving the public’s oral health, and fostering dental hygiene education (ADHA, 2015a).

- **Attitude**: A feeling or way of thinking that influences one’s behavior (Attitude, Merriam-Webster, n.d.).

- **Collaborative practice**: When health care providers from different professions work together to deliver shared care that is patient, family, and/or community centered. Collaborative practice requires high-level engagement, a detailed understanding of the roles and responsibilities of other health care providers, and interprofessional skills to provide the highest standard of care to patients (Greer & Clay, 2010).

- **Collaborative practice ready health worker**: “Someone who has learned to work in an interprofessional team and is competent to do so” (WHO, 2010, p. 7).

- **Commission on Dental Accreditation (CODA)**: The accrediting body for dental hygiene academic programs that is committed to serving the public through the creation and administration of standards that promote the continuous improvement of these programs (CODA, 2015).

- **Complexity theory**: Refers to a complex system comprised of dynamic parts (health team, health system, and environment) (Sargeant, 2009). IPE is viewed as a complex system because its infrastructure includes institutional elements and various components of health care systems.

- **Cooperative practice**: When professionals in health care environments communicate with each other to deliver care (Greer & Clay, 2010). This is different than collaborative practice because it does not require engagement, connectivity, and teamwork.
- **Dental hygienist:** A health care provider responsible for “...assessing, diagnosing, planning, implementing, evaluating and documenting treatment for prevention, intervention and control of oral diseases” (ADHA, 2015b, para. 3).

- **Health and education systems:** “All the organizations, people and actions whose primary intent is to promote, restore or maintain health and facilitate learning, respectively” (WHO, 2010, p. 13).

- **Interprofessional education:** Experiences through which students from diverse professions learn about, from, and alongside each other to enhance collaboration and the standard of care (Grant et al., 2011).

- **Professionalism:** The views one professional possesses towards professionals from alternative disciplines, with specific regard to the value of their professional roles (Sargeant, 2009).

- **Silo:** A department or system that functions in isolation from others (Silo, 2015).

- **Social identity:** The way in which an individual perceives themselves within a group (Sargeant, 2009).

- **Social psychology theory:** A theory that explores how situational factors influence one’s actions and behaviors (Sargeant, 2009).

**Conclusion**

Chapter 1 has clearly introduced and emphasized the focus of the study. A concise statement of the problem has been provided, as well as a description of the purpose, which clarifies the relationship between the circumstance and the investigation. Research questions, grounded in theory, as well as the literature have been outlined and will be used to guide the study. Assumptions and limitations have been described in addition to a concrete rationalization
for the research. Definitions of key terms have been provided to clarify terminology that will be present throughout the remainder of the text.

To continue this process of inquiry and attain the objectives of this study, Chapter 2, Review of the Literature, explains relevant studies, as well as the convictions and theories they present. Following Chapter 2 will be Chapter 3: Methodology, detailing all components of the research design, which are grounded in the study’s conceptual framework and used to discover dental hygiene administrator and faculty attitudes towards IPE. Following Chapter 3 is Chapter 4: Results, which explains the data interpretation and presents results, linking them to the purpose of the study and the problem statement. Chapter 5: Conclusion relates results to the field of dental hygiene and the literature in addition to providing recommendations for future research.
CHAPTER 2
REVIEW OF THE LITERATURE

The days of uniprofessional medical practice are in jeopardy of coming to an end due to the rise of an interprofessional health care system that implements a collaborative approach to patient care. The increasing number of complex health issues, as well as shortages in providers, plague today’s medical system (Chan, Lam, & Lam Yeung, 2013). This transition has directly affected health science academia. It is the responsibility of educational programs to efficiently prepare students to enter a collaborative workforce upon graduating; IPE is proposed as the key to such measures (WHO, 2010).

IPE is an appropriate and effective technique to address the problems presented by the current medical system. The advantages of this learning style benefit students, practitioners, and patients. The educational training of health science students has drastically fallen behind the expectations of the workforce they will enter (Interprofessional Education Collaborative Expert Panel, 2011). IPE provides learners with fundamental tools so that they are capable of being high-functioning members of collaborative teams, therefore impacting the practitioners of the future. Because of this interconnectedness, patients will receive optimal treatment, leading to the achievement of desired health outcomes. Overall, IPE allows for collaborative practice, which enhances treatment, thereby improving wellbeing (WHO, 2010).

The aim of this integrative literature review is to offer a detailed description of the context of IPE. Topics to be covered include the circumstances that form the setting and development of interprofessional efforts and the significance of this learning style. Evidence will display how the evolution of health care has created a sense of urgency for the integration of
joint teaching and learning. Motivating frameworks will be elaborated upon in order to describe the progression of IPE, the theories in which it is embedded, and the desired outcomes of this educational typology.

Barriers to IPE will be highlighted in order to identify impediments to integration. The existing literature suggests a need to further investigate administrator and faculty perspectives associated with this learning style; these viewpoints have been identified as a hindrance to the practice and success of interprofessional strategies (Brame et al., 2015).

A parallel between IPE and dental hygiene academia will be described, identifying dental hygienists as the missing component in interprofessional teams. Absent information will serve as evidence for future studies. The literature substantiates the need for additional research in order to attain a thorough understanding of the perceptions of dental hygiene administrators and faculty; evaluations will reflect how these attitudes support or oppose the adoption of interprofessional initiatives in addition to uncover the foundation of these viewpoints (Delnat, 2012). There is a need to comprehend knowledge and feelings to foster discussion and create opportunities for the development of IPE (Evans, Henderson, & Johnson, 2012).

The Context of Interprofessional Education (IPE)

IPE is described as experiences in which multiple professions learn about, from, and alongside each other to enhance collaboration and standards of care (Grant et al., 2011). The literature indicates an expansion in the aging population, an increase in the prevalence of chronic illness, heightened oral health disparities, a strong relationship between oral and systemic conditions, and deficits in medical provision. All of these elements are contributing factors that have led to a call for action in health education reform. This has created a sense of urgency for
academia to integrate IPE into curricula because it is perceived as a viable solution to numerous health challenges (WHO, 2010).

The origin of interprofessional education. IPE began prior to the 1900s in regions outside of the U.S. During this time, mission hospitals in India sent collaborative teams consisting of physicians, nurses, and medical assistants to communities where access to care was limited (Royer, 1978). Furthermore, the Dawson Report (1920) indicated that interprofessional care was alive and well in areas such as Great Britain, where team practice and health centers were used as the primary means to treat those in the military. Models such as these ignited a reaction; people soon acknowledged their effectiveness. Sidney Kark was inspired to adopt paralleling models in South Africa and Israel to provide community medical services (Kark, 1951).

Within the U.S., the idea of IPE has been in existence since the early 1900s and can be ascribed to Cherkasky, Cabot, Silver, Deisher and Baldwin (Baldwin, 2007); although each of these individuals presented a slightly different conception, the basis of a team-centered approach is common to all of their perspectives (Delnat, 2012). Cherkasky is responsible for the generation of modern-day interdisciplinary teams (Baldwin, 2007). He made great attempts to provide home care to patients throughout the local community; in fact, “...in 1948 he developed a hospital outreach program which employed teams of physicians, social workers, and nurses” (Balwdin, 2007, p. 23). Cabot was also praised for his efforts at the Massachusetts General Hospital, where he raised awareness about team care within the hospital’s outpatient unit (Baldwin, 2007). Cabot’s work influenced others who continued to make strides towards a joint approach to patient care.
Shortly after Cherkasky and Cabot’s endeavors followed those of Silver, Deisher, and Baldwin. Using new ideas centered on collaborative practice, Silver brought physicians, nurses, and social workers together to take part in the Family Health Maintenance Demonstration Project. The main objective being to implement a team approach that focused on the wellbeing of families (Baldwin, 2007). Similarly, Deisher and Baldwin were working on their own project at the University of Washington’s Child Health Center, in which an interdisciplinary faculty and student group focused on the educational experience of working collectively. “This may have been one of the first experiments with true interdisciplinary faculty interaction and role modeling of health team care together with concurrent interdisciplinary student experience” (Baldwin, 2007, pp. 24–25).

Throughout the mid-1900s, Brown, Royer, and Lewin built on the original ideology to propose new theories of IPE. Baldwin (2007) categorized the development from the 1940s to the present in terms of seven phases. Phase I describes interprofessional clinical outreach and education, phase II revolves around clinical treatment, phase III fosters IPE, giving rise to theories on team training, phase IV focuses on interdisciplinary groups to treat veterans, phase V promotes an ongoing initiative in an effort to build on student collaboration, phase VI demonstrates a demand for health profession students to join forces, and phase VII (representative of today) involves the expanding enthusiasm to use shared pedagogy because it produces quality sets in education and practice (Baldwin, 2007).

The role of interprofessional education. IPE is a learning style that fosters teamwork-working skills, effective communication, shared goals, and comprehension of the roles and responsibilities of various professionals (Greer & Clay, 2010). The current health care workforce is said to be collaborative-practice ready, which has a direct effect on the education system; it is
the responsibility of this system to tailor curricula objectives to meet demands. The primary role of IPE is to adequately prepare students to participate in team-structured practice. Greer and Clay (2010) suggested that collaborative practice groups are a step in moving medical systems from disintegration to a position of power.

Walsh, Gordon, Marshall, Wilson, and Hunt (2005) introduced the concept of interprofessional capability as the degree to which one gives their attention to a task, modifies behavior, and conceptualizes knowledge from experience to continually better performance. This capability can be obtained through exposure to collaborative pedagogy, in which learning guides students to acquire skills. Efficacious IPE will enable them to take a multidimensional approach to practice. To meet the medical needs of a wide array of patient populations, IPE teaches students to join forces, compelling a transition towards a team-based workflow. This strategic learning style positively influences the maturity and growth of learners while cultivating their knowledge of each other’s professional obligations (Nelson et al., 2014).

IPE is the starting point for the synergic approach implemented by collaborative health care teams. It serves as the infrastructure required for professionals to meet patient demands (Vanderbilt, Isringhausen, & Bonwell, 2013). Medical authorities are strongly requesting collective strategies that address the need for interventions that foster optimal wellbeing (Grant et al., 2011).

Greer and Clay (2010) acknowledged that teamwork is present among medical professionals, which is a reflection of cooperative practice; however, interprofessional application concentrates on collaborative approaches over cooperative because of an increased degree of interaction, which includes an appreciation and understanding of the diverse contributions of each profession. To achieve unity, practice and exposure are crucial. Successful
IPE introduces intentional learning to cover all characteristics of an interconnected environment. Interchange of and engagement in learning across professional cultures can reduce impediments to communication and collaboration (Bainbridge, 2009). There is a distinction between learning with others and banding together with others; IPE is illustrative of the latter.

IPE must follow a top-down model. An institutional framework should offer guidance to administrators, which in turn can support faculty in embracing this pedagogy. Without leadership support, achieving established objectives associated with collaborative practice is impossible (Bridges et al., 2011).

**Health Care Reform**

Today's U.S. medical system has undergone a drastic transformation; there are many factors that are moving it towards an increased demand for interprofessional collaboration. There is a shortage of primary care providers, the aging population is rapidly rising, there is an increased prevalence of chronic disease, and the Affordable Care Act has expanded access to care. All of these elements have shifted the basis of health care, causing a transition from a uniprofessional to a multiprofessional approach and necessitating a remodeling of the health science education system.

**The evolution of interprofessional education.** Instruction and training are required to adequately prepare health care professionals to engage in multidisciplinary teams (Thistlethwaite et al., 2014). Educational standards and competencies must be central to current practices. IPE sheds light on a new way of teaching and learning, calling for education to be interactive both in and outside of the classroom. The days of learning in silos are coming to an end with the increasing expectance that health science students should be competent in collaborative practice.
Institutions need to produce students that are proficient in current applications. The medical system is evolving, and academia must adapt.

In 2002, at the Institute of Medicine Health Profession Education Summit, action strategies were presented as a method of revamping educational arrangements to coincide with present and future health care networks (IOM, 2003). A central vision was developed for the training of medical professionals. It entails the creation and implementation of interdisciplinary groups to offer patient-centered care, with an emphasis on evidence-based practice and strengthening the overall approach to treatment (IOM, 2003). The intentions of this initiative were to confront the fact that this vision is “...not incorporated into the basic fabric of health professions education,” and thus failing to meet the demands of today’s medical system (IOM, 2003, p. 3). Therefore, academia is charged with reforming teaching and learning practices to satisfy cultural changes. IPE is a system fix, expected to confront the problems that are occurring “...in the hands of health professionals, highly dedicated to doing a good job but working within a system that does not adequately prepare them, or support them once they are in practice” (IOM, 2003, pp. 2–3).

IPE has been blossoming over time and should not be viewed as a fad, but as a new type of education that will continue to mature. Speculation has brought forth the conception that it will soon be a required standard established by all accrediting bodies. Graybeal, Long, Scalise-Smith, and Zeibig (2010) lent support to this argument by discussing the vital need for higher education to transition from individual profession-based curricula to a multifarious atmosphere. Numerous accrediting bodies have already proved this speculation to be true by requiring institutions to ensure that students are competent in collaborative care. For example, CODA (2013) has integrated objectives for dental hygiene education programs; standard 2-15 states that
dental hygiene graduates must be competent in interprofessional skills so that they can efficiently communicate with various populations and health care professionals. This fact is further highlighted by a study conducted by Zorek and Raehl (2012) that assessed the accreditation directives for professional academic programs in the U.S. Currently, nursing, dentistry, medicine, occupational therapy, pharmacy, physical therapy, physician’s assistant, and public health programs all have IPE standards that must be met (Zorek & Raehl, 2012).

Motivating frameworks and theories. IPE frameworks are all based on activities that promote learning between students from diverse disciplines. Each presents the roles and responsibilities of independent professions to develop common competencies, resulting in interprofessional abilities to respond to a changing health care environment. Frameworks can guide the evolution of scholastic models that can be methodologically executed and assessed (Mann et al., 2009). They are based on theories that inform our understanding in addition to promoting the development of initiatives (Sargeant, 2009).

One of the primary frameworks outlined by the Interprofessional Collaborative Expert Panel (2011) focused on actions driven by leaders, educators, and policymakers that lead to successful education transformation. The future health care system can be fortified by encouraging IPE that deconstructs professional isolation while improving the participation needed for effective teamwork (Frenk et al., 2010). Numerous theories have proved to be beneficial in presenting the influencing factors behind the attitudes experienced by these leaders and educators.

Sargeant (2009) detailed social psychology and complexity theories to inform the substance, argument, and processes of IPE. Social psychology is applicable in this context; the situational factors affecting behaviors and subjective inferences influencing actions must be
examined. In addition, principles of social psychology indicate that societal structure, atmosphere, and intellectual processes are active and affect one another vigorously (Sargeant, 2009). The adoption of IPE yields structural, organizational, and cultural changes. Investigating how conditions impact administrators and faculty will assist in understanding whether there is a connection between IPE status and attitudes. Social psychology theory can lend support to specifying the factors behind thoughts and beliefs.

Stemming from social psychology are the theories of social identity and professionalism. Prior research has indicated that faculty attitudes can be a threat to IPE due to academic elitism (Hoffman & Redman-Bentley, 2012). Social identity theory assists in explaining how individuals regard and connect with others (Sargeant, 2009). It can clarify how attitudes and self-perception can be influenced by the environment (Thomas-Gregory, 2014). Professionalism views individuals within a specific discipline as a socialized group sharing values and goals (Sargeant, 2009). Divergent professions do not always appreciate each other’s roles, forming prejudgments based on previous experiences (Neocleous, 2014). Social identity theory facilitates the understanding of professionals’ level of familiarity with the roles of others, which can reveal how attitudes affect the adoption of learning within a social atmosphere (Sanders, 2003).

The health care system has evolved into a dynamic network of interaction and engagement, which responds to system behavior and system change (Grol, Bosch, Hulscher, Eccles, & Wensing, 2007; Sargeant, 2009). Complexity theory suggests that composite structures involve interaction among multiple components resulting in emergent behaviors, which should be considered in the adoption and facilitation of IPE (Sargeant, 2009). Interprofessional frameworks are constructed of micro, meso, and macro factors that can best be viewed through a complexity lens because of the numerous parts that encompass each. This theory lends support to
assessing how individual, instructional, and organizational aspects collectively associated with shared teaching and learning affect administrator and faculty attitudes (Silver & Leslie, 2009). Furthermore, it can elucidate adjustments being made as a result of multidisciplinary learning. The world and practice of IPE is a dynamic network; application of complexity theory enables administrator and faculty sentiments to be assessed to better understand how they correspond to associated actions. It is possible to comprehend a transformative system by alluding to its variance, structure, and development (Hean, Craddock, Hammick, & Hammick, 2012).

The influence of interprofessional education. IPE has a favorable influence on student learning outcomes and the quality of patient care. Duley, Fitzpatrick, Zornosa, and Barnes (2012) discussed how those participating in interprofessional learning attain a thorough understanding of divergent professions, establish communication and team working skills, and develop an appreciation for the interconnections within the health care delivery system. Theories deriving from IPE suggest that shared learning can be beneficial in the classroom, but it truly dominates when it is applied to experiential activities. Reflection, collaborative practice, and problem-based cooperative education are all contributing factors in enhancing student outcomes. Chan et al. (2013) offered factual information regarding how learners who are involved in IPE perceive their synergistic abilities; the four trending themes are role clarification and enhancement, evolving role emphasis, understanding the importance of various communications in teamwork, and being more responsive to joint efforts. Results revealed that after participating in IPE programs, students from different disciplines had a heightened understanding of the roles and responsibilities of each profession, recognized that their own limitations may be strengths for others, identified communication as an integral component in connectivity, and associated experiential learning with increased knowledge.
Engel and Prentice (2013) explained that improving conditions in the health care system is the key objective of collaborative practice. This theory is predicated by the notion that a joint approach will offer patients the highest quality of care. By institutions preparing their students to be a part of an integrative team, they are fostering services that are patient centered, establish shared goals among providers, and optimize collaborative efficiency in delivering the highest standard of care.

**Studies of current interprofessional education models.** IPE is flourishing; in fact, numerous institutions that have adopted it early on have made great strides in the enhancement and maturation of their models. The literature highlights and discusses the interprofessional designs that have been embraced by various health science programs to educate their students. The majority affect the entire curriculum and embody comprehensive structures and processes.

Reviewing successful models is beneficial because they serve as a framework for administrators and faculty to construct favorably operating multiprofessional groups concentrated on improving treatment effectiveness and productivity (VanderWielen et al., 2014). Examination of designs reveals factors essential for operation. Each version described serves as an excellent example of why the guidance and involvement of administration and faculty is warranted in interprofessional initiatives.

The University of New England has developed and implemented a large-scale IPE model among the health profession programs from five disciplines to foster a collaborative environment in which students are compelled to work with each other to accomplish optimal relationship-centered care and medical outcomes. It encompasses nine credits and is dispersed over a two-year curriculum. The intent is to produce individuals that are capable of employing discipline-specific practices in addition to engaging in collaborative tasks (Pardue, 2013). Four courses
present detailed information and learning experiences focused on the roles of the diverse members of a medical team, effective communication, team-work, evidence-based practice, collaborative analysis, and ethics. Faculty from different disciplines teaches these courses (Pardue, 2013).

VanderWielen et al. (2014) commendably portrayed the Inter Health Professionals Alliance (IHPA) that was enacted at Virginia Commonwealth University (VCU), and can be reproduced by any institution. The IHPA consists of learners ranging in profession in addition to level of education. It was implemented by a student-led organization and is comprised of a system of interrelated parts: knowledge and skill set, perceived value, institutional support, multidimensional approach to health, interprofessional teamwork, and IPE and collaboration around a common goal. Each component was designed with the intent of promoting the success of IPE and confronting barriers head-on. “During health outreach events, each health profession contributes discipline specific knowledge, while recognizing shared knowledge and skills” (VanderWielen et al., 2014, p. 107). Participation enriches students’ role clarity, taking them one step closer to a more effective way of operating in teams upon entering the workforce (VanderWielen et al., 2014). Although a student organization is responsible for application, implementation of this project would not have been possible without the support and leadership of the academic institution, administrators, and faculty (VanderWielen et al., 2014). Faculty and administrators lead through example by demonstrating IPE skills, behaviors, and cognitive processes, enabling students to adopt similar practices. The framework offered creates an ideal picture for the necessity of their engagement, vouching for the need for attitudinal exploration of these parties.
In addition, the Center for Health Sciences Interprofessional Education (CHSIE) at the University of Washington highlights the importance of administrator and faculty support (Bridges et al., 2011). The CHSIE was developed to incorporate enhanced teaching, research, and professional activities among six health science schools by means of IPE. Through this program, students are awarded the luxury of working alongside multiple disciplines in and outside of the classroom. Committed faculty guide them to develop a respect for others, increase their knowledge of the roles of diverse health care professionals, and learn effective collaboration and problem-solving skills. Staff and faculty are responsible for developing the infrastructure that connects the different schools (Bridges et al., 2011). A joint approach is taken by faculty and students to determine topics that are worthy of study and innovative projects that enhance learning. Bridges et al. (2011) acknowledged the critical role administrators and faculty play in this model, substantiating the need to investigate the perceptions of those who are facing similar situations.

Olenick et al. (2011) introduced and described the first regional model of IPE in the United States developed by the Commonwealth Medical College located in Scranton, Pennsylvania. It differs from others in its multisite, distributive approach. A high number of administrators and faculty are dedicated to directing 17 undergraduate and postgraduate health science programs from various institutions engaging in IPE through activities surrounding simulation, patient care, collaboration, and leadership. The goal is to guide ambitious individuals to perform services implementing patient-based practices that encourage innovation through the utilization of advanced methodologies (Olenick et al., 2011). The formation and implementation is centered on learning objectives that are divided into four levels and disseminated over a four-year curriculum. These objectives were established to promote socialization among students and
professionals, to develop an understanding of the roles of others, and to influence collaborative practice competencies (Olenick, 2011). The explored framework demonstrates an interprofessional model operating on a large scale.

**Associated challenges of interprofessional education.** The literature suggests that the challenges plaguing the implementation of interprofessional pedagogy are failure in comprehending terms, resistance, time logistics, and lack of efficacious evaluation. Reeves et al. (2011) stated that although there has been attention to IPE, failure to conceptualize associated terminology can hinder progression. Versatility and readiness are necessary for integration; if resistance is experienced, interprofessional learning will not be successful (Grant et al., 2011). Time impedes the progression of collective application due to the variability of educational programs. It is extremely challenging to find equivalent availability in students’ and faculty’s hectic schedules, making it difficult to incorporate shared teaching and learning into already chaotic curricula. Evaluation proposes another dilemma because currently no measurement tool exists to evaluate IPE initiatives (Greer & Clay, 2010). The lack of an effective means to ensure the success of IPE-related actions impedes willingness to move in this direction.

**Administration, Faculty, and Interprofessional Education**

Leadership is a crucial aspect of institutions that have successfully implemented IPE initiatives; one of the primary challenges threatening the success of such plans is a lack of directorship (Interprofessional Education Collaborative Expert Panel, 2011). For interprofessional programs to succeed, administrative reinforcement is required because of its role in establishing the necessary infrastructure. Administrators and faculty are accountable for the development and facilitation of action strategies. Lack of support and assistance obstruct implementation (Brame et al., 2015; VanderWielen et al., 2014). Efforts are restricted if
organizing parties do not recognize the importance of multidisciplinary learning. Changes must take place at the institutional level in order for joint actions to be achieved by diverse academic departments (Pfiefl & Earnest, 2014). Successful transformation across disciplines requires dedication from academic employees, collective learning, and commitment to collaboration (Lattuca, 2002).

Experienced faculty with the expertise, skills, and appropriate perspectives are required to teach and model interprofessional behaviors; however, this necessity presents a problem (Becker, Hanyok, & Walton-Moss, 2014). The majority of health science faculty members were trained prior to the emergence of IPE; thus, a great deal of insight has been built upon these professions operating in silos (Becker et al., 2014). The way in which they were taught greatly influences their attitudes and teaching methodologies. IPE calls for administrators and faculty to move beyond previous experiences, and embrace change. Students will be able to learn alongside professionals from other disciplines when their leaders model this behavior.

Administrative reinforcement is essential to providing a clear and compelling vision for an educational paradigm transition: unidisciplinary to multidisciplinary education (Muller, Jain, Loeser, & Irby, 2008). Administrators and faculty must interact with the idea of interdisciplinarity and have confidence in their vision in order to convey their dedication (Smith & Clouder, 2010).

**Educational environment.** Refining and regenerating academic programs and processes requires individuals that are comfortable with interprofessional practices (Sanders, 2003). A fruitful teaching and learning environment can only be established with the backing of supportive administrators and faculty. Connectedness between these entities will influence the educational atmosphere, thereby impacting learning. Negativity in the viewpoints of these parties
has the potential to affect the acceptance of collaboration endeavors (Loversidge & Demb, 2014). Creating conditions in which students can excel is the responsibility of administrators and faculty. Therefore, further investigation on the connection between their feelings and IPE can enhance learners’ surroundings.

**Administrative and faculty attitudes.** Many administrators and faculty members are being asked to assume an unfamiliar role in guiding and delivering interprofessional initiatives; the majority harbor feelings and hesitations that leave them ill-equipped to confront the challenges presented by this new, innovative pedagogy. Their attitudes obstruct flourishing IPE efforts within academic institutions (Curran et al., 2007). Therefore, the positive and negative views of these individuals influence the level of movement towards collaborative teaching and learning.

Brame et al. (2015) indicated that faculty feelings can hinder favorability. If educators do not believe in the goal of IPE, it is likely that students will observe this and adopt similar attitudes. Leadership perceptions that are in alignment with the intent of objectives are vital to fostering interprofessional opportunities (Alfano, 2012). The Association of Academic Health Centers acknowledged the importance of positive perspectives among faculty from various disciplines in reinforcing implementation efforts (Rafter et al., 2006). Bennett et al. (2013) suggested that negativity is worthy of further investigation to allow forward movement.

Although attitudes towards IPE have recently received increased attention, some research does exist, dating to over a decade ago, that can be used as a baseline measurement for perspectives. Gardner et al. (2002) conducted a national study assessing the insights of administrators at professional institutions across the United States towards IPE. Research findings revealed that administrators from nursing, medicine, and pharmacy possess positive
viewpoints. However, levels of positivity varied between genders and across disciplines. Females tended to favor IPE more than males. Additionally, administrators from nursing and pharmacy were more supportive than those from medicine. Gardner et al. was concerned that those with a higher level of approving feelings were more apt to complete the survey, failing to identify and analyze uninterested perspectives. Further research is warranted to identify differences in attitudes among disciplines, to identify trends in beliefs, and to analyze a greater number of both positive and negative views (Gardner et al., 2002).

Similar to the research carried out by Gardner et al. (2002) is that of Curran, Deacon, and Fleet (2005). Curran et al. examined the attitudes towards IPE of the administrators of health education programs in Canada. Analyzed data suggested a general positive perception towards IPE and that insights did not vary according to disciplines. Results “...suggest a high level of support amongst Canadian academic administrators towards the concept and principles of interdisciplinary health care teams, the efficiency and productivity of teamwork and the value of teamwork in the provision of patient-centred care” (Curran et al., 2005, p. 85). Although the overall consensus of participant answers was favorable, concerns were raised. Response rates were higher for some programs than others, potentially indicating that supporters of IPE were more inclined to participate in the survey (Curran et al., 2005). In addition, this study, as well as that of Gardner et al., focused solely on administrators, excluding faculty who are also primary determinants for successful IPE initiatives. “It is important to have a better understanding of the nature of faculty attitudes and the role of faculty development in promoting and fostering positive attitudes towards interdisciplinary education amongst faculty in health professional education” (Curran et al., 2005, p. 85).
Building off of previous research, Curran et al. (2007) carried out a study to identify specific qualities of faculty members from nursing, pharmacy, medicine, and social work relating to standpoints towards IPE. Results revealed that medicine faculty possessed significantly more negative attitudes than those from nursing. In addition, females and faculty with interprofessional experience expressed more positivity than males and those with no acquaintance with collaborative pedagogy.

Studies exploring administrator and faculty attitudes towards IPE are increasingly common. This may be because of the currently emphasized push for the adoption of interprofessional practices within health science academic programs. It is important to continue to analyze the viewpoints of administrators and faculty members to determine whether changes in feelings have occurred, to identify similarities and differences, to understand the reasons underlying professionals’ perspectives, and to create transformative plans focused on the basis of beliefs.

**Risks and benefits.** Understanding the risks and benefits that administrators and faculty are exposed to through their involvement with IPE can be useful in explaining different perspectives. Those who invest in interprofessional education may encounter personal and professional risks. When it is pursued, individuals must devote a great deal of time outside their discipline to acquire the knowledge necessary to promote this learning style. The dedication and time spent fostering these changes can result in lost professional opportunities and advancement for those involved (Pfiefe & Earnest, 2014). With the acceptance of IPE, administrative and institutional frameworks must change in order to create common ground to advance joint efforts. While laying down the groundwork to establish commonalties, new policies, and innovative practices, administrators and faculty collaborate with others outside of their department, which
often means interacting with professionals external to one’s career network. Unfortunately, this results in the appreciation of individuals that are not in any position to reward one’s hard work (Pfieffe & Earnest, 2014). Successful efforts will also compete with in-discipline educational programs that are often chosen over IPE programs because of higher degrees of familiarity and lower risk (Pfieffe & Earnest, 2014).

Although risks are unappealing, those who engage in IPE efforts are in a position to benefit. Administrators and faculty are rewarded the luxury of acting as transformative agents, leading their institutions to innovative teaching and learning experiences. They can also change the health outcomes of patient populations and influence future medical practitioners (Pfieffe & Earnest, 2014). Furthermore, through interaction with other disciplines, future opportunities for growth and development are created (Neocleous, 2014; Pfieffe & Earnest, 2014).

**Faculty barriers.** Despite advocacy for IPE, higher education’s dedication to and acceptance of it continues to fluctuate (Bennett et al., 2011). Bennett et al. (2011) described leadership, curriculum, costs, and minimal health outcome verification as faculty barriers related to a lack of interprofessional promotion. Neocleous (2014) contributed to this argument by identifying professional stereotyping as an additional roadblock. In the absence of executive leadership, faculty is reluctant to engage in IPE projects; Evans et al. (2012) displayed that the lack of advocacy from leadership prevents progress.

The curriculum of every discipline varies. Each must adhere to the standards and timetables put forward by their program (Neocleous, 2014). Budgeting also presents a problem. For costs to be manageable, resources must be shared between departments (Neocleous, 2014). A lack of evidence of favorable patient outcomes decreases faculty buy-in (Bennett et al., 2011). Some members display bias towards their colleagues from other professions because of past
experiences or inadequate knowledge regarding roles (Neocleous, 2014). Such ignorance can lead to resistance and hinder progression. Faculty who are against the integration of IPE pose a threat to those who are willing to adopt it; this ultimately leads to a failure to build relationships (Loversidge & Demb, 2014).

**Professional development.** A large number of health care administrators and educators have minimal exposure to and training in IPE, contributing to the lack of promotion and engagement by those in leadership roles (Hall & Zierler, 2015). Unfamiliarity can be a direct cause of negative perceptions towards this learning style. Educators may not possess the knowledge, attitudes, and skill set required to implement interprofessional teaching and learning (Silver & Leslie, 2009); however, to actualize successful initiatives, they must be provided with information that will shape positive standpoints (Steinart, 2005). Faculty development, specifically geared towards enhancing understanding and facilitation skills, has been identified as a key component in supporting IPE projects (Hall & Zierler, 2015). Professional development can assist in transforming administrative and faculty attitudes, potentially increasing buy-in levels. Training and guidance can increase leadership proficiency, preparing faculty to apply learned skills.

Development of effective training calls for academic administrators and faculty to come together to recreate traditional education practices, often opposed by institutional and attitudinal resistance (Sanders, 2003). For attempts to be achievable, they must be representative of interprofessional principles. Attaining connectivity requires administrators and faculty to be engaged and invested in shared values and goals, which can be fostered through developmental programs. Research indicates that emphasis on experiential learning, generation of a structure that fits the context, having efforts guided by joint competencies, and the promotion of ongoing
learning through reflection are all advantageous strategies that promote engagement (Hall & Zierler, 2015).

Professional development is an important aspect of successful projects. If administrators and faculty are well versed in interprofessional skills, they will be confident in their execution abilities (Interprofessional Education Collaborative Expert Panel, 2011).

**The Connection between Dental Hygiene and Interprofessional Education**

The literature describes an increase in the aging population, a rise in the prevalence of chronic illness, heightened oral health disparities, a strong relationship between oral and systemic health, and deficits in medical provision (Bowser, Sivahop, & Glicken, 2013; Chan et al., 2013). Additionally, there is a lack of access to oral health care in the U.S. among underserved populations, those who are uninsured, and low-income communities (Vanderbilt et al., 2013). All of the aforementioned elements are contributing factors that have led to a call for action in health education reform, specifically dental hygiene.

In the U.S., oral health disparities have been a longstanding issue, which was brought to the forefront by the Surgeon General’s report from 2000. “This report makes it abundantly clear that there are profound and consequential disparities in the oral health of our citizens” (US Department of Health and Human Services, 2000, Preface section, para. 2). To confront oral disease and bring all Americans to a state of wellbeing, medical professions are charged with working together. The report outlined various opportunities to decrease oral health disparities and disease, one being interprofessional practice (US Department of Health and Human Services, 2000).

In 2011, the Institute of Medicine released two reports: *Advancing Oral Health in America* and *Improving Access to Oral Health Care for Vulnerable and Underserved*
Populations; they discussed the current oral health status in the U.S., advocated for dental care to reduce oral health disparities, and emphasized the need for oral health services to be provided in numerous medical environments by expanding collaborative and multidisciplinary approaches to delivering treatment (Bowser et al., 2013). “All Americans can benefit from the development of a National Oral Health Plan to improve quality of life and eliminate health disparities by facilitating collaborations among individuals, health care providers, communities, and policymakers at all levels of society and by taking advantage of existing initiatives” (US Department of Health and Human Services, 2000, A Framework for Action section, para. 1).

The literature reveals disparities and diseases in oral health as an age-old issue. This has created a longstanding interest in collaborative care, bolstering the need to move IPE forward. Therefore, dental hygienists should be one of the primary components in medical teams due to their role as key oral health care providers.

Battrell et al. (2014) did an exemplary job of detailing the importance of advancing educational opportunities in dental hygiene, which will allow the profession to stay relevant in a consistently changing health care system. In order to accommodate community needs and the evolution of medicine, dental hygiene academia must transform (Battrell et al., 2014). In September, 2013, the ADHA, the ADHA Institute for Oral Health, and the Santa Fe Group held a conference, “Transforming Dental Hygiene Education: Proud Past, Unlimited Future,” to develop various initiatives to maintain the relevance of the profession. At this forum, one of the reemerging themes was IPE (Battrell et al., 2014). Interprofessional pedagogy will serve the profession well in its educational reconstruction efforts because it is in alignment with many of the ADHA’s plans for the future. They include: heightened services offered by interdisciplinary
teams, the increasing incorporation of oral health into alternative therapeutic provision, and the need to provide care to patients with complex medical issues (Battrell et al., 2014).

The need to create collaborative learning environments has been a constant for many years. “Interprofessional education enables effective collaborative practice which in turn optimizes health-services, strengthens health systems and improves health outcomes” (WHO, 2010, p. 18).

**Dental hygiene: A lacking component.** Research suggests that there is a demand for increased communication between medical and dental professionals that is attributed to the linkage between oral and systemic conditions. Dental hygienists are identified as one of the primary providers that are absent from interprofessional teams, yet are in demand (ADHA, 2015c). They are underemployed in collaborative groups, and the employment that does exist has not been thoroughly assessed (Swanson Jaecks, 2009). Poirier and Wilhelm (2014) examined an IPE faculty seminar in which pharmacy, nursing, dental, and medical faculty was invited to participate; the involvement level of those from the dental school was extremely low. Currently, many allied dental programs do not accentuate interprofessional strategies within existing curricula, restricting shared learning opportunities (ADHA, 2015c; Brame et al., 2015). Findings from an international scan conducted by the World Health Organization Study Group on Interprofessional Education and Collaborative Practice revealed types of students receiving IPE from academic programs. Dental hygiene was not a listed category among these learners; however, it can be assumed that this discipline falls under the category “other,” making up only 6.7% of the population assessed (WHO, 2010). If collaboration among different groups of health care students increases, evidence indicates that this will contribute to future providers that are primed to enter multidisciplinary environments.
A national survey was conducted in 2007 to assess the views of dental hygiene program directors. Results indicated that 99% of them strongly believe that the demand for the incorporation of dental hygienists within collaborative practice will increase because of the correlation between oral and systemic health (Swanson Jaecks, 2009). Currently, a large number of dental hygiene programs are educating students to be part of a team consisting of the dentist(s) and dental hygienist(s). In fact, in January, 2015, a New York State collaborative practice law went into effect. This law “…enables a dental hygienist working in Article 28 facilities under NYS Public Health Law to have collaborative arrangements with a dentist who has a formal relationship with that facility” (Dental Hygienists’ Association of the State of New York, n.d., Collaborative Practice Legislation section, para. 1). To advance, the profession should attempt to find collaborators outside the field of dentistry (Fried, 2013).

Because dental hygienists are a frequently missing element of collaborative teams, academia should modify their curricula to teach students how to effectively communicate with health care professionals in order to adequately prepare them for the interdisciplinary workforce. For them to be competent members of interprofessional teams, their educational qualifications must be satisfactory (Vanderbilt et al., 2013). Although a small number of dental hygiene institutions are implementing IPE within curricula, such creativity is not always embraced (Alfano, 2012). According to the literature, dental hygiene academia should transform to adequately train students to be collaborative-practice ready.

**Perceptions of dental hygienists.** The literature suggests that health care providers should be more aware of the scope of each other’s practice. Wilder (2013) discussed the fact that dental hygienists would benefit from being exposed to IPE; this can be attributed to their expressed concern and desire to increase their understanding of the roles of others. Dental
hygiene students do not view their profession as an integral element in collaborative teams because they are not exposed to collective health care during their educational journey (Duley et al., 2012). They also report being unfamiliar with the roles of other medical students and professionals (Brame et al., 2015).

Due to a lack of IPE, dental hygienists may not possess the ability to effectively interact with other professionals regarding patient care. In fact, some believe that they do not have enough knowledge of systemic diseases and feel their communication skills can be improved (Bell, Phillips, Paquette, Offenbacher, & Wilder, 2012; Duley et al., 2012). They perceive their multidisciplinary experience as insufficient and report feelings of uncertainty regarding their position in collaborative teams (Bell et al., 2012). As a result of the changing health care system and the fact that the dental hygienist’s professional role is largely communicative, having progressive relations through schooling would be ideal (Vannah, McComas, Taverna, Hicks, & Wright, 2014). The perceptions expressed by dental hygienists appear to be the result of unavailable interprofessional learning opportunities.

**A call for action.** The Surgeon General’s Report from 2000 initiated a national call for action to reduce oral health disparities and improve patient quality of life; its vision was to develop and facilitate crucial professional partnerships that improve dental conditions and diseases (Bowser et al., 2013). Health science academia can respond to this call by integrating IPE within programs that will assist in fostering future professionals who are primed to address the challenges of today’s medical system. “Advanced education and training within interprofessional teams will prepare dental hygienists to better fulfill these needs” (ADHA, 2015c, p. 14). IPE is also said to meet the needs of current students who desire collaborative educational experiences and connectivity (Blue & Henson, 2015). Educators should actively
respond to the demands presented in the medical environment by restructuring curriculum in an attempt to move health care forward. Administrators and faculty have a responsibility to provide vital opportunities because the “...transformation of dental hygiene education begins with” them (ADHA, 2015c, p. 18).

Greer and Clay (2010) stated that a “…shortage of 4.3 million health workers has unanimously been recognized as a critical barrier to achieving the health-related Millennium Development Goals” (p. 224). Wilder et al. (2008) also identified limited access to oral care, the rise of chronic disease, an increase in the aging population, and a heightened realization of the correlation between systemic and oral conditions as variables that have ignited and intensified the exploration of IPE. This style of learning presents an efficient, viable solution for the shortage of medical providers and other concerns by meeting demands while increasing limited assets. Specifically, the involvement of dental hygiene enhances favorable results for patients, students, and faculty, contributing to a comprehensive health care network (Vanderbilt et al., 2013). For this solution to be achievable, learners must be informed through schooling to be equipped to work in collaborative teams. There is a need for dental hygiene administrators and educators to interact with colleagues from other disciplines to produce the practitioners that today’s workforce requires to confront oral health care disparities and medically compromised patients. “Since education is the foundation of any profession, the envisioned future of the dental hygiene profession will depend on the transformation of the educational preparation required to better prepare dental hygienists to practice within the integrated health care delivery structure and impact the public’s oral and overall health” (ADHA, 2015c, p. 17).

Dental hygiene departments, programs, and curricula must be thoroughly assessed to address missing elements. Wilder et al. (2008) pointed out the possibility for academic dentistry
to be left behind if intensive attempts are not made to integrate IPE into curricula. Dental hygiene falls under the category of academic dentistry because it is an allied dental program; therefore, these leaders and teachers must increase their familiarity with interprofessional learning to foster willingness to move in this direction; the credibility of the profession is at risk. Evidence displays that educators’ resistance to reform is directly influenced by negativity; therefore, understanding these feelings will facilitate the implementation of IPE (Sanders, 2003). Dental hygienists have the opportunity to be primary team members of collaborative care, but they are not educated on the fundamentals of this approach to patient treatment. Administrative devotion to faculty involvement is vital (Loversidge & Demb, 2014). If the insights of leaders are assessed and explained, action plans can be enacted to address the underlying causes of opposition and foster optimism. Viewpoints are the leading predictor of administrator and faculty desire to participate in IPE (Lash et al., 2014).

If health care reform demands a new era of learning, then academia is compelled to rise to the occasion. The World Health Organization (2010) has specifically addressed medical educators in their report, Framework for Action on Interprofessional Education and Collaborative Practice, calling for those in scholastic positions to embed multidisciplinary teaching and learning within all areas of delivered services. To effectively meet this request, research on dental hygiene administrator and faculty perceptions would be helpful. Lash et al. (2014) conducted a study exploring osteopathic medicine, physician’s assistant, and pharmacy faculty member attitudes, but the researchers highly recommend assessing the insights of those from other disciplines as well, which provides the rational for the present study. The lack of existing research assessing dental hygiene administrator and faculty sentiments towards IPE also justifies this investigation.
**Conceptual Framework**

The 21\textsuperscript{st} century health care industry has experienced a transition from uniprofessional practice to a multiprofessional approach to enhance the quality and delivery of patient treatment in addition to confronting the overwhelming issues that plague today’s medical system (Brame et al., 2015; VanderWielen et al., 2014). Now that collaboration and teamwork has been embraced, there is a need for health science academia to adequately prepare students to participate in integrative teams. The solution offered to scholastic programs is IPE. By learning to work interprofessionally, it is expected that individuals will be ready to join collaborative practice groups (WHO, 2010).

Although IPE appears to be a viable answer for health science institutions, offering a multitude of benefits that will meet the demands of today’s workforce, many impediments exist, including challenges put forward by administrators and faculty (Interprofessional Education Collaborative Expert Panel, 2011; VanderWielen et al., 2014). Until these barriers are overcome, it will be difficult to include IPE in academic programs. Furthermore, evidence indicates that dental hygiene is largely absent from interdisciplinary teams (Swanson-Jaecks, 2009), and many allied dental programs do not integrate shared teaching and learning into curricula (Brame et al., 2015). As a dental hygiene educator, this problem resonates with me; striving to confront this hurdle can generate interprofessional opportunities, guiding students to multidisciplinary pedagogy. Therefore, the literature supports the need to assess how dental hygiene administrative and faculty attitudes influence the integration of IPE within educational programs.

Social psychology and complexity theories assist in explaining and supporting the proposed argument. Social psychology theory takes into account how situational factors impact behavior (Sargeant, 2009). It also attempts to figure out if and how actions can be more
accurately anticipated (Sargeant, 2009). The circumstances in which administrators and faculty find themselves affect their thoughts, feelings, and behaviors. Studying how situational and subjective factors influence them will aid in better understanding how perceptions impact the incorporation of IPE within curricula. Social psychology theory will serve as a guide for examining the reasoning behind subjects’ cognitive processes.

Health science administrators and educators are called to adopt IPE, in which social identity and professionalism frequently emerge. Social identity theory is useful in explaining how individuals perceive and relate to others (Sargeant, 2009). Analyzing attitudes through the lens of professionalism will reveal whether viewpoints demonstrate competitiveness and/or bias towards other disciplines. In order for IPE to advance, it is important to recognize whether one’s professional identity influences their insights about collaborative learning.

Complexity theory supports research by incorporating references to diversity, self-organization, and emergence in order to make sense of an adaptive system (Hean et al., 2012). Interprofessional curricula can best be viewed through an intricate lens, which is ideal for evaluating unpredictable perceptions and revealing the development of feelings and behavior. This allows increased understanding of how and why dental hygiene administrators and faculty possess specific viewpoints towards the dynamic system of IPE. In addition, it can assist in explaining how they are adapting to health care reform and how they are coping with the uncertainties presented by an innovative style of learning. Viewing attitudes from a complexity perspective will provide a means for understanding and analyzing skepticism, if present (Anfara & Mertz, 2006).

Bridges et al. (2011) highlighted three best practice models of IPE; administrative support and the importance of committed faculty are detailed in each as integral components of
successful efforts. Because interprofessional opportunities begin with administrators and faculty, scholars recommend future study of their attitudes and the causes of their beliefs (Delnat, 2012; Loversidge & Demb, 2014). Assessing the perceptions of these individuals will reveal how their viewpoints support or oppose the adoption of IPE initiatives.

Conclusion

It is apparent that more attention should be paid to interprofessional learning in order to advance health science education, particularly within the field of dental hygiene. Administrators and faculty are the key to successfully integrating IPE within curricula. McLeod (2014) pointed out that attitudes influence behavior; therefore, administrator and faculty perspectives may greatly impact the adoption levels of interprofessional pedagogy.

The literature reveals that the following themes may be associated with the attitudinal challenges faced by administrators and educators in the development of IPE initiatives: risks and benefits, lack of knowledge, barriers (including resistance, stereotyping, time logistics, lack of evaluation tools, lack of comfort level in teaching outside one’s department, and power struggles), minimal training, and low levels of leadership support. Making consistent progress requires the incorporation of recommendations from previously conducted studies.

Research recommends conducting studies that touch on the knowledge, feelings, and perceptions of faculty and staff to foster discussion and create opportunities to develop IPE programs (Graybeal et al., 2010). Hoffman and Redman-Bantley (2012) discussed the comprehension of faculty attitudes to highlight the need for professional development. One of the primary methods to develop and successfully implement IPE initiatives is to understand the feelings of those directing these projects. Delnat (2012) proposed future inquiries into the factors influencing faculty and administrative attitudes towards collaborative education.
If attitudes and associated causes are understood, measures can be taken to develop strategic plans to overcome negativity and enhance positivity, leading to the adoption of IPE. If this occurs, dental hygiene may no longer be the missing component of interprofessional teams. By examining administrator and faculty attitudes, transformation can take place at institutional and individual levels. If research displays a commonality in reported perspectives, barriers hindering the acceptance of IPE can be confronted, leading to more dental hygiene institutions joining health care reform efforts.
CHAPTER 3  
METHODOLOGY  

When selecting the appropriate research methodology for a study, multiple factors must be taken into consideration, including the problem under investigation, the purpose, and the conceptual framework (Roberts, 2010). The following chapter demonstrates and supports the application of a mixed methodology approach to identifying attitudes towards interprofessional education, as well as elucidates the associated causes of these viewpoints. Collected and analyzed data are expected to provide a solid knowledge base, centered on administrator and faculty needs, which can serve as the building blocks to IPE implementation. If perspectives are better understood, then measures (such as professional development) can be utilized to focus attention on confronting issues and fortifying support for interprofessional pedagogy.

A mixed methodology approach was implemented to explore the following research questions: (a) what are the attitudes of dental hygiene administrators and faculty towards IPE? (b) How do attitudes influence the utilization of IPE within dental hygiene curricula? (c) What is the basis for attitudes towards IPE? (d) How are these attitudes related to leadership support, knowledge and skill set, risks and benefits, training, professionalism, and perceived barriers?

By implementing a mixed methodology approach to collect and analyze data, attitudes towards the complex system of IPE were quantitatively measured and related to a qualitative description of causes. Delnat (2012) utilized a quantitative/qualitative model that encompassed a descriptive design, as well as a subjective exploration, to examine attitudes. By utilizing descriptive and inferential statistics, she was able to identify standpoints; however, the qualitative data collected were limited because of the use of one open-ended question. Delnat
recommended that future inquiries focus on identifying the causes of relevant perspectives, which can be accomplished through focus group interviews. Additionally, Lash et al. (2014) utilized a survey to assess perceived benefits and challenges among faculty towards the implementation of IPE. Although quantitative data were beneficial in providing descriptive results, it could not be used to explain the reasons for reported perceptions (Lash et al., 2014). Loversidge and Demb (2014) suggested that a qualitative approach to assess insights is advantageous in identifying themes and clarifying participants’ feelings.

The mixed methodology design of this study is therefore supported by the literature. A quantitative approach was needed to identify attitudes, and a qualitative method was suitable to gain insight into these feelings. Descriptive statistics were used to present perspectives and the factors that best explain them. Inferential statistics were used to detect and describe correlations between sentiments and variables, such as knowledge about interprofessional pedagogy and its use. Qualitative facts were used to draw connections between the data, themes presented in the literature, and patterns disclosed in the findings. Additionally, it provided an in-depth explanation of factors influencing positions. This methodology allowed for data to be assessed through a social psychology lens, drawing connections between participants’ reasoning and viewpoints. Identification of these relationships enhanced the understanding of how convictions impact the utilization of IPE. Social identity and professionalism served as frameworks for clarifying the rationale behind attitudes. Furthermore, the application of complexity theory assisted in explaining how dental hygiene administrators and faculty are adapting to health care in the 21st century.
Setting

Because dental hygiene administrators and faculty are employed at a variety of higher education institutions, the setting for the study did not focus on a single site. In addition, the problems addressed affect dental hygiene education in a manner that extends far beyond one college. For the purposes of this study, the research setting therefore consisted of multiple higher education institutions that include dental hygiene programs located within the Northeast region of the United States. This was appropriate because it allowed for a significant sample size. Because dental hygiene is generally lacking in interprofessional teams, it was only logical to investigate multiple sites so that results were based on a substantial sampling unit. A wide-range of participants provided diversity, which enhanced outcomes. Studying one educational establishment would have restricted findings and thus failed to address the scope of the problem.

Currently, there are 47 dental hygiene programs located within the Northeast region. Although this seems like a great deal, the faculty of these departments generally vary in size, ranging from three to nine members. Taking into consideration that full survey participation was unlikely, thus decreasing the response rate, contacting all programs was necessary to obtain an adequate sampling population.

Internet links to the websites of each program are available on the American Dental Hygienists’ Association web page. The researcher used the contact information provided to get in touch with each program director in an attempt to obtain email addresses for all administrators and faculty within the departments. When the chair could not be contacted, the available email addresses of faculty members were obtained directly from the program’s website. The compiled email addresses were used to send participants the URL link to the informed consent form and survey. Utilizing a survey was appropriate because it helped identify and measure the attitudes of
individuals, was practical in correlational research, and offered convenience for reaching a geographically dispersed population (Creswell, 2012). Additionally, the researcher selected four dental hygiene administrators and faculty to take part in a focus group so that qualitative data could be gathered. This proved to be useful for understanding the insights of specific people and collecting information on those who possess similar traits (Creswell, 2012).

Because multiple dental hygiene programs were included in the study, the researcher did not have any relationship to the majority of the participants. The only connection was to those from the researcher’s employing site. However, this did not present a problem because every effort was made not to discuss personal views on IPE in order to avoid bias. In addition, the survey was distributed via the Internet and was anonymous, so data could not be tracked to any individual respondent.

**Participants/Sample**

To be eligible to participate in the study, individuals needed to meet certain specifications. All participants had to be administrators or faculty members within a dental hygiene program at a higher education institution located within the Northeast region of the United States. Both men and women were invited to take part. In general, there are a larger number of dental hygiene faculty members than administrators. Therefore, a sizable portion of those asked to join was faculty.

Variations in terms of professional experience in higher education and knowledge level about IPE were also anticipated. Administrators and faculty with experience of less than one year, two to five years, six to ten years, 15 to 20 years, and more than 20 years were all welcomed to partake in the study. Differences in terms of insight about higher education were expected to provide diversified perspectives, yielding rich data. Education levels, varying from
novice to expert, were desired to identify similar or contrasting attitudes in relation to the understanding of IPE.

Qualified individuals from a large number of institutions were invited to partake in the study for the following reasons: (a) a single dental hygiene department is limited in number of administrators and faculty members, restricting data collection and results, and (b) IPE not being included within current dental hygiene curricula is a problem among many programs, not just one in particular (Battrell et al., 2014; ADHA, 2015c). To gain access to participants spread out over the Northeast, the contact information for each department provided via the American Dental Hygienists’ Association website was used.

**Stakeholders**

Weiss (2006, p. 474) defined stakeholders as entities that possess “…some stake in the quality of outcomes” of transformation. Stakeholders in this study include the ADHA, higher education institutions, and dental hygiene programs including administrators, faculty members, and students, as well as patients. The ADHA has recently published *Transforming Dental Hygiene Education and the Profession for the 21st Century*, a national paper focusing on how to most efficiently prepare dental hygiene students through curricula focused on IPE, accreditation, collaborations, and state practice acts (ADHA, 2015c). The study yields results that may bring dental hygiene education closer to adopting interprofessional transformative plans. Higher education institutions and the dental hygiene programs they encompass can benefit from stronger initiatives to foster shared teaching and learning. “Since education is the foundation of any profession, the envisioned future of the dental hygiene profession will depend on the transformation of the educational preparation required to better prepare dental hygienists to
practice within the integrated health care delivery structure and impact the public’s oral and overall health” (ADHA, 2015c, p. 17).

In addition, identifying and understanding attitudes can help administrators attain concrete evidence, which can be used to develop effective strategic plans. Buring et al. (2009) highlighted assessment tactics as one of the primary elements of successful development and implementation of interdisciplinary initiatives. The transformation of dental hygiene education begins with administrators and faculty who are committed to integrating interprofessional pedagogy into curricula (ADHA, 2015c). Understanding and documenting the perspectives of individuals responsible for execution is useful in creating fundamental change centered on collaboration. Students and patients are also considered stakeholders. The generation of IPE opportunities can promote learning and improve patient outcomes (Interprofessional Education Collaborative Expert Panel, 2011).

**Data Collection**

Once Institutional Review Board (IRB) and committee approval were obtained, all dental hygiene program directors were contacted via electronic mail to compile a list of the email addresses of all administrators and faculty members within their departments. This represented snowball sampling because departmental leaders identified others to become members of the study’s sampling unit (Creswell, 2012). When chairmen/women could not be reached, the researcher obtained the available e-mail addresses of faculty members directly from the programs’ websites. These were used to distribute the URL link for the cover letter, informed consent, and survey (refer to Appendixes A, B, and C). Furthermore, various directors and faculty were contacted to inquire about their willingness to participate in a focus group. A combination of convenience and purposeful sampling was used to select those that were ready
and available to engage as well as provide useful, rich information (Creswell, 2012). Qualifying parties were contacted until four administrators and/or faculty members agreed to take part.

Prior to engagement in the study, participants read the informed consent form (refer to Appendixes B and D). Their willingness to voluntarily participate was indicated by completing the survey and signing the informed consent before partaking in the focus group. To ensure that there was no link between subjects and the details offered, names or personal information were not included on the survey. To maintain confidentiality when conducting the focus group, members were assigned a participant number to avoid linking responses to each individual.

The attitudes of dental hygiene administrators and faculty towards IPE were assessed using a mixed methodology design in the form of a focus group interview and a 34-question self-reported survey adapted from Curran et al. (2007). Focus group questions were developed according to themes that have emerged from the literature (refer to Appendix E). Permission to use the survey has been obtained from Vernon Curran (Curran et al., 2007) (refer to Appendix F). The survey was adapted for dental hygiene administrators and faculty (refer to Appendix C). A mixed methodology approach was utilized because: (a) the survey consisted of close-ended questions to gather quantitative data, and (b) the focus group increased the richness of qualitative data collected. Implementing a mixed methodology design provided a better understanding of the problem. Quantitative and qualitative data collection occurred separately.

The survey was comprised of quantitative questions that assessed attitudes towards IPE and interprofessional learning within the academic setting. A 15-item Likert scale was adapted from Parsell and Bligh (1999) by Curran et al. (2007). It explored perspectives towards IPE by focusing on interprofessional learning, the benefits of working in groups, communication, problem solving, and team-working skills. The original tool from which the *Attitudes towards*
Interprofessional Education subscale was adopted has “...high content validity” as well as an internal consistency of 0.9 (Parsell & Bligh, 1999, p. 99). A 13-item Likert scale was adapted from Gardner et al. (2002) by Curran et al. (2007). It investigated viewpoints towards interprofessional learning within the academic setting by focusing on institutional support, faculty and student likes and dislikes, and collaborative efforts. The original tool from which the Attitudes towards Interprofessional Learning in the Academic Setting subscale was adopted “...was content validated by a panel of experts” (Gardner et al., 2002, p. 181).

All 28 Likert scale items used a five-point rating system, in which five equaled “strongly agree” and one equaled “strongly disagree.” Cronbach’s alpha was calculated to estimate the internal consistency and reliability of scale items. Four demographic questions and two closed-ended questions were included. Demographic questions allowed for information about respondents’ background to be obtained. The closed-ended questions were used to collect data about the current status of IPE within curricula and to identify the basis for attitudes. This was important for exploring the relationship between convictions and the use of interprofessional practices. Additionally, it allowed for determination of whether feelings influenced the adoption of interprofessional pedagogy. The researcher was able to assess whether attitudes were reflective of leadership support, level of knowledge, risks and benefits, training, professionalism, and perceived barriers. Factors influencing sentiments reported on a large scale were compared to data collected during the focus group.

SurveyMethods was utilized to develop and distribute the informed consent form and the survey. It is an online software application that enables survey deployment and storage of collected data. The researcher used the list of email addresses previously compiled to send out the survey link to dental hygiene administrators and faculty. In an attempt to increase return rate,
good follow-up procedures were implemented (Creswell, 2012). Two emails were sent two weeks apart to remind potential participants to complete the survey. Five days prior to the completion date, a closing email was forwarded.

The focus group increased the richness of the data and allowed for further connection between information collected and themes reported in the literature. Participants were located within different geographical areas in the Northeast, so Zoom was used to conduct the interview. Zoom is a video and web conferencing service enabling location-independent communication between individuals via the Internet. The focus group interview was recorded so that data could be transcribed. Once transcription was complete, the recording was erased. The questions asked concentrated on attaining an in-depth understanding of perspectives towards the value of IPE (refer to Appendix E). The primary purpose was to collect qualitative information that could assist in clarifying the data collected through the survey. The transcript allowed a detailed assessment of perspectives. The interaction of focus group participants was analyzed to better comprehend viewpoints.

All data collected, both quantitative and qualitative, will be kept by the researcher for five years after the study is completed. Data were saved on a password-protected computer. To maintain anonymity and confidentiality, no aspect of the survey identified participants. In regard to the focus group, individual responses were not linked to members because they were assigned numbers so that personal information was not used on any research documents.

**Data Analysis**

Data analysis began with preparing and organizing the information collected (Creswell, 2012). Survey data were downloaded from SurveyMethods as an excel file. From the excel spreadsheet, data was entered into Statistical Package for the Social Sciences (SPSS) 23, the
most current version of one of the most reliable statistical analysis software programs. Focus group data were transcribed from the recorded interview and notes taken.

In order to use SPSS for analysis, all data were converted into numerical scores. Nominal measurements were used to assign numerical scores to demographic information and the reported causes of attitudes. Ordinal measurements were used for Likert scale items so that attitudes could be ranked. For Likert scale items, the scoring system was consistent, with five equaling “strongly agree” and one equaling “strongly disagree.”

To identify viewpoints towards IPE and the factors best explaining them, descriptive statistics were used. The mean score of each Likert scale item was calculated to measure attitudes. The mode was used to highlight the factor that the majority of the participants indicated best explain their perspectives. Inferential statistics were utilized to explore the association between standpoints and survey variables, including gender, professional role, experience in higher education, knowledge about IPE, and use of the teaching methodology in dental hygiene curricula. The Spearman’s rho ($r_s$) correlation coefficient identified and measured any significant correspondence present among variables. An ordinal regression analysis was used to draw inferences and further explore these connections.

Creswell’s (2014) data analysis plan was executed to evaluate qualitative data. The transcription was analyzed to identify all attitudes reported in addition to the corresponding causes of them. Data were coded through organization into categories that were identified from the focus group. The process of coding was used to develop themes and patterns. Data theme identification techniques were performed manually and with NVivo software. NVivo is a qualitative analysis computer software program used to organize and make sense of unstructured data. Word repetition was used to emphasize the words and phrases that consistently appeared
throughout the transcription. Highlighted statements that were important to the topic were transferred onto index cards and organized into categories. These were given names, which became themes. NVivo software was also used for organizing and accentuating data to explore themes. Once themes were generated, they were related to one another and compared with theories outlined in the literature. Lastly, data were reported and interpreted in an attempt to display a needs assessment that could be used in the future to transform dental hygiene education. After analyzing focus group data, findings were shared with the participants to ensure validity.

**Participant Rights**

To guarantee protection of all research participants, the study underwent IRB evaluation and received approval. IRB review took place at two institutions: the researcher’s employing site and the University of New England.

Prior to collecting data, participants were informed of the purpose and aims of the study, as well as how data would be used. Additionally, they were notified of the time required of them. By means of informed consent (refer to Appendixes B and D), participants were briefed about data collection procedures, the benefits of the study, and the provisions that were made to protect anonymity and confidentiality (Creswell, 2012). They were notified about all of their rights, which included the right to voluntarily choose to partake in the study, the right to withdraw at any point in time without penalty, and the right to ask questions and obtain results. Contact information for the principal researcher, the lead research advisor, and the IRB was provided if questions and/or concerns arose. Participants were apprised about any risks or discomforts they may have encountered by taking part in the study. All individuals were notified that by reading the informed consent form, choosing to complete the survey, and/or signing the informed
consent to participate in the focus group, they acknowledged that they had been made aware of, understood, and agreed to the research study protocol and implications.

Ethical considerations were employed throughout the lifetime of this study. To maintain anonymity and confidentiality, participants did not provide their name or any personal information on the survey. Because an electronic survey was distributed, settings were programmed during development to ensure that Internet Protocol (IP) addresses were not captured through SurveyMethods. Additionally, the secure socket layer (SSL) feature was utilized to ensure that data entered by respondents was encrypted before it was sent over servers. Because individuals did not identify themselves on the survey and were distinguished according to participant number during the focus group, confidentiality was maintained. The names of focus group participants were never used on any research documents. The interview was recorded. The principal researcher was the only individual that had access to it. Once transcribed, it was erased. Survey and focus group data were entered into coded worksheets for computer analysis and stored on a password-protected database. The principal investigator was the sole individual with access to this data.

**Potential Limitations and Biases**

Potential limitations of the study include the research being limited to the administrators and faculty of dental hygiene programs; results are thus not reflective of other health science programs. The study assessed administrators and faculty from dental hygiene programs located within the Northeast region of the United States; therefore, findings cannot be generalized to dental hygiene administrators and faculty in other regions. Voluntary participation in the survey affected the sample size. Responses were self-reported, which could have influenced data accuracy and reliability. Focus group participants only had a certain amount of time available,
restricting the length of the interview. Additionally, focus group participant attitudes may have been influenced by the responses of others.

The principal investigator is currently a dental hygiene educator at an institution in the Northeast region of the United States that favors IPE. The researcher’s connection to participants was limited. The only existing relationship was to those from the dental hygiene program in which the researcher is employed. The investigator was aware of her individual support towards this learning style, and therefore made every effort not to discuss personal views to avoid bias.

**Pilot Study**

A pilot study of the focus group was conducted with two health science faculty members. These individuals offered valuable information that enabled the researcher to assess the protocol and test questions prior to the study being conducted. Based on feedback from pilot participants, the questions were reorganized to begin with those that were simplistic followed by those that were more complex. One question was rephrased to use verbiage that was more participant friendly. Additionally, two questions were removed to avoid redundancy. Both contributors also recommended distributing the questions to participants prior to conducting the interview so that they had ample time to reflect on their responses.

**Conclusion**

Chapter 3 details the mixed methodology investigation, the setting, the participants, the instruments, and data collection and analysis. Ethical considerations explain the measures that were taken to protect participants’ rights. Potential limitations and biases are described so that readers are made aware of how research findings may have been influenced.

This mixed methodology study documented the perspectives of dental hygiene administrators and faculty at higher education institutions in the Northeast region about the value
of IPE within dental hygiene curricula. A quantitative/qualitative design was used to explore attitudes towards IPE and factors that best explain them. Analysis of data was used to answer the research questions.
CHAPTER 4

RESULTS

The purpose of this mixed methodology study was to document the perspectives of dental hygiene administrators and faculty members at higher education institutions in the Northeast region of the United States about the value of IPE within dental hygiene curricula. Gathering quantitative and qualitative data assisted in providing information to inform possible transformative plans focused on IPE implementation. Quantitative data were acquired through the collection of survey responses. Additionally, a focus group interview protocol was developed and implemented to collect qualitative data. Both data sets were then evaluated.

This chapter is divided into the following sections: participants, analysis method, presentation of results, thematic patterns derived from the focus group, and conclusion. The intention is to report the results of the data analysis. Survey data were statistically interpreted using SPSS to identify the attitudes of participants towards IPE. This analysis allowed a comprehensive assessment that highlighted the manner in which perspectives influence the use of collaborative pedagogy within curricula. The relationship between respondents’ sentiments and knowledge about interprofessional teaching and learning was revealed. Quantitative investigation also indicated how the causes of viewpoints are associated with emergent themes. NVivo was used to perform a detailed evaluation of the focus group data that led to the emergence of six main themes and four sub-themes. Verbatim statements of participants were documented, along with a summary of specific elements of the interview, indicating the validity of thematic patterns. Each was linked to theories and concepts presented in the review of the literature.
Participant Demographics

An invitation to participate in the quantitative portion of this study was distributed via email to 224 faculty members and administrators on December 15, 2015. To increase the response rate, good follow up procedures were implemented. A second and third round of emails were sent on January 5, 2016 and January 18, 2016, respectively. In a final attempt to boost survey completion, a closing message was forwarded on January 26, 2016. As of January 31, 2016, 91 individuals completed the survey, a response rate of 40.6%.

Of the sample respondents (n = 91), 18.68% were administrators and 81.32% were faculty members. A much larger percent of the population was female (89.01%) as opposed to male (10.99%). Most of those surveyed (81.32%) also reported 11 or more years of experience in higher education. Table 4.1 provides the demographics of survey participants.

Table 4.1

<table>
<thead>
<tr>
<th>% of Total Participants</th>
<th>Demographic Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.68%</td>
<td>Dental Hygiene Administrator</td>
</tr>
<tr>
<td>81.32%</td>
<td>Dental Hygiene Faculty</td>
</tr>
<tr>
<td>10.99%</td>
<td>Male</td>
</tr>
<tr>
<td>89.01%</td>
<td>Female</td>
</tr>
<tr>
<td>1.10%</td>
<td>Less than one year experience in higher education</td>
</tr>
<tr>
<td>8.79%</td>
<td>Two to five years experience in higher education</td>
</tr>
<tr>
<td>8.79%</td>
<td>Six to 10 years experience in higher education</td>
</tr>
<tr>
<td>39.56%</td>
<td>11 to 20 years experience in higher education</td>
</tr>
<tr>
<td>41.76%</td>
<td>20 plus years experience in higher education</td>
</tr>
</tbody>
</table>

Initially, five faculty members and administrators were approached to participate in the focus group interview by means of purposeful and convenience sampling. Four of the faculty members accepted the invitation, agreed on an appropriate meeting time, and returned the signed informed consent forms. Due to an unforeseen circumstance, one withdrew from the study. To
ensure that the data collected represented diverse perspectives, another qualified individual was invited to join. This person graciously agreed and returned the signed informed consent. In the end, a total of four dental hygiene faculty members consented to partake in the focus group, representing variety in terms of affiliated dental hygiene programs, professional responsibilities, and years of experience in higher education. Although diversity was present, limitations arose. The administrators that were invited to join refused the request. All participants were therefore faculty members. However, administrative duties are a component of the professional roles of two of the members. Additionally, the person that withdrew from the focus group was the only individual actively involved with an IPE-based dental hygiene curriculum. All others are in the infancy stages of developing and facilitating interprofessional plans within curricula. Table 4.2 describes the institutions in which focus group participants are employed as well as their demographic information.

Table 4.2

Demographic Information of Focus Group Participants

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Professional Role</th>
<th>Professional Duties Entail Administrative Tasks</th>
<th>Experience in Higher Education (years)</th>
<th>Employing Institution Demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>Faculty</td>
<td>Yes</td>
<td>23</td>
<td>Mid-sized, State</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>Faculty</td>
<td>No</td>
<td>32</td>
<td>Large, State</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>Faculty</td>
<td>Yes</td>
<td>14</td>
<td>Large, City</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>Faculty</td>
<td>No</td>
<td>17</td>
<td>Mid-sized, State</td>
</tr>
</tbody>
</table>

Analysis Method

Quantitative data were exported from SurveyMethods as an excel spreadsheet. From the spreadsheet data were entered into SPSS to run statistical analyses. Nominal measurements were
used to assign numerical scores to demographic information, knowledge base, utilization levels of IPE, and factors explaining perspectives. Ordinal measurements were used for Likert scale items so that attitudes could be ranked. For Likert scale items, the scoring system was consistent: five equaled "strongly agree" and one equaled "strongly disagree."

Measures of central tendency were used to identify attitudes towards IPE. The mean was used to describe the responses of all participants to Likert scale items, which in turn determined perspectives. Mean scores that were closer to 5.00 indicated a more positive attitude, whereas those that were closer to 1.00 reflected a more negative attitude. According to Curran et al. (2007), one overall mean score for all survey items, ranging between 1.00 and 5.00, should be computed. Reverse-scored items were appropriately accounted for. Cronbach’s alpha was calculated to estimate the internal consistency and reliability of Likert scale items. The mode was used to highlight the factor that the majority of the participants indicated best explain their viewpoints.

Inferential statistics were used to draw correlations between survey variables. The Spearman’s rho ($r_s$) correlation coefficient identified and measured the association between attitudes and the following variables that were not normally distributed: participants’ professional role, gender, years of experience, knowledge about IPE, and the extent to which the pedagogy is utilized within dental hygiene curricula. An ordinal regression analysis was used to draw inferences between the variables that were connected, further investigating the relationships revealed by the Spearman’s rho ($r_s$) correlation coefficient. Statistical significance of the correlation between variables was determined by $p$-values that were less than or equal to .05.

The focus group interview was recorded, and notes were taken during this time to ensure that all details were captured, manage potential biases, and take notice of any meaningful
expressions that may not have been apparent when listening to the recording or reading the transcription. After the focus group, transcription of the entire interview occurred. The document was then compared to the recording to check for accuracy. All detected errors were corrected. The transcription served as one of the main data sources for this study. At this point, the researcher reviewed it, highlighting concepts and phrases that were frequently shared and discussed among participants. After multiple readings, a thorough reflection occurred. This allowed for the identification of attitudes, as well as a concrete understanding of the basis for them.

Creswell’s (2014) plan for analyzing and interpreting qualitative data was executed. Qualitative information was manually coded, followed by the use of NVivo software to ensure that data were organized properly and important, reoccurring information was highlighted and analyzed. Several rounds of manual coding occurred in which the researcher searched for overlap and redundancy. Coded data were grouped and categorized into major and minor themes through the use of index cards.

NVivo software was used as an additional approach to identify themes. This computer program “...offers a complete toolkit for rapid coding, thorough exploration, and rigorous management and analysis” (Creswell, 2014, p. 243). The transcription was uploaded and nodes were created. Parent and child nodes were generated to represent codes that were aggregated together to form the major and minor themes that had emerged from manual analysis. A word frequency query was run to examine the words that most often occurred throughout the transcription, assisting in pattern identification. This query justified the codes utilized during data analysis and the verified themes that developed. Next, specific quotes were extracted from the transcription according to the theme they related to, and placed within the node that they
supported. Data were carefully selected according to research questions and emergent themes. A text search query was then performed to ensure that the researcher did not overlook important information that should have been placed within developed nodes to support a theme or identify a potential thematic pattern. Coding stripes also proved to be useful for writing up the analysis of data because this feature highlights all information that is included within a specific node. After themes were generated and analysis was complete, findings were shared with the four focus group participants to ensure validity.

**Presentation of Results**

Overall mean scores are an accurate identifier of attitudes. Table 4.3 summarizes the individual survey items and overall mean score for two scales: *Attitudes towards Interprofessional Education* and *Attitudes towards Interprofessional Learning in the Academic Setting*. Overall, respondents demonstrate favorability towards IPE and interprofessional learning. Mean scores closer to 5.00 indicate more positive perspectives, whereas those closer to 1.00 reflect more negative standpoints. Participants felt most positive about the fact that teamwork skills are essential for all health care students to learn (\(M = 4.41\)), that patients would ultimately benefit if health care students worked together to solve problems (\(M = 4.40\)), that interprofessional efforts require support from campus administration (\(M = 4.39\)), and that for small-group learning to work, students must trust and respect each other (\(M = 4.39\)). Out of the 28 Likert scale items used to assess perspectives, 26 yielded a mean score of three or greater, indicative of more positive viewpoints. Cronbach’s \(\alpha\) revealed high internal consistency across both scales: *Attitudes towards Interprofessional Education* (.88) and *Attitudes towards Interprofessional Learning in the Academic Setting* (.78).
### Table 4.3

**Summary on Mean Scores of Attitudinal Scales**

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes towards interprofessional education (Parsell &amp; Bligh, 1999)</td>
<td></td>
</tr>
<tr>
<td>Interprofessional learning will help students think positively about other health care professionals</td>
<td>4.28</td>
</tr>
<tr>
<td>Clinical problem solving can only be learned effectively when students are taught within their individual department/school*</td>
<td>3.69</td>
</tr>
<tr>
<td>Interprofessional learning before qualification will help health professional students to become better team-workers</td>
<td>4.22</td>
</tr>
<tr>
<td>Patients would ultimately benefit if health care students worked together to solve patient problems</td>
<td>4.40</td>
</tr>
<tr>
<td>Students in my professional group would benefit from working on small-group projects with other health care students</td>
<td>4.17</td>
</tr>
<tr>
<td>Communication skills should be learned with integrated classes of health care students</td>
<td>3.85</td>
</tr>
<tr>
<td>Interprofessional learning will help to clarify the nature of patient problems for students</td>
<td>3.98</td>
</tr>
<tr>
<td>It is not necessary for undergraduate health care students to learn together*</td>
<td>3.75</td>
</tr>
<tr>
<td>Learning with students in other health professional schools helps undergraduates to become more effective members of a health care team</td>
<td>4.27</td>
</tr>
<tr>
<td>Interprofessional learning among health care students will increase their ability to understand clinical problems</td>
<td>4.16</td>
</tr>
<tr>
<td>Interprofessional learning will help students to understand their own professional limitations</td>
<td>3.98</td>
</tr>
<tr>
<td>For small-group learning to work, students need to trust and respect each other</td>
<td>4.39</td>
</tr>
<tr>
<td>Interprofessional learning among health professional students will help them to communicate better with patients and other professionals</td>
<td>4.26</td>
</tr>
</tbody>
</table>
Table 4.3 (continued)

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team-working skills are essential for all health care students to learn</td>
<td>4.41</td>
</tr>
<tr>
<td>Learning between health care students before qualification would improve working relationships after qualification</td>
<td>4.22</td>
</tr>
</tbody>
</table>

Attitudes towards interprofessional learning in the academic setting (Gardner et al., 2002)

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interprofessional learning better utilizes resources</td>
<td>3.82</td>
</tr>
<tr>
<td>It is important for academic health center campuses to provide interprofessional learning opportunities</td>
<td>4.09</td>
</tr>
<tr>
<td>Interprofessional learning should be a goal of this campus</td>
<td>3.96</td>
</tr>
<tr>
<td>Students like courses taught by faculty from other academic departments</td>
<td>3.22</td>
</tr>
<tr>
<td>Students like courses that include students from other academic departments</td>
<td>3.42</td>
</tr>
<tr>
<td>Faculty should be encouraged to participate in interprofessional courses</td>
<td>4.07</td>
</tr>
<tr>
<td>Faculty like teaching to students in other academic departments</td>
<td>3.42</td>
</tr>
<tr>
<td>Faculty like teaching with faculty from other academic departments</td>
<td>3.49</td>
</tr>
<tr>
<td>Interprofessional efforts weaken course content*</td>
<td>3.91</td>
</tr>
<tr>
<td>Interprofessional efforts require support from campus administration</td>
<td>4.39</td>
</tr>
<tr>
<td>Interprofessional courses are logistically difficult*</td>
<td>2.53</td>
</tr>
<tr>
<td>Faculty should be rewarded for participation in interprofessional courses</td>
<td>3.69</td>
</tr>
<tr>
<td>Accreditation requirements limit interprofessional efforts*</td>
<td>2.93</td>
</tr>
</tbody>
</table>

*A negatively worded item that was reverse-scored to calculate the overall mean score

The knowledge base of the participants in terms of interprofessional pedagogy, as well as the utilization of IPE within dental hygiene curricula was explored. A small number of respondents (1.1%) expressed no understanding of IPE, 38.46% reported some comprehension,
58.24% felt they are knowledgeable, and 2.2% revealed that they are well informed about it. Respondents also reported the extent to which shared teaching and learning is applied within the dental hygiene curriculum at their corresponding institutions. Data indicated that it is not a component of the curriculum of 24.44% of those surveyed, approximately half of the respondents (47.78%) stated that it is in its beginning stages, 22.22% reported that multidisciplinary education is in its intermediary stages, and only 5.56% revealed that it is a major component of their curricula.

The mode served as an indication of the factor that was the most commonly selected explanation for the convictions of survey respondents towards IPE. The majority of participants (35.96%) attributed their positive attitudes to the fact that they favor working with other professions. Factors explaining perspectives were dispersed. The following percentages indicate the circumstances for which viewpoints can be described: a lack of leadership support (7.87%), the presence of leadership support (5.62%), unfamiliarity with IPE (4.49%), familiarity with IPE (8.99%), risks associated with IPE (2.25%), benefits associated with IPE (12.36%), lack of training for IPE (8.99%), presence of training for IPE (1.12%), against working with other professions (0%), favor working with other professions (35.96%), and perceived barriers associated with IPE (12.36%). Figure 4.1 is a bar chart displaying the percentages for factors best explaining respondents’ standpoints towards IPE.
Figure 4.1. Bar chart of factors explaining perspectives towards IPE.

Because the focus of this study is attitudes, the Spearman’s rho ($r_s$) correlation coefficient, implementing a two-tailed test of significance, was used to reveal the correspondence between survey respondents’ feelings and their professional role, gender, years of experience, knowledge about IPE, and utilization of IPE. According to the correlation matrix represented in Table 4.4, there is a significant association between attitudes and knowledge ($r_s = .303$), as well as attitudes and use ($r_s = .269$). The number of $r_s$ indicates the strength or degree of the connection between variables. The closer $r_s$ is to -1.00 or +1.00, the stronger the association. The valence signs, positive or negative, specify the direction of the relationship (Creswell, 2014). Both correlations are positive, meaning that a direct relationship exists between the variables. When one variable increases, the other does as well. According to Table 4.4 there is no association between attitudes and professional role, gender, or years of experience.
Table 4.4

* Spearman’s rho Correlation Coefficient Matrix

<table>
<thead>
<tr>
<th>Professional Role</th>
<th>Correlation Coefficient Sig. (2-tailed)</th>
<th>N</th>
<th>Gender</th>
<th>Correlation Coefficient Sig. (2-tailed)</th>
<th>N</th>
<th>Years Experience</th>
<th>Correlation Coefficient Sig. (2-tailed)</th>
<th>N</th>
<th>Knowledge about IPE</th>
<th>Correlation Coefficient Sig. (2-tailed)</th>
<th>N</th>
<th>Use of IPE</th>
<th>Correlation Coefficient Sig. (2-tailed)</th>
<th>N</th>
<th>Attitudes</th>
<th>Correlation Coefficient Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Role</td>
<td>1.000</td>
<td>91</td>
<td>.012</td>
<td>-.118</td>
<td>91</td>
<td>-.175</td>
<td>.098</td>
<td>91</td>
<td>.033</td>
<td>.754</td>
<td>91</td>
<td>.911</td>
<td>.911</td>
<td>91</td>
<td>.012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.012</td>
<td>91</td>
<td>1.000</td>
<td>.264</td>
<td>91</td>
<td>.098</td>
<td>.168</td>
<td>91</td>
<td>.040</td>
<td>.457</td>
<td>91</td>
<td>.079</td>
<td>-.217*</td>
<td>90</td>
<td>.040</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years Experience</td>
<td>-0.118</td>
<td>91</td>
<td>.148</td>
<td>1.000</td>
<td>91</td>
<td>.109</td>
<td>-.119</td>
<td>91</td>
<td>-.132</td>
<td>.213</td>
<td>91</td>
<td>.911</td>
<td>.911</td>
<td>91</td>
<td>.911</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge of IPE</td>
<td>-.175</td>
<td>91</td>
<td>.146</td>
<td>.109</td>
<td>91</td>
<td>.472**</td>
<td>.304</td>
<td>91</td>
<td>.000</td>
<td>.003</td>
<td>91</td>
<td>.303**</td>
<td>.303**</td>
<td>91</td>
<td>.003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of IPE</td>
<td>.033</td>
<td>90</td>
<td>-.217*</td>
<td>-.119</td>
<td>90</td>
<td>.472**</td>
<td>.265</td>
<td>90</td>
<td>1.000</td>
<td>.269*</td>
<td>90</td>
<td>.269*</td>
<td>.269*</td>
<td>90</td>
<td>.269*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td>.012</td>
<td>91</td>
<td>.079</td>
<td>-.132</td>
<td>91</td>
<td>.303**</td>
<td>.213</td>
<td>91</td>
<td>.010</td>
<td>.010</td>
<td>90</td>
<td>.010</td>
<td>.010</td>
<td>91</td>
<td>.010</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).
An ordinal regression analysis was used to further explore the pattern of relationships between attitudes and knowledge about IPE, as well as perspectives and the use of interprofessional practices, that were identified by the Spearman’s rho (\(r_s\)) correlation coefficient. This statistical test was calculated for each Likert scale item and for the variables of knowledge and utilization. \(P\)-values less than or equal to .05 indicate significant associations. \(P\)-values close to .05 are considered to be marginal and therefore can be subjectively interpreted. The ordinal regression analyses that revealed significant and marginal relationships are reported.

Tables 4.5 through 4.11 relate to the Likert items associated with the *Attitudes towards Interprofessional Education* scale. Table 4.5 reveals a significant relationship between Likert scale item one and the 1.1% of the sample that reported no knowledge of IPE \((p = .000)\), in addition to the 38.46% of the population with some understanding of it \((p = .000)\). Likert scale item one states that “Interprofessional learning will help students think positively about other health care professionals” (Curran et al., 2007, p. 894). The mean score of this item \((M = 4.28)\) indicates that administrators and faculty strongly agreed with this statement. Survey respondents that possessed no or minimal comprehension still felt strongly that IPE would improve the manner in which students view health care professionals outside of their specific discipline. Even limited understanding of interprofessional practices is sufficient enough to grasp that it promotes positivity towards others.
Table 4.5

**Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale Item 1**

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item 1 = 1.0</strong></td>
<td>-23.407</td>
<td>1.467</td>
<td>254.503</td>
<td>1</td>
<td>.000</td>
<td>-26.282</td>
<td>-20.531</td>
<td></td>
</tr>
<tr>
<td><strong>Item 1 = 3.0</strong></td>
<td>-20.729</td>
<td>1.022</td>
<td>411.408</td>
<td>1</td>
<td>.000</td>
<td>-22.732</td>
<td>-18.726</td>
<td></td>
</tr>
<tr>
<td><strong>Item 1 = 4.0</strong></td>
<td>-17.942</td>
<td>.941</td>
<td>363.519</td>
<td>1</td>
<td>.000</td>
<td>-19.786</td>
<td>-16.098</td>
<td></td>
</tr>
<tr>
<td>Knowledge = 1</td>
<td>-21.857</td>
<td>2.139</td>
<td>104.452</td>
<td>1</td>
<td>.000*</td>
<td>-26.048</td>
<td>-17.665</td>
<td></td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>-18.375</td>
<td>.513</td>
<td>1283.797</td>
<td>1</td>
<td>.000*</td>
<td>-19.380</td>
<td>-17.370</td>
<td></td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>-17.187</td>
<td>.000</td>
<td>.</td>
<td>1</td>
<td></td>
<td>-17.187</td>
<td>-17.187</td>
<td></td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td></td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Use = 1</td>
<td>-.211</td>
<td>1.054</td>
<td>.040</td>
<td>1</td>
<td>.841</td>
<td>-2.278</td>
<td>1.855</td>
<td></td>
</tr>
<tr>
<td>Use = 2</td>
<td>-1.132</td>
<td>.990</td>
<td>1.308</td>
<td>1</td>
<td>.253</td>
<td>-3.074</td>
<td>.809</td>
<td></td>
</tr>
<tr>
<td>Use = 3</td>
<td>-.649</td>
<td>1.044</td>
<td>.387</td>
<td>1</td>
<td>.534</td>
<td>-2.695</td>
<td>1.396</td>
<td></td>
</tr>
<tr>
<td>Use = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td></td>
<td>.</td>
<td>.</td>
<td></td>
</tr>
</tbody>
</table>

* This parameter is set to zero because it is redundant.
* p < .05

Table 4.6 reveals a significant relationship between Likert scale item four and the 1.1% of the sample with no knowledge of IPE (p = .000), in addition to the 38.46% of the population with some understanding of it (p = .000). Likert scale item four reads, “Patients would ultimately benefit if health care students worked together to solve patient problems” (Curran et al., 2007, p. 894). The mean score of this item (M = 4.40) revealed that administrators and faculty strongly agreed with this statement. Table 4.6 reveals that respondents with no or minimal comprehension of IPE believed that a collaborative approach to managing care would result in optimal patient treatment.
Table 4.6

**Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale Item 4**

<table>
<thead>
<tr>
<th>Item 4 = 1.0</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-23.946</td>
<td>1.576</td>
<td>230.829</td>
<td>1</td>
<td>.000</td>
<td>-27.036 -20.857</td>
</tr>
<tr>
<td>Item 4 = 3.0</td>
<td>-23.238</td>
<td>1.405</td>
<td>273.502</td>
<td>1</td>
<td>.000</td>
<td>-25.992 -20.484</td>
</tr>
<tr>
<td>Item 4 = 4.0</td>
<td>-18.893</td>
<td>1.165</td>
<td>263.143</td>
<td>1</td>
<td>.000</td>
<td>-21.176 -16.611</td>
</tr>
<tr>
<td>Knowledge = 1</td>
<td>-19.924</td>
<td>2.561</td>
<td>60.545</td>
<td>1</td>
<td>.000*</td>
<td>-24.942 -14.905</td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>-18.420</td>
<td>.547</td>
<td>1133.389</td>
<td>1</td>
<td>.000*</td>
<td>-19.492 -17.348</td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>-17.175</td>
<td>.000</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>-17.175 -17.175</td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

| Use = 1     | -1.142   | 1.252      | .832   | 1   | .362 | -3.596 1.312          |
| Use = 2     | -1.843   | 1.201      | 2.358  | 1   | .125 | -4.196 .509          |
| Use = 3     | -1.581   | 1.256      | 1.583  | 1   | .208 | -4.044 .882          |
| Use = 4     | 0*       | .          | .      | 0   | .   | .                       |

*This parameter is set to zero because it is redundant.
*p < .05

Table 4.7 reports a significant relationship between Likert scale item eight and the 1.1% of the sample with no knowledge of IPE (p = .000). There is also a significant association between Likert scale item eight and the 38.46% of the population that possess some understanding of it (p = .000). Likert scale item eight states that “It is not necessary for undergraduate health care students to learn together” (Currant et al., 2007, p. 894). This item was reverse-scored. Therefore, the mean score (M = 3.75) indicates that administrators and faculty disagreed with this statement. Even with limited comprehension of the concepts of IPE, respondents still felt that collaborative learning would benefit undergraduate health care students.
Table 4.7

**Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale Item 8**

<table>
<thead>
<tr>
<th>Item 8</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>-22.954</td>
<td>1.172</td>
<td>383.302</td>
<td>1</td>
<td>.000</td>
<td>-25.252 -20.656</td>
</tr>
<tr>
<td>2.0</td>
<td>-21.217</td>
<td>.979</td>
<td>469.875</td>
<td>1</td>
<td>.000</td>
<td>-23.136 -19.299</td>
</tr>
<tr>
<td>3.0</td>
<td>-20.119</td>
<td>.944</td>
<td>454.618</td>
<td>1</td>
<td>.000</td>
<td>-21.968 -18.269</td>
</tr>
<tr>
<td>4.0</td>
<td>-16.916</td>
<td>.953</td>
<td>314.924</td>
<td>1</td>
<td>.000</td>
<td>-18.785 -15.048</td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>-18.120</td>
<td>.503</td>
<td>1300.149</td>
<td>1</td>
<td>.000*</td>
<td>-19.105 -17.135</td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>-18.668</td>
<td>.000</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>-18.688 -18.688</td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Use = 1</td>
<td>-1.452</td>
<td>1.050</td>
<td>1.911</td>
<td>1</td>
<td>.167</td>
<td>-3.510 .607</td>
</tr>
<tr>
<td>Use = 2</td>
<td>- .542</td>
<td>.983</td>
<td>.305</td>
<td>1</td>
<td>.581</td>
<td>-2.469 1.384</td>
</tr>
<tr>
<td>Use = 3</td>
<td>.584</td>
<td>1.049</td>
<td>.310</td>
<td>1</td>
<td>.578</td>
<td>-1.472 2.640</td>
</tr>
<tr>
<td>Use = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

*This parameter is set to zero because it is redundant.

* p < .05

Table 4.8 reveals a significant relationship between Likert scale item nine and the 1.1% of the sample with no knowledge of IPE (p = .000), in addition to the 38.46% of the population with some understanding of it (p = .000). Likert scale item nine reads, “Learning with students in other health professional schools helps undergraduates to become more effective members of a health care team” (Currant et al., 2007, p. 894). Administrators and faculty displayed a high level of support for this statement (M = 4.27). With no or little comprehension about the theory of IPE, survey participants possessed strong convictions that when collaborative learning is present in
health science programs, students become more competent members of integrated medical groups.

Table 4.8

**Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale Item 9**

<table>
<thead>
<tr>
<th>Item 9 = 3.0</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-20.896</td>
<td>.993</td>
<td>442.827</td>
<td>1</td>
<td>.000</td>
<td>-22.842 -18.950</td>
</tr>
<tr>
<td>Item 9 = 4.0</td>
<td>-17.421</td>
<td>.893</td>
<td>380.844</td>
<td>1</td>
<td>.000</td>
<td>-19.170 -15.671</td>
</tr>
<tr>
<td>Knowledge = 1</td>
<td>-18.628</td>
<td>2.228</td>
<td>69.919</td>
<td>1</td>
<td>.000*</td>
<td>-22.995 -14.262</td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>-18.283</td>
<td>.523</td>
<td>1223.539</td>
<td>1</td>
<td>.000*</td>
<td>-19.308 -17.259</td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>-17.580</td>
<td>.000</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>-17.580 -17.580</td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0a</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Use = 1</td>
<td>-.530</td>
<td>1.026</td>
<td>.267</td>
<td>1</td>
<td>.605</td>
<td>-2.540 1.480</td>
</tr>
<tr>
<td>Use = 2</td>
<td>-.366</td>
<td>.950</td>
<td>.148</td>
<td>1</td>
<td>.700</td>
<td>-2.227 1.496</td>
</tr>
<tr>
<td>Use = 3</td>
<td>-.105</td>
<td>1.006</td>
<td>.011</td>
<td>1</td>
<td>.917</td>
<td>-2.076 1.867</td>
</tr>
<tr>
<td>Use = 4</td>
<td>0a</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

* This parameter is set to zero because it is redundant.
* p < .05

Table 4.9 indicates a significant relationship between Likert scale item 10 and the 47.78% of the population that reported IPE is beginning to emerge within the dental hygiene curriculum of their respective institutions (p = .042). Likert scale item 10 states, “Interprofessional learning among health care students will increase their ability to understand clinical problems” (Curran et al., 2007, p. 894). Administrators and faculty had positive convictions towards this statement (M = 4.16). Survey participants that reported they are beginning to initiate IPE implementation within curricula felt that by doing so, they are fostering
their students’ ability to better grasp clinical issues. It was perceived that collaborative learning highlights different perspectives about problems.

Table 4.9

*Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale Item 10*

<table>
<thead>
<tr>
<th>Item 10 =</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>-7.872</td>
<td>2.097</td>
<td>14.096</td>
<td>1</td>
<td>.000</td>
<td>-11.982 -3.763</td>
</tr>
<tr>
<td>3.0</td>
<td>-5.158</td>
<td>1.816</td>
<td>8.065</td>
<td>1</td>
<td>.005</td>
<td>-8.718 -1.598</td>
</tr>
<tr>
<td>4.0</td>
<td>-2.139</td>
<td>1.762</td>
<td>1.474</td>
<td>1</td>
<td>.225</td>
<td>-5.593 1.315</td>
</tr>
<tr>
<td>Knowledge = 1</td>
<td>-4.486</td>
<td>2.550</td>
<td>3.095</td>
<td>1</td>
<td>.079</td>
<td>-9.483 .512</td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>-1.183</td>
<td>1.477</td>
<td>.641</td>
<td>1</td>
<td>.423</td>
<td>-4.077 -1.711</td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>-.962</td>
<td>1.428</td>
<td>.454</td>
<td>1</td>
<td>.500</td>
<td>-3.760 -1.836</td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Use = 1</td>
<td>-2.029</td>
<td>1.154</td>
<td>3.095</td>
<td>1</td>
<td>.079</td>
<td>-4.291 .232</td>
</tr>
<tr>
<td>Use = 2</td>
<td>-2.235</td>
<td>1.097</td>
<td>4.149</td>
<td>1</td>
<td>.042*</td>
<td>-4.385 -.084</td>
</tr>
<tr>
<td>Use = 3</td>
<td>-1.895</td>
<td>1.144</td>
<td>2.742</td>
<td>1</td>
<td>.098</td>
<td>-4.138 .348</td>
</tr>
<tr>
<td>Use = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

* This parameter is set to zero because it is redundant.
* p < .05

Table 4.10 reveals a significant relationship between Likert scale item 12 and the 38.46% of the sample that possess some knowledge about IPE (p = .000). Likert scale item 12 reads, “For small-group learning to work, students need to trust and respect each other” (Curran et al., 2007, p. 894). Administrators and faculty strongly believed this to be true (M = 4.39). Participants with limited mastery of IPE concepts felt that interprofessional efforts will only be effective if students believe in and think highly of the members within their group.
Table 4.10

**Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale Item 12**

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Item 12 = 1.0</td>
<td>-23.066</td>
<td>1.516</td>
<td>231.359</td>
<td>1</td>
<td>.000</td>
<td>-26.038</td>
</tr>
<tr>
<td>Item 12 = 3.0</td>
<td>-21.030</td>
<td>1.197</td>
<td>308.514</td>
<td>1</td>
<td>.000</td>
<td>-23.376</td>
</tr>
<tr>
<td>Item 12 = 4.0</td>
<td>-18.473</td>
<td>1.130</td>
<td>267.325</td>
<td>1</td>
<td>.000</td>
<td>-20.687</td>
</tr>
<tr>
<td>Knowledge = 1</td>
<td>.131</td>
<td>5174.889</td>
<td>.000</td>
<td>1</td>
<td>1.000</td>
<td>-10142.466</td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>-17.285</td>
<td>.488</td>
<td>1253.433</td>
<td>1</td>
<td>.000*</td>
<td>-18.242</td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>-17.004</td>
<td>.000</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>-17.004</td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Use = 1</td>
<td>-1.500</td>
<td>1.221</td>
<td>1.511</td>
<td>1</td>
<td>.219</td>
<td>-3.892</td>
</tr>
<tr>
<td>Use = 2</td>
<td>-1.712</td>
<td>1.170</td>
<td>2.142</td>
<td>1</td>
<td>.143</td>
<td>-4.005</td>
</tr>
<tr>
<td>Use = 3</td>
<td>-.944</td>
<td>1.229</td>
<td>.590</td>
<td>1</td>
<td>.442</td>
<td>-3.352</td>
</tr>
<tr>
<td>Use = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

*This parameter is set to zero because it is redundant.*

* p < .05

Table 4.11 highlights a significant relationship between Likert scale item 13 and the 38.46% of the population with some knowledge about IPE (p = .000). Likert scale item 13 states, “Interprofessional learning among health professional students will help them to communicate better with patients and other professionals” (Curran et al., 2007, p. 894). Administrators and faculty strongly agreed with this statement (M = 4.26). With some understanding about multidisciplinary education, survey participants regard it as a method for enhancing
communication skills. They felt that through interprofessional application, students would learn more effective strategies for connecting with patients and other professionals.

Table 4.11

*Ordinal Regression Analysis Attitudes towards Interprofessional Education Scale Item 13*

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Item 13 = 3.0</td>
<td>-21.236</td>
<td>1.016</td>
<td>437.008</td>
<td>1</td>
<td>.000</td>
<td>-23.227</td>
</tr>
<tr>
<td>Knowledge = 1</td>
<td>-36.357</td>
<td>4031.940</td>
<td>.000</td>
<td>1</td>
<td>.993</td>
<td>-7938.815</td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>-17.929</td>
<td>.517</td>
<td>1203.433</td>
<td>1</td>
<td>.000*</td>
<td>-18.942</td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>-17.463</td>
<td>.000</td>
<td>.</td>
<td>1</td>
<td>.</td>
<td>-17.463</td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0(^a)</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Use = 1</td>
<td>-1.482</td>
<td>1.049</td>
<td>1.996</td>
<td>1</td>
<td>.158</td>
<td>-3.539</td>
</tr>
<tr>
<td>Use = 2</td>
<td>-1.192</td>
<td>.975</td>
<td>1.493</td>
<td>1</td>
<td>.222</td>
<td>-3.103</td>
</tr>
<tr>
<td>Use = 3</td>
<td>-.584</td>
<td>1.031</td>
<td>.321</td>
<td>1</td>
<td>.571</td>
<td>-2.605</td>
</tr>
<tr>
<td>Use = 4</td>
<td>0(^a)</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

\(^a\) This parameter is set to zero because it is redundant.

* \(p < .05\)

Tables 4.12 through 4.17 relate to the Likert items associated with the *Attitudes towards Interprofessional Learning in the Academic Setting* scale. Table 4.12 reveals a significant relationship between Likert scale item four and the 38.46% of the sample with some understanding of IPE \(p = .022\). It also indicates a significant association between Likert scale item four and the 58.24% of the population that are knowledgeable about interprofessional practices \(p = .022\). Likert scale item four reads, “Students like courses taught by faculty from other academic departments” (Curran et al., 2007, p. 894). Administrators and faculty expressed...
positive attitudes towards this statement ($M = 3.22$). Participants with comprehension levels of IPE, varying from limited to adequate, felt that students favor interaction with faculty outside of their respective disciplines. They believed that learners would find education to be enjoyable if they were exposed to professors from different domains.

Table 4.12

*Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 4*

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 4 = 2.0</td>
<td>-4.903</td>
<td>1.805</td>
<td>7.377</td>
<td>1</td>
<td>.007</td>
<td>-8.441</td>
<td>-1.365</td>
</tr>
<tr>
<td>Item 4 = 3.0</td>
<td>-2.311</td>
<td>1.794</td>
<td>1.659</td>
<td>1</td>
<td>.198</td>
<td>-5.827</td>
<td>1.206</td>
</tr>
<tr>
<td>Item 4 = 4.0</td>
<td>-0.777</td>
<td>1.686</td>
<td>0.213</td>
<td>1</td>
<td>.645</td>
<td>-2.527</td>
<td>4.081</td>
</tr>
<tr>
<td>Knowledge = 1</td>
<td>-3.927</td>
<td>2.540</td>
<td>2.390</td>
<td>1</td>
<td>.122</td>
<td>-8.906</td>
<td>1.051</td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>-3.702</td>
<td>1.610</td>
<td>5.285</td>
<td>1</td>
<td>.022*</td>
<td>-6.858</td>
<td>-.546</td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>-3.583</td>
<td>1.568</td>
<td>5.219</td>
<td>1</td>
<td>.022*</td>
<td>-6.658</td>
<td>-.509</td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Use = 1</td>
<td>.320</td>
<td>.993</td>
<td>.104</td>
<td>1</td>
<td>.747</td>
<td>-1.625</td>
<td>2.266</td>
</tr>
<tr>
<td>Use = 2</td>
<td>.389</td>
<td>.927</td>
<td>.176</td>
<td>1</td>
<td>.674</td>
<td>-1.427</td>
<td>2.206</td>
</tr>
<tr>
<td>Use = 3</td>
<td>1.278</td>
<td>.988</td>
<td>1.673</td>
<td>1</td>
<td>.196</td>
<td>-.659</td>
<td>3.215</td>
</tr>
<tr>
<td>Use = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

*This parameter is set to zero because it is redundant.*

* $p < .05$

Table 4.13 reveals a marginal relationship between Likert scale item five and the 38.46% of the sample reporting some understanding of collaborative education ($p = .051$). A marginal relationship is also shown between Likert scale item five and the 58.24% of the population that are knowledgeable about IPE ($p = .056$). Marginal correlations are noteworthy because their
interpretation is subjective. Likert scale item five states, “Students like courses that include students from other academic departments” (Curran et al., 2007, p. 895). Administrators and faculty expressed a more positive than negative viewpoint towards this statement ($M = 3.42$). Those with limited comprehension in addition to those who are knowledgeable about IPE believed that students enjoy interaction with individuals from other disciplines. Participants felt that exposure, through interprofessional courses, to learners from programs other than dental hygiene would be favored.

Table 4.13

**Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 5**

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Item 5 = 2.0</td>
<td>-6.795</td>
<td>1.836</td>
<td>13.699</td>
<td>1</td>
<td>.000</td>
<td>-10.393</td>
</tr>
<tr>
<td>Item 5 = 3.0</td>
<td>-2.820</td>
<td>1.731</td>
<td>2.656</td>
<td>1</td>
<td>.103</td>
<td>-6.212</td>
</tr>
<tr>
<td>Item 5 = 4.0</td>
<td>-.138</td>
<td>1.675</td>
<td>.007</td>
<td>1</td>
<td>.934</td>
<td>-3.420</td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>-2.999</td>
<td>1.536</td>
<td>3.812</td>
<td>1</td>
<td>.051</td>
<td>-6.009</td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>-2.848</td>
<td>1.489</td>
<td>3.658</td>
<td>1</td>
<td>.056</td>
<td>-5.766</td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0$^a$</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td></td>
<td>.</td>
</tr>
<tr>
<td>Use = 1</td>
<td>-.982</td>
<td>1.016</td>
<td>.935</td>
<td>1</td>
<td>.334</td>
<td>-2.974</td>
</tr>
<tr>
<td>Use = 2</td>
<td>-.520</td>
<td>.928</td>
<td>.314</td>
<td>1</td>
<td>.575</td>
<td>-2.339</td>
</tr>
<tr>
<td>Use = 3</td>
<td>.406</td>
<td>.980</td>
<td>.171</td>
<td>1</td>
<td>.679</td>
<td>-1.514</td>
</tr>
<tr>
<td>Use = 4</td>
<td>0$^a$</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td></td>
<td>.</td>
</tr>
</tbody>
</table>

$^a$ This parameter is set to zero because it is redundant.

* $p < .05$
Table 4.14 reveals a marginal relationship between Likert scale item seven and the 47.78% of the population that disclosed that IPE is beginning to emerge within their dental hygiene curriculum \( (p = .061) \). This correlation is marginal and worthy of exploration because interpretation of it is subjective. Likert scale item seven reads, “Faculty like teaching to students in other academic departments” (Curran et al., 2007, p. 895). Administrators and faculty viewed this statement in a positive light \( (M = 3.42) \). Those who are in the infancy stages of implementing IPE into curricula enjoyed educating students outside of dental hygiene.

Table 4.14

**Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 7**

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Item 7 =</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-7.315</td>
</tr>
<tr>
<td>2.0</td>
<td>-3.969</td>
<td>1.707</td>
<td>5.404</td>
<td>1</td>
<td>.020</td>
<td>-7.315</td>
</tr>
<tr>
<td>Item 7 =</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-3.994</td>
</tr>
<tr>
<td>3.0</td>
<td>-.751</td>
<td>1.654</td>
<td>.206</td>
<td>1</td>
<td>.650</td>
<td>-3.994</td>
</tr>
<tr>
<td>Item 7 =</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-1.700</td>
</tr>
<tr>
<td>4.0</td>
<td>1.557</td>
<td>1.662</td>
<td>.878</td>
<td>1</td>
<td>.349</td>
<td>-1.700</td>
</tr>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-5.670</td>
</tr>
<tr>
<td>= 1</td>
<td>-.653</td>
<td>2.560</td>
<td>.065</td>
<td>1</td>
<td>.799</td>
<td>-5.670</td>
</tr>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-2.962</td>
</tr>
<tr>
<td>= 2</td>
<td>-.092</td>
<td>1.464</td>
<td>.004</td>
<td>1</td>
<td>.950</td>
<td>-2.962</td>
</tr>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-2.225</td>
</tr>
<tr>
<td>= 3</td>
<td>.547</td>
<td>1.414</td>
<td>.150</td>
<td>1</td>
<td>.699</td>
<td>-2.225</td>
</tr>
<tr>
<td>Knowledge</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>= 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.</td>
</tr>
<tr>
<td>Use = 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-3.659</td>
</tr>
<tr>
<td></td>
<td>-1.707</td>
<td>.996</td>
<td>2.940</td>
<td>1</td>
<td>.086</td>
<td>-3.659</td>
</tr>
<tr>
<td>Use = 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-3.551</td>
</tr>
<tr>
<td></td>
<td>-1.735</td>
<td>.926</td>
<td>3.508</td>
<td>1</td>
<td>.061</td>
<td>-3.551</td>
</tr>
<tr>
<td>Use = 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-2.566</td>
</tr>
<tr>
<td></td>
<td>-.676</td>
<td>.964</td>
<td>.492</td>
<td>1</td>
<td>.483</td>
<td>-2.566</td>
</tr>
<tr>
<td>Use = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

*This parameter is set to zero because it is redundant.
*p < .05
Table 4.15 highlights a significant relationship between Likert scale item nine and the 1.1% of the sample with no knowledge of IPE ($p = .000$), in addition to the 38.46% of the population that possess some understanding of it ($p = .000$). Table 4.15 also reveals a significant association between Likert scale item nine and the 24.44% of the sample that reported that IPE is not a component of the dental hygiene curriculum at their institution ($p = .031$). Likert scale item nine states, “Interprofessional efforts weaken course content” (Curran et al., 2007, p. 895). This was a reverse-scored item. Administrators and faculty expressed a higher level of negativity towards this statement ($M = 3.91$). Table 4.15 reveals that respondents with no or minimal comprehension of interprofessional pedagogy felt that application of it does not weaken course material. Even those who did not practice IPE felt that it does not negatively affect course content.
Table 4.15

*Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 9*

<table>
<thead>
<tr>
<th>Item 9 = 1.0</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-24.874</td>
<td>1.374</td>
<td>327.819</td>
<td>1</td>
<td>.000</td>
<td>-27.567 - 22.181</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 9 = 2.0</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-23.453</td>
<td>1.063</td>
<td>486.579</td>
<td>1</td>
<td>.000</td>
<td>-25.537 - 21.369</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 9 = 3.0</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-21.694</td>
<td>.955</td>
<td>515.620</td>
<td>1</td>
<td>.000</td>
<td>-23.566 - 19.821</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 9 = 4.0</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-18.358</td>
<td>.887</td>
<td>428.442</td>
<td>1</td>
<td>.000</td>
<td>-20.096 - 16.620</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge = 1</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge = 2</td>
<td>-20.303</td>
<td>1.922</td>
<td>111.578</td>
<td>1</td>
<td>.000*</td>
<td>-24.070 - 16.536</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge = 3</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge = 4</td>
<td>-18.553</td>
<td>.516</td>
<td>1290.902</td>
<td>1</td>
<td>.000*</td>
<td>-19.565 - 17.541</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge = 2</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge = 3</td>
<td>-18.677</td>
<td>.000</td>
<td></td>
<td>1</td>
<td>.</td>
<td>-18.677 - 18.677</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge = 4</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0*</td>
<td>.</td>
<td></td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use = 1</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use = 2</td>
<td>-2.271</td>
<td>1.052</td>
<td>4.658</td>
<td>1</td>
<td>.031*</td>
<td>-4.333 - .209</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use = 3</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use = 4</td>
<td>-1.675</td>
<td>.969</td>
<td>2.989</td>
<td>1</td>
<td>.084</td>
<td>-3.575 - .224</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use = 3</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use = 4</td>
<td>-.917</td>
<td>1.016</td>
<td>.814</td>
<td>1</td>
<td>.367</td>
<td>-2.909 - 1.075</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use = 4</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use = 4</td>
<td>0*</td>
<td>.</td>
<td></td>
<td>0</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

* This parameter is set to zero because it is redundant.

* p < .05

Table 4.16 shows a significant relationship between Likert scale item 10 and the 38.46% of the population with some understanding of IPE ($p = .000$). Likert scale item 10 reads, “Interprofessional efforts require support from campus administration” (Curran et al., 2007, p. 895). Administrators and faculty strongly agree with this statement ($M = 4.39$). Those who are somewhat knowledgeable about the principles of IPE felt that for interprofessional efforts to flourish, institutional support is necessary. They believed that campus assistance would enable collaborative plans to function effectively.
Table 4.16

*Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 10*

<table>
<thead>
<tr>
<th>Item 10 = 3.0</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-20.894</td>
<td>1.058</td>
<td>389.968</td>
<td>1</td>
<td>.000</td>
<td>-22.968 -18.821</td>
</tr>
<tr>
<td>Item 10 = 4.0</td>
<td>-17.146</td>
<td>.896</td>
<td>366.529</td>
<td>1</td>
<td>.000</td>
<td>-18.901 -15.390</td>
</tr>
<tr>
<td>Knowledge = 1</td>
<td>-.247</td>
<td>5333.578</td>
<td>.000</td>
<td>1</td>
<td>1.000</td>
<td>-10453.868 10453.374</td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>-17.745</td>
<td>.507</td>
<td>1222.877</td>
<td>1</td>
<td>.000*</td>
<td>-18.740 -16.751</td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>-17.401</td>
<td>.000</td>
<td>.000</td>
<td>1</td>
<td>.</td>
<td>-17.401 -17.401</td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0*</td>
<td>.000</td>
<td>.000</td>
<td>0</td>
<td>.</td>
<td>.000 - .000</td>
</tr>
<tr>
<td>Use = 1</td>
<td>.265</td>
<td>1.018</td>
<td>.068</td>
<td>1</td>
<td>.795</td>
<td>-1.730 2.260</td>
</tr>
<tr>
<td>Use = 2</td>
<td>-.223</td>
<td>.951</td>
<td>.055</td>
<td>1</td>
<td>.814</td>
<td>-2.088 1.641</td>
</tr>
<tr>
<td>Use = 3</td>
<td>.300</td>
<td>1.009</td>
<td>.088</td>
<td>1</td>
<td>.767</td>
<td>-1.679 2.278</td>
</tr>
<tr>
<td>Use = 4</td>
<td>0*</td>
<td>.000</td>
<td>.000</td>
<td>0</td>
<td>.</td>
<td>.000 - .000</td>
</tr>
</tbody>
</table>

*This parameter is set to zero because it is redundant.
*p < .05

Table 4.17 reveals a significant relationship between Likert scale item 11 and the 24.44% of the sample that reported that IPE is not a component of the dental hygiene curriculum at their institution (p = .036), in addition to the 47.78% of the population that disclosed it is beginning to emerge (p = .036). Likert scale item 11 states, “Interprofessional courses are logistically difficult” (Curran et al., 2007, p. 895). This was a reverse-scored item. Administrators and faculty agreed with this statement (M = 2.53). Those who are beginning to integrate interprofessional teaching and learning into curriculum found it logistically challenging. Even those who did not report application of IPE agreed that much effort and skill is needed for organizing and planning.
Table 4.17

*Ordinal Regression Analysis Attitudes towards Interprofessional Learning in the Academic Setting Scale Item 11*

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Item 11 = 1.0</td>
<td>-1.609</td>
<td>1.651</td>
<td>.950</td>
<td>1</td>
<td>.330</td>
<td>-4.846</td>
</tr>
<tr>
<td>Item 11 = 2.0</td>
<td>.556</td>
<td>1.671</td>
<td>.111</td>
<td>1</td>
<td>.739</td>
<td>-2.718</td>
</tr>
<tr>
<td>Item 11 = 3.0</td>
<td>2.292</td>
<td>1.663</td>
<td>1.899</td>
<td>1</td>
<td>.168</td>
<td>-9.68</td>
</tr>
<tr>
<td>Item 11 = 4.0</td>
<td>5.228</td>
<td>1.889</td>
<td>7.663</td>
<td>1</td>
<td>.006</td>
<td>1.527</td>
</tr>
<tr>
<td>Knowledge = 1</td>
<td>-18.019</td>
<td>.000</td>
<td>.</td>
<td>1</td>
<td></td>
<td>-18.019</td>
</tr>
<tr>
<td>Knowledge = 2</td>
<td>2.375</td>
<td>1.474</td>
<td>2.598</td>
<td>1</td>
<td>.107</td>
<td>-.513</td>
</tr>
<tr>
<td>Knowledge = 3</td>
<td>2.415</td>
<td>1.434</td>
<td>2.837</td>
<td>1</td>
<td>.092</td>
<td>-.395</td>
</tr>
<tr>
<td>Knowledge = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td></td>
<td>.</td>
</tr>
<tr>
<td>Use = 1</td>
<td>-2.054</td>
<td>.977</td>
<td>4.417</td>
<td>1</td>
<td>.036*</td>
<td>-3.969</td>
</tr>
<tr>
<td>Use = 2</td>
<td>-1.914</td>
<td>.914</td>
<td>4.387</td>
<td>1</td>
<td>.036*</td>
<td>-3.706</td>
</tr>
<tr>
<td>Use = 3</td>
<td>-1.689</td>
<td>.968</td>
<td>3.049</td>
<td>1</td>
<td>.081</td>
<td>-3.586</td>
</tr>
<tr>
<td>Use = 4</td>
<td>0*</td>
<td>.</td>
<td>.</td>
<td>0</td>
<td></td>
<td>.</td>
</tr>
</tbody>
</table>

*This parameter is set to zero because it is redundant.

* p < .05

Descriptive statistics proved to be useful in revealing that participants expressed positive attitudes towards IPE. This is apparent when viewing the calculated mean scores for Likert scale items. The mode identified the factor that best explains these perspectives as a preference for working with those from other professions. Inferential statistics enabled the identification and investigation of the association between variables. Spearman’s rho correlation coefficient distinguished a significant correspondence between attitudes and knowledge about interprofessional pedagogy, as well as beliefs and use of IPE. The importance of these
relationships was expressed by ordinal regression analyses, which highlighted the Likert scale items that significantly connected to these variables.

Themes were developed from the coding process by combining similar codes into categories (Creswell, 2014). Concepts and theories that were detailed throughout the literature review guided this study; they were compared to the topics and ideas that emerged from the focus group interview. Table 4.18 reveals the themes and sub-themes developed during data analysis, in addition to how they are linked to the literature review themes.

Table 4.18

Summary of Emergent Themes Linked to Literature Review Themes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Emergent Theme</th>
<th>Link to Literature Review Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inadequate exposure, understanding, and proficiency</td>
<td>Administration, faculty, and IPE</td>
</tr>
<tr>
<td>1a</td>
<td>Education, knowledge, and growth</td>
<td>Administration, faculty, and IPE</td>
</tr>
<tr>
<td>1b</td>
<td>Need for experience</td>
<td>Administration, faculty, and IPE</td>
</tr>
<tr>
<td>2</td>
<td>Expanding benefits, from students to patients</td>
<td>The role of IPE</td>
</tr>
<tr>
<td>3</td>
<td>Scheduling, leadership support, and logistics</td>
<td>Faculty barriers</td>
</tr>
<tr>
<td>4</td>
<td>Enthusiasm</td>
<td>Motivating frameworks and theories</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administrative and faculty attitudes</td>
</tr>
<tr>
<td>5</td>
<td>Significance, worth, and usefulness</td>
<td>Administrative and faculty attitudes</td>
</tr>
<tr>
<td>6</td>
<td>Essentiality of integration</td>
<td>The connection between dental hygiene and IPE</td>
</tr>
<tr>
<td>6a</td>
<td>Varying opportunities</td>
<td>The connection between dental hygiene and IPE</td>
</tr>
<tr>
<td>6b</td>
<td>Emerging trends</td>
<td>The connection between dental hygiene and IPE</td>
</tr>
</tbody>
</table>

Coding procedures proved to be advantageous in identifying similarities in relation to certain topics where there was 100% agreement from focus group participants. For example, all members expressed positive attitudes towards IPE and agreed that there is a need for it to be
integrated into dental hygiene curricula. Individuals explicitly stated that there were no disadvantages to practicing collaborative education, but only challenges associated with the implementation process. Additionally, each believed that multidisciplinary teaching and learning is the only way to educate dental hygienists because of the many demands presented by today's health care industry.

Variation was also easily identified through the coding process. Divergence existed in the familiarity and experience levels of IPE discussed by each participant. One member was more familiar with this pedagogy because she had taken two formal professional development courses with a focus on interprofessional practices, whereas another was somewhat familiar with it because of various informal experiences she has had while working with other professions.

**Thematic Patterns Derived from the Focus Group**

After extensively analyzing focus group data, the following themes and sub-themes developed:

1. Inadequate exposure, understanding, and proficiency
   a. Education, knowledge, and growth
   b. Need for experience
2. Expanding benefits, from students to patients
3. Scheduling, leadership support, and logistics
4. Enthusiasm
5. Significance, worth, and usefulness
6. Essentiality of integration
   a. Varying opportunities
   b. Emerging trends
Thematic topic 1: Inadequate exposure, understanding, and proficiency. All participants discussed their level of familiarity with IPE. They each expressed that their knowledge was based on interprofessional instruction and professional experiences. The specific types of education detailed were formal schooling, professional training, continuing education courses, and professional development. Various experiences were also highlighted, including observations and practical applications. One’s ability to grasp and practice the concepts of IPE was directly related to their exposure to this learning style. Those who had formal training opportunities expressed higher proficiency than those who had become acquainted with it through observation alone. A lower level of familiarity was attributed to a lack of practical experience and limited theoretical exposure. Although some members reported a greater degree of insight, this did not affect the positive standpoint each had conveyed. The following quotes exemplified each participant’s familiarity with IPE:

- “I can't say I'm extremely familiar with IPE, but my background, my formal training with IPE is about three years ago; I took a two-day seminar with the American Dental Education Association where we were introduced to IPE.” (participant 1)
- “I am somewhat familiar with IPE. I understand the concepts of IPE.” (participant 2)
- “I am familiar with the theory, for the most part. I have very limited practical experience with IPE.” (participant 2)
- “I would say that I'm a little familiar with it.” (participant 4)
- “I'm going to say on a scale of one to ten maybe about a five being familiar with it.” (participant 4)

Sub-theme 1a: Education, knowledge, and growth. Participants discussed their education in terms of formal and informal experiences, both of which increased familiarity with
IPE. Upon sharing their scholastic background, one main concept arose: The professional (dental hygiene) academic training of all was restricted to siloed learning. It was reported that their first experiences interacting with people from diverse professions did not come about until they ventured outside of dental hygiene to explore different fields, such as community and public health. It was through these informal communications that they realized the value in connecting with others from different domains of health care. After successfully completing their formal course work, participants disclosed that their acquaintance with IPE was enhanced through professional development opportunities, such as continuing education courses. Some of these focused on teaching the application of theory. On the other hand, there were other forms of instruction that shed light on the concepts of IPE by having participants work interprofessionally to learn from and about one another. All members unanimously agreed that education, formal and informal, directly correlates with familiarity. However, it was apparent that understanding is truly greatest when educational opportunities that have objectives reflective of interprofessional concepts are experienced. Below are some participant remarks that support this sub-theme:

- “Then I went on to get a bachelor's in community health. That put me in a situation where I was interacting with people from the health professions, physical therapists, nurses, OT, and administrators. That gave me more of a perspective of different parts of healthcare and how they interacted with one another.” (participant 1)

- “My master's took me to another level. The master's was in healthcare management with an emphasis in teaching of Allied Health professionals. That put me in a situation where I was with doctors, nurses, and CEOs of hospitals.” (participant 1)
• “Then I chose to, after a few years of teaching, to go back to take some graduate public health courses and really enjoyed it. That was where my opportunity was to really interact more with other healthcare professionals in education.” (participant 2)

• “While getting my master's in public health, I had my first opportunity to work with other students from other healthcare situations, which was nice. It just gave me a little bit more of an overview.” (participant 3)

• “I think it was really during my master's degree that I really began to feel the input of other professions.” (participant 4)

• “My formal training with IPE was about three years ago; I took a two-day seminar with ADEA where we were introduced to IPE. It was very informative and intense, but it was a training that because we did hands on with it, I felt that I gained a great deal from it.” (participant 1)

**Sub-theme 1b: Need for experience.** During the focus group, participants were asked to describe their experiences with IPE, which were explained as unofficial and/or official. Individuals discussed how their practical involvement, as well as their observation of interprofessional application, increased their overall understanding. Because additional concepts were grasped through each experience, they continued to take part in similar opportunities. Highlighted below are some of the statements made by participants in regard to their personal experiences with IPE:

• “In the spring of 2014, we decided to have a collaboration with nursing. We developed a seven-week rotation, a very small baby step. What we did was for seven weeks we rotated freshman nursing students into freshman dental hygiene students’ clinical experience.” (participant 1)
“In the spring of 2015, we advanced to another level. We got med lab tech onboard and we worked on an interdisciplinary morning based on the code of ethics.” (participant 1)

“In the fourth semester, they do an interactive experience with the EMT program where the professors from the EMT program come down and work as role play different types of medical emergencies. I know every time I go through it as a faculty member participating in this that I learn something.” (participant 2)

“Several years ago I was asked by one of the nursing educators if I would come into her class and just put something together to help the freshman understand the oral systemic connection.” (participant 4)

Thematic topic 2: Expanding benefits, from students to patients. All participants felt that students and patients are the primary groups that will greatly benefit from IPE. The consensus was that this pedagogy would place learners in a position to enter today's collaborative health care workforce adequately prepared. Some indicated that interprofessional efforts are key to enabling students to professionally flourish, develop their self-identity and confidence, and promote team-based care. It was reported that because shared learning instills a certain mind frame within individuals, they acquire the necessary skills to take a multidimensional approach when treating patients. Focus group members communicated that IPE will result in viewing the patient and their needs as central, thereby treating them accordingly, better managing overall health. Below are some quotes that revealed the main beneficiaries of interprofessional education:

“The first benefit that stands out in my mind is telling people who we are and learning who other people are.” (participant 1)
• “IPE gives them an identity of who they are in this global picture of healthcare. You more can see who you are, and you examine your abilities. You put yourself in a specific spot as your expertise are called upon to treat the patient optimally.” (participant 1)

• “I believe that promoting IPE or using IPE in the curriculum to any extent, to any level truly supports that patient-centered care, whole person approach to patient care. It promotes that team-based care for improved health outcomes. It brings oral health into general health, which we've been trying to do for so long to be recognized as part of that, bringing greater awareness to the role of oral health in treating the entire patient and managing many systemic types of conditions that are out there, and vice versa.” (participant 2)

• “IPE will promote a greater awareness of each profession's role in patient care.” (participant 2)

• “I feel that the benefits will be from the bottom up, from the foundation up, from the students, and hopefully the rest will follow.” (participant 3)

• “I really feel that the beneficiary of IPE will be the patient because this will secure better patient outcomes.” (participant 1)

**Thematic topic 3: Scheduling, leadership support, and logistics.** All of the participants felt that there were no disadvantages presented by IPE, only challenges associated with implementation. There was general agreement that the primary barrier to progression was scheduling logistics because of the difficulty with finding mutual times for planning and implementing shared teaching and learning. Some reported additional challenges, such as lack of administrative support and leadership on an institutional level. A number of individuals expressed that if leadership extended beyond the department chair and dean, IPE execution
would be more achievable. This claim was backed with personal experiences. All agreed that their administrators were in favor of interprofessional pedagogy. However, support levels fluctuated. Some stated that directors did not encourage collaboration, whereas others attributed their involvement with IPE to their leaders. An additional barrier reported was the uncertainty about whether senior faculty would buy-in to an exploration of unknown territory. These are statements made by participants that support these findings:

- “It is very difficult to incorporate IPE throughout the school of health science given everybody's schedule.” (participant 1)
- “The disadvantages, the one that again I agree with everyone else, that it's really the scheduling.” (participant 2)
- “Challenges with faculty and challenges with scheduling.” (participant 3)
- “One of the biggest problems is scheduling. When participant one mentioned that I definitely have to agree that on our campus it's scheduling as well.” (participant 4)
- “I have to say in our program our chair is very supportive of IPE. I mean she is the one that sent me to take the initial course, the two-day course, and she came with me. Since then, she's sat in on some of our meetings that we've had as a group. We have this informal group with the school of health science. We do not have an IPE curriculum committee, a formalized committee.” (participant 1)
- “She is very supportive; although it is very difficult to incorporate IPE throughout the school of health science given everybody's schedule. She tries to help us create the time. She'll give suggestions on how we can create the time to get together and offer us opportunities to grow.” (participant 1)
• “Maybe have the involvement not only of the department and the dean of the school of health science, but we need the involvement of the administration, the college administration, to recognize the importance of IPE.” (participant 1)

• “Although our department chair is pro-IPE, she doesn't push the faculty to really go after anything else.” (participant 3)

• “The logistics of how to make this happen because you're teaching old dogs new tricks and getting everybody to start changing what we're doing currently to expand into this direction. That's always a hard thing to change the tradition and try something new.” (participant 2)

Thematic topic 4: Enthusiasm. Participants all mentioned that they were enthusiastic about becoming more involved with IPE. They attributed this excitement to observing the success others were having. This interest ignited an eagerness shared by each individual to learn more so that they can jump on the interprofessional bandwagon. Everyone indicated that they were happy and grateful for all of their exposure, but yearned for further involvement to feel more confident launching collaborative plans.

Participants expressed support for collaborating with other professionals because it contributes to feelings of enlightenment, as well as increased confidence. Some indicated that their desire to become involved with IPE initiatives stemmed from the lack of familiarity health care professionals exhibited in regard to the discipline of dental hygiene and the role of dental hygienists. Each reported that they were eager to adopt shared teaching because this meant that students would be aware of different medical professionals, triggering the attainment of a global perspective towards the patient. Here is how they explained their motivation:
• “Right after I took that, the two-day seminar, I felt strongly motivated to do something with it immediately. I wanted to get the word out to not only my colleagues, but I wanted to see my students’ response to it.” (participant 1)

• “I would love more of an opportunity to do that because I think when you start listening to what others are bringing to the table, for that person it does make you more aware of thinking outside the box of our traditional dental hygiene type of services that provide and look more globally at that patient.” (participant 2)

• “When I hear about other departments or other situations, I get excited about it. I would like to be more involved in it.” (participant 3)

• “I'm a little more energized to get back into the activities at the college and hopefully support our faculty member in moving forward with her IPE initiative in our program.” (participant 2)

• “I'm very interested in the whole concept, and I would love to learn more about it.” (participant 2)

• “I feel that when I work with a group with professionals and I'm working interprofessionally, I feel more confident that I'm treating the patient optimally. It encourages me.” (participant 1)

• “I love working with other professions if for no other reason than to educate them. Not only to learn from them, but to educate them on what it is we do as professionals.” (participant 4)

• “It validates my credentials and my ability and my skills, and it makes me feel like I'm very much a part of the healthcare system. I really do feel more ... I feel like I come alive more working inter-professionally.” (participant 1)
• “It’s my goal to make the students aware that they don't work in a silo. I mean we reach out to other disciplines in our profession and also to make them aware that the patient is home, the patient is central.” (participant 1)

**Thematic topic 5: Significance, worth, and usefulness.** Each participant had similar notions about the role and value of IPE. They emphasized that it is in alignment with the objectives of today’s medical framework. All felt that it efficiently responds to the complexities presented within the health care environment. Some mentioned that they are onboard with interprofessional education because of its efficacy. The main conviction expressed by each was that collaboration is an integral component to producing highly competent health care professionals that are more than capable of treating the patient optimally. Here is how they explained their beliefs:

• “A part of me always believed that we really always needed to work as a team. I always believed in an interdisciplinary approach to education.” (participant 2)

• “I just feel that IPE is essential, and it's essential to become the consummate clinician in whatever discipline you're in.” (participant 1)

• “I agree that IPE is really the way to go. I don’t see any other alternatives to how to train or educate, I don't really like the word train, but educate our healthcare providers. I think that IPE supports the direction that healthcare is moving towards and is very beneficial.” (participant 2)

• “What we do is to benefit the patient. It's not all about dental hygiene, it's not all about dentistry. It is to prioritize their treatment and do what's best for the patient. That is what we're doing now, and hopefully we'll move forward.” (participant 1)
• “I think that IPE is going, that it’s a trend. It's not going to stop. I think that it's needed, and as participant one said, it's all about the patient. This is the way to be able to get the best care for the patients.” (participant 4)

• “IPE brings greater awareness to the role of oral health in treating the entire patient and managing many systemic types of conditions that are out there and vice versa.”
  (participant 2)

**Thematic topic 6: Essentiality of integration.** There was unanimous agreement expressed by all that it is incumbent upon academic departments to offer courses that are in alignment with the current health care system. Each mentioned that students should be exposed to IPE learning standards so that they can acquire the knowledge and skill set required to implement a collaborative approach to care, which in turn will optimize health services. All felt that integrating shared teaching and learning into dental hygiene curricula, on any level, would allow for forward movement within the educational system. Some indicated that dental hygiene is falling behind when compared to other disciplines that are formally weaving IPE into curricula. The need for multidisciplinary education to be incorporated into dental hygiene academia was recognized. The following statements capture the value of IPE within dental hygiene curricula:

• “It's my goal with the limitations we have now that it's not an exact, we don't have an exact course for it, is to make the students aware that they don't work in a silo.”
  (participant 1)

• “There shouldn't be a nutrition course for just hygienists and a nutrition course for just nurses. Everybody needed to be within those programs together.” (participant 2)
• “I think that whole IPE approach to education and to patient care is so important. I believe that being part of a team and working as part of that healthcare team and participating in that treatment of that patient can only make me a better educator and a much better healthcare provider.” (participant 2)

• “I just, I definitely see that this is a way that we're going, and I think it's really important.” (participant 4)

• “I think that faculty are looking more and more about how they could possibly pull it into the curriculum and integrate it into their course, whatever course they're teaching.” (participant 4)

• “In the nursing department on our campus, they seem to be steps ahead of us in this whole concept.” (participant 2)

**Sub-theme 6a: Varying opportunities.** Participants reported that the dental hygiene course of study at their institutions does not adhere to an IPE model. There are no interprofessional objectives built into the curricula. However, all revealed that shared learning opportunities were provided to the students at some point in their educational journeys. These learning activities varied from institution to institution. Some were extensive, whereas others were limited. One focus group member discussed circumstances that were planned with faculty from other health science departments in an attempt to introduce collaboration into curricula. This person also indicated that endeavors are actively being made to increase the incorporation of IPE. On the other hand, another individual explained that there is only one interprofessional opportunity offered to some students because of the legal aspects of affiliation agreements. There was 100% agreement that the current status of interprofessional pedagogy within curricula is not
definitively structured because it is in its infancy stages. The following statements describe IPE within participants’ curricula:

- “We have this informal group with the school of health science. We do not have an IPE curriculum committee, a formalized committee.” (participant 1)
- “In the fourth semester, they do an interactive experience with the EMT program where the professors from the EMT program come down and work as role play different types of medical emergencies.” (participant 2)
- “In their affiliations, it's probably a hit or miss that occurs depending on what affiliation they go to and whether or not they have an interaction with a physician there or a nurse there or a social worker. That is, probably it's not very formalized.” (participant 2)
- “It is very, very limited. The students are actually invited, so not all of the students can participate.” (participant 3)
- “On our campus several years ago, we started a thing through health and wellness called CSI, critical student issues. The person who runs it is somebody from the health and wellness center. They try to bring onboard representatives from all the different schools. Dental hygiene is represented, nursing is represented, and med lab tech is represented from the school of health science.” (participant 4)
- “We got invited to go upstairs to the nursing lab. I took some of our sophomore dental hygiene students to visit. It’s set up like a hospital ward. The students, I had five of them with me, and they just worked with the nursing students showing them how to be able to perform some oral hygiene on a patient in the hospital.” (participant 4)

**Sub-theme 6b: Emerging trends.** In addition to participants demonstrating a willingness to adopt IPE, they each stated that it should be integrated within dental hygiene curricula. Focus
groups members realized that the health care system has transformed and is calling for an interprofessional approach to patient treatment. A consensus of beliefs among them revealed that this is the direction dental hygiene education is heading, so students should be equipped to be primary members of these collaborative teams. There was a general agreement expressed by all that there is no other teaching methodology to execute other than IPE as a result of the paradigm shift in health care. These quotes reveal how participants perceive the future of dental hygiene curricula:

- “It's up and coming, and I think that this is kind of the direction that our school, the school of health sciences on our campus, is going to be taking.” (participant 4)
- “Healthcare is changing so rapidly. We may find ourselves in a position where we're plunked in the middle of a community healthcare center working with all different healthcare providers. We have to know what everyone else does in order to treat the patient optimally.” (participant 1)
- “Healthcare is changing, and I agree we don’t really know where it's going to go in the future, but right now there's really a very strong public health future for us. I think dental hygiene is moving more into that public health arena of where we're going to go for patient care, and that's going to be very vital that they have these types of skills and they truly accept that this is the way to treat patients, more interprofessional approach to it.” (participant 2)
- “The students, as everyone has said already, are entering a different world of healthcare. They need to be aware from very basic beginnings of their education where they fit.” (participant 3)
• “I just, I definitely see that this is a way that we're going, and I think it's really important.” (participant 4)

• “I really don't think there's any other way but to get onboard with IPE.” (participant 1)

• “I agree that IPE is really the way to go. I don't see any other alternatives to how to train or educate; I don't really like the word ‘train,’ but educate our healthcare providers. I think that IPE supports the direction that healthcare is moving towards and is very beneficial.” (participant 2)

• “I think that it's needed, and as participant one said, it's all about the patient. This is the way to be able to get the best care for the patients.” (participant 4)

Conclusion

This chapter described how the data were analyzed and detailed the results of the research study. Overall, both survey respondents and focus group participants expressed positive attitudes towards IPE. Interprofessional teaching and learning is considered to be of value for dental hygiene education. Findings offer an explanation of the relationship between perspectives and usage, as well as knowledge about collaborative education. Reasons for viewpoints were reported, explicating the feelings and thought processes of administrators and faculty. Analyzed data were categorized into themes and further connected to reoccurring topics in the literature. Chapter V offers a comprehensive discussion of the results presented.
CHAPTER 5

CONCLUSION

This research study sought to document dental hygiene administrator and faculty sentiments about the value of IPE within dental hygiene curricula. Although previous studies have investigated attitudes towards multidisciplinary education, minimal research has focused on this specific population. Today’s health care system implements a collaborative approach to patient care. The rise of interprofessional practice calls for dental hygiene academia to adopt IPE (Battrell et al., 2014). Failure to do so will restrict shared learning opportunities and potentially jeopardize the relevance of the profession. A clear need exists to understand the convictions of these individuals because they are positioned to lead transformative initiatives and respond to the demands put forward.

This mixed methodology study relied on a survey and focus group interview to collect data that enabled the investigator to present conclusions to the research questions. A total of 91 dental hygiene administrators and faculty members participated in the survey portion of this study. Additionally, four dental hygiene faculty members took part in the focus group interview. Research results are presented and interpreted in this chapter. The implications, as well as recommendations for future action and further study, are highlighted. This chapter concludes by articulating the significance of the research and illuminating the importance of the findings.

Interpretation of Findings

Dental hygiene administrators and faculty do hold IPE in high regard. Their perspectives have instilled a desire to develop and implement transformative plans focused on incorporating shared teaching and learning into dental hygiene education. As the understanding of IPE among
these individuals grows so will their positive outlook. Adopting collaborative practices is highly attainable in the presence of leadership advocacy. This will provide students with the fundamentals needed to work in the medical system of the 21st century, bringing patients with complex issues to a state of health and wellbeing.

**Research question 1.** What are the attitudes of dental hygiene administrators and faculty towards IPE? The data indicated that there were favorable attitudes towards IPE possessed by survey and focus group participants. Perceptions were determined by utilizing descriptive statistics to calculate the mean score of all Likert scale items. Additionally, the positivity of focus group members was conveyed through the following themes and sub-themes: expanding benefits, from students to patients, enthusiasm, significance, worth and usefulness, essentiality of integration, and emerging trends.

Throughout this study, attitude has been defined as the viewpoints and perspectives of dental hygiene administrators and faculty towards IPE, which encompasses interprofessional teaching and learning. The Likert scale items of the survey in conjunction with the focus group interview questions elicited responses from participants that enabled the researcher to quantitatively and qualitatively interpret their feelings.

Out of the 28 Likert scale items, 13 produced a mean score over 4.00, and 13 provided a mean score over 3.00. This results in only two Likert scale items yielding a mean score between 2.00 and 3.00. An overall mean score was calculated for all Likert scale items, equaling 3.89. Curran et al. (2007) reported that when mean scores are closer to 5.00 this is indicative of more favorable attitudes. Statistical analysis confirmed strong affirmation in regard to IPE benefiting patients because it is expected to enhance teamwork and communication skills, increase comprehension levels of the roles of health care professionals, and offer clarity about patient
problems. Prioritizing IPE by increasing interprofessional learning opportunities, encouraging faculty participation, and boosting administrative support were also emphasized.

When focus group members were asked several questions centering on various aspects of IPE, a number of themes and sub-themes emerged. Within these themes, which are supported by verbatim statements, it is evident that approxbatory attitudes were unanimously articulated. Participants all felt strongly that multidisciplinary application is necessary to efficiently educate dental hygiene students to be highly competent members of the integrated health care system, preparing them to provide optimal patient treatment. Each expressed a deep desire to become better versed and involved in interprofessional practices. Emphasis placed on the value of IPE within dental hygiene curricula exhibited the high regard in which this teaching methodology is viewed. Overall, interprofessional pedagogy is perceived as a frontrunner for maintaining the relevance of dental hygiene while simultaneously confronting the demands of today’s medical system.

Although this data is restricted to individuals within the Northeast region of the United States, it does confirm that dental hygiene education should focus attention on incorporating IPE within curricula.

**Research question 2.** How do attitudes influence the utilization of IPE within dental hygiene curricula? The results of this study indicate that there is a relationship between attitudes of participants and their use of IPE. Specifically, positive perspectives were correlated to two utilization levels: IPE not a component of the dental hygiene curriculum and beginning to emerge. This is supported by the positive correspondence revealed between these two variables through the statistical calculation of Spearman’s rho ($r_s$) correlation coefficient (Table 4.4). An ordinal regression analysis further explored this connection (Tables 4.9, 4.14, 4.15, and 4.17).
Through qualitative analysis, the association between perspectives towards and use of IPE was further clarified and reinforced; it is explicitly highlighted in the emergent sub-theme: varying opportunities.

There is a relationship between positive attitudes towards IPE and the 24.44% of survey respondents indicating that it is not a component of their dental hygiene curriculum, as well as the 47.78% of those surveyed that revealed interprofessional pedagogy is in its beginning stages of emerging. This finding is supported by qualitative data, which revealed the same correlation. Although favorable feelings towards IPE are widespread, the majority of the study’s population is not adhering to an IPE-based curriculum. Most of these programs offer interprofessional opportunities through various educational activities, rotations, lectures, etc. However, a small number of them are actually structured on an IPE framework.

Quantitative data from this study revealed that about half of dental hygiene programs are in the infancy stages of integrating IPE into curricula. The results also reported other stages of application: 24.44% of the surveyed population does not integrate interprofessional pedagogy on any level, and 22.22% are in the intermediary stages of implementation. Only 5.5% reported that interdisciplinary education is a primary component of their curricula. The qualitative data parallels the quantitative data: three of the four focus group members shared that each of their respective programs is in the beginning stages of incorporating interprofessional methodologies into the curriculum. One participant stated that IPE is not a component of their program of study because it is limited to one circumstance that is only offered to a select number of dental hygiene students.

Findings indicate that positive attitudes do not have much influence on dental hygiene curricula being structured on an IPE model or framework. Instead, sentiments are more in
alignment with the aspiration to expand shared teaching and learning within curricula. Therefore, favorable perspectives are impacting the commencement of interprofessional opportunities.

**Research question 3.** What is the basis for these attitudes? The statistical analysis performed on this data indicated a correlation between attitudes towards IPE and the understanding of it (Table 4.4). Significant relationships were reported between positive viewpoints and the following levels of knowledge about IPE: no knowledge, some knowledge, and knowledgeable (Tables 4.5, 4.6, 4.7, 4.8, 4.10, 4.15, 4.12, 4.13, 4.15, and 4.16). Given that only 1.1% of the population reported no comprehension of shared teaching and learning, the primary relationships were between positive feelings and those who possess minimal knowledge (38.46%), as well as those with an adequate understanding (58.24%). The quantitative data are bolstered by the qualitative data that is revealed through the following emergent theme and sub-themes: inadequate exposure, understanding, proficiency, education, knowledge, growth, and need for experience. Focus group data continues to contribute to the presented research question by information provided within expanding benefits, from students to patients and emerging trends.

Findings indicate that positivity towards IPE is associated with one’s understanding of it. Perspectives are enhanced with any form of interprofessional instruction or experience. Exposure to this pedagogy intensifies recognition of its value. The importance, worth, and usefulness of collaborative teaching and learning are better perceived when the familiarity and proficiency of it are higher.

The underlying foundation for attitudes can also be explained through the following sub-themes: expanding benefits from students to patients and emerging trends. Dental hygiene administrators and faculty have supportive attitudes because they acknowledge that it is by
means of IPE that students will develop an individual identity while being able to function in a collaborative atmosphere. They also realize that interprofessional pedagogy is key to patients being viewed as central. These entities understand that there has been a transition in health care from siloed treatment to a team-based approach. As a result of this paradigm shift, the integration of IPE within dental hygiene curricula is viewed in a positive light.

**Research question 4.** How are these attitudes related to leadership support, knowledge and skill set, risks and benefits, training, professionalism, and perceived barriers? The statistical analysis performed on the data indicated that the most frequently selected factor used to explain attitudes towards IPE was that participants favor working with other professions. Although that was the most common response, others did relate their perspectives to a lack of leadership support (7.87%), the presence of leadership support (5.62%), unfamiliarity with IPE (4.49%), familiarity with IPE (8.99%), risks associated with IPE (2.25%), benefits associated with IPE (12.36%), lack of training for IPE (8.99%), presence of training for IPE (1.12%), and perceived barriers associated with IPE (12.36%). Each aspect was detailed and elucidated through the focus group, which clarified the connection between standpoints and the elements that influence them.

Valuable information emerged through the following themes: inadequate exposure, understanding and proficiency, expanding benefits from students to patients, scheduling, leadership support and logistics, and enthusiasm.

Both positive and negative feelings were expressed when asked about leadership support for IPE. Participants felt that it must be both present and proactive to promote advancement. Leadership without advocacy and encouragement is similar to a lack of directorship; both obstruct forward movement.
Attitudes are directly associated with one’s familiarity level with IPE. Acquaintance with the concepts of interprofessional teaching and learning brings about positive viewpoints. As awareness and experience increase, so does favorability and support. The value of IPE within dental hygiene curricula is strengthened as related tenets are better understood.

Few participants expressed that their feelings were associated with risks. Positive attitudes are intensified because of the benefits presented by IPE. Students and patients are the primary beneficiaries. Interprofessional exposure provides leaners with the knowledge and skill set required preparing them to be integral components of the collaborative health care system. This educational training will maximize the standard of care that patients receive.

Many participants reported a lack of training for IPE. The absence of professional development resulted in insecurity and unawareness. Because of this uncertainty, dental hygiene administrators and faculty do not feel secure enough to develop action strategies. As a result, they look to observe others and gain practical experience to increase proficiency. When faculty reported formal training, they felt better equipped to initiate transformative plans. In fact, these were the individuals who were more advanced and involved in the process of integrating interprofessional opportunities within dental hygiene curricula.

The data indicated that all attitudes reflect favorability for working with other disciplines. The thought processes behind these feelings varied. Some enjoy working with others because it educates these professionals about dental hygiene. Others champion interprofessional teaching and learning because it produces a sense of self-efficacy and triggers the attainment of a global perspective in health care.

It was expressed that to be capable of implementing IPE, barriers needed to be overcome. Scheduling logistics was reported as a chief obstacle because of the difficulty in arranging
mutual meeting times. Buy-in levels were also a concern. Participants were doubtful that both administrators and faculty would be willing to wholeheartedly embrace a new educational strategy.

Findings indicate that attitudes are related to leadership support, knowledge and skill set, risks and benefits, training, professionalism, and perceived barriers. The relationship between feelings and these factors are useful to establish a concrete framework to build transformative plans.

A comparison of past and current research. It is advantageous to compare the findings in this study to those previously reported. This will determine whether changes in attitudes have occurred and offer a rationale explaining why. The continuation of assessing perspectives towards IPE will be useful in creating effective transformative plans that are focused on the convictions of those expected to guide endeavors.

Similarly to the studies conducted by Gardner et al. (2002), Curran et al. (2005), and Curran et al. (2007) the data from current research also revealed that participants possessed positive attitudes towards IPE. This study identified a relationship between favorable perspectives and knowledge about interprofessional practices. This is comparable to the association between supportive viewpoints and experience with shared teaching and learning that Curran et al. (2007) discovered. It is assumed that experience enhances knowledge. Therefore, positivity is intensified with exposure and awareness. Through the comparison of findings it is apparent that over time the principles of IPE continue to be held in high regard because of their ultimate effect on students and patients.

Although similarities were present, differences were also noted. The research conducted by Gardner et al. (2002), Curran et al. (2005), and Curran et al. (2007) examined diverse health
care disciplines such as, nursing and medicine, excluding dental hygiene. The studies of Gardner et al. and Curran et al. (2005) focused solely on administrative attitudes. The current research investigated administrative and faculty insights; however, a larger portion of the population was comprised of faculty (81.32%). There is potential for variations in standpoints between these two professional roles.

Although attitudes are the main focus of this study, results were compared and contrasted to previous research concentrating on alternative factors in an attempt to validate or negate the feelings and actions of dental hygiene educators. Greer and Clay (2010) discussed the variation in scheduling as a challenge that needed to be addressed when designing interprofessional models. Data from this study indicated that collaborative efforts are logistically difficult \((M = 2.53)\). This was a reverse-scored item. In fact, focus group participants expressed this as one of the main barriers limiting IPE progression. They felt that it was extremely onerous for members from varying disciplines to find mutual meetings times within chaotic curricula.

The Interprofessional Education Collaborative Expert Panel (2011) has shed light on the fact that leadership support is necessary for advancement to occur. Those expected to develop and implement IPE initiatives should have the required assistance to inform their plans (Brame et al., 2015; VanderWielen et al., 2014). Data indicated that administrators and faculty felt strongly about the fact that they should be encouraged to participate in interprofessional courses \((M = 4.07)\) and that the support from campus administration is required \((M = 4.39)\). Focus group participants also discussed directorship quite extensively. Those that experienced guidance and were invigorated by their department chairs and/or school deans were much more assured and ready to partake in IPE efforts. When leadership was deficient and non-motivating, faculty lacked the confidence to become involved.
Becker et al. (2014) found that faculty must have a certain level of knowledge and skill to be proficient in implementing IPE. Additionally, Hall and Zierler (2015) connected a lack of interprofessional involvement to minimal exposure and training. Survey data indicated that knowledge levels fluctuated from no comprehension about the concepts of this pedagogy (1.1%) to being exceptionally informed about it (2.2%). Most of survey respondents reported that they possessed some understanding (38.46%) or were knowledgeable (58.24%) about interprofessional principles. Qualitative data revealed that although faculty felt somewhat familiar with shared teaching and learning, they desired further education and instruction to increase awareness and ability. These findings support the issues raised by Becker et al. as well as Hall and Zierler. Therefore, the aspiration of administrators and educators to be exposed to a greater extent of training is perfectly aligned with integrating IPE into dental hygiene curricula. To boost the number of programs in which collaborative application is a major component (5.56%), additional training is necessary.

Neocleous (2014) noted that some faculty is resistant to interprofessional application because they are unfamiliar with the roles of other professionals and therefore, not open to collaboration. This study revealed that faculty like teaching with their colleagues from different academic departments ($M = 3.49$). In fact, most reported that their positive attitudes towards IPE are attributed to the favorability of connecting with those from diverse domains (35.96%). Dental hygiene educators elaborated on this during the focus group. All expressed that they advocate for working with diverse professions because it enlightens them about the importance of dental hygiene and that it promotes a global perspective towards patient care.

Previous research has found that many allied dental programs restrict shared learning because they do not focus attention on interprofessional efforts (ADHA, 2015c; Brame et al.,
Similarly, data from this study indicated that only 5.56% of the surveyed population stated that IPE is a major component of the program of study at their respective institutions. Most reported that they are only in the beginning stages of implementing multidisciplinary education (47.78%). Focus group members also shared that although their departments are working towards collaborative learning, they are in the infancy phase of initiation.

Findings from this study serve as evidence that dental hygiene educators possess the attitudes required to embrace IPE. Administrator and faculty viewpoints and the factors that influence them reveal that academia is on the correct path for making interprofessional practices a component of curricula. As a result of positive convictions, dental hygiene can move closer to diminishing oral health disparities and disease through collaborative efforts. This was recommended in the Surgeon General’s Report from 2000 as well as the Institute of Medicine’s reports: *Advancing Oral Health in America* and *Improving Access to Oral Health Care for Vulnerable and Underserved Populations* (Bowser et al., 2013; US Department of Health and Human Services, 2000). Furthermore, this study reveals that dental hygiene administrators and faculty are interested and highly motivated to advance towards IPE. This eagerness should be built upon so that care offered by interdisciplinary teams could heighten, the number of dental hygienists joining these groups can increase, and the care provided to patients with complex medical issues can be enhanced. This would allow for dental hygiene academia to work towards the objectives put forward at the September 2013 conference, "*Transforming Dental Hygiene Education: Proud Past, Unlimited Future,*" held by the ADHA, the ADHA Institute for Oral Health, and the Santa Fe Group (Battrell et al., 2014).
Limitations

Limitations to this study were identified. First, this study was limited to the administrators and faculty of dental hygiene programs in the Northeast region of the United States. Findings are not reflective of other health science academic programs. Results cannot be generalized to all dental hygiene administrators and faculty members as well as dental hygiene curricula throughout the United States.

Secondly, of the 224 individuals that were asked to participate in the survey, 91 responded. There is no way of determining if members of each department in the Northeast participated. Additionally, four focus group participants represented dental hygiene programs that are not structured on an IPE model but are only in the infancy stages of integrating interprofessional learning opportunities into the curriculum. It would be beneficial to collect qualitative data from individuals that represent programs that vary in the extent to which IPE is utilized at their institution.

Third, only 18.68% of survey participants are dental hygiene administrators. Although two of the four focus group members have administrative responsibilities, all are faculty. It would have been advantageous to obtain more quantitative and qualitative data from administrators being that their support can hinder the progression of IPE (Brame et al., 2015; VanderWielen et al., 2014).

Lastly, responses to survey questions were self-reported, leaving room for subjective interpretation among respondents.

Implications

Health care academia is undergoing a paradigm shift, from siloed to multidisciplinary teaching and learning. Integrating IPE within dental hygiene programs will assist in fostering
future dental hygienists who are primed to address the challenges of today’s medical system. This is not feasible without the leadership and involvement of committed administrators and faculty members. It is the responsibility of these individuals to actively respond to the demands presented by students and the health care system by transforming education. It is essential to understand their feelings because they have been called upon to actualize strategic plans focusing on collaborative efforts. As a result of this research investigation, we now know more about the attitudes of dental hygiene administrators and faculty members towards interprofessional practices. They do feel IPE is not a fad but a movement that will remain.

Outcomes from this study can be useful in heightening discussion and creating IPE learning opportunities within dental hygiene curricula. Results can assist in confronting one of the primary barriers, administrative and faculty attitudes. Findings indicate that overall administrators and faculty possess a positive outlook toward this pedagogy but feel it is challenging to find the time to incorporate it into existing curricula. In addition, they are open to adopting and applying collaborative teaching strategies with the appropriate guidance, knowledge, and support. The basis for these viewpoints is revealed. Therefore, evidence sheds light on the fact that if proper measures are taken IPE can be catapulted forward. For example, professional development experiences, targeting identified areas of need, can be designed as one method for transforming dental hygiene education.

Conclusions serve as an administrative and faculty needs assessment in which attitudes and related causes are explored and explicated. Understanding these feelings are crucial for any dental hygiene program to build a solid foundation for change. Given the knowledge gained in conducting this research, institutions can develop interprofessional plans or modify existing efforts in an attempt to advance IPE. Doing so will assist in creating an educational environment
where students can learn effective team-working, communication, and management skills. This will position them for a positive transition from academia into a collaborative health care system. As a result, they will become practitioners who are well equipped to provide optimal treatment to patients through application of joint practices.

**Recommendations for Action**

This study supports the notion that IPE is a valuable component of dental hygiene education and should therefore be integrated or expanded within curricula. Efforts should be directed at enhancing the knowledge and skill sets of those expected to carry out strategic plans. This will boost buy-in levels in addition to the confidence and comprehension among transformative leaders. Encouraging the use of this pedagogy can result in an increase in the utilization of it. Providing professional development opportunities, in-service training, as well as informal and formal experiences are strategies that promote this recommendation.

Dental hygiene administrators and faculty recognize that the health care system has undergone a paradigm shift. Generating and implementing IPE action strategies will assist students to become team players, think positively about other professionals, solve patient problems, enhance communication skills, clarify the nature of medical issues, and heighten their ability to solve clinical dilemmas. By using shared teaching and learning to achieve all of the highlighted objectives, dental hygiene programs will be preparing students to be highly functioning members of today’s health care system. These credible practitioners will be perfectly positioned to provide optimal care to patients.

During IPE planning phases, leadership support, connectivity, logistics, and curriculum must be acknowledged to ensure success. Assistance from campus administration should be sought. Program directors should encourage their faculty to participate in interprofessional
courses and reward them for their contribution. Faculty should unite, leading students by example. Administrators and faculty from each discipline involved need to come together in order to determine the most practical approach for utilizing resources and avoiding scheduling conflicts. IPE learning objectives should be crafted and intertwined into programs. All the detailed elements will commence the process of initiating an interprofessional framework in which the curriculum is grounded.

**Recommendations for Further Study**

The results of this investigation warrant the following recommendations for future research:

1. A replication of the present study should be pursued to assess a sampling unit that includes dental hygiene programs throughout the United States to offer widespread findings.

2. An investigation of dental hygiene administrator and faculty attitudes pre and post further exposure to IPE should be conducted. Focus group participants expressed a desire to increase their experience with collaborative practice. This will reveal salient sentiments that can continue to inform transformative initiatives. For example, a case study approach can be implemented to study perspectives during a professional development process or the execution of a new interprofessional dental hygiene program.

3. An investigation exploring negative attitudes towards IPE should be conducted, since most of the participants of this study exhibited positive feelings. This can be used to create efforts aimed at altering viewpoints and increasing the understanding of interprofessional practices.
4. A qualitative investigation of dental hygiene administrator attitudes towards IPE. This will provide the administrative perspective that the present study lacks. Data can be used to better understand how administrators feel about interprofessional pedagogy and where these viewpoints stem from.

5. A qualitative exploration of the attitudes of administrators and faculty members representing dental hygiene programs varying in the extent to which IPE is utilized. This can provide the perspective of those actively involved in an interprofessional based curriculum, which the present study fails to address.

Conclusion

Interprofessional practices within the health care system will continue to evolve. Within these changes lie the value and significance of utilizing IPE as a means to effectively educate dental hygiene students to enter a collaborative workforce. This study supports the inclusion of IPE in dental hygiene curricula. Knowledge gained is useful because it sheds light on the feelings of the administrators and faculty members expected to execute a joint approach to teaching. This study serves as a needs assessment, exposing points of interest and concerns, which can be referenced to propel collaborative efforts forward. It advocates implementing interprofessional plans of action that would complement professional, student, and community needs.

Currently, IPE is not extensively applied within dental hygiene curricula. Despite the lack of utilization, the administrators and faculty members responsible for managing these programs feel that the adoption of it would be valuable. The modern collaborative health care system has emphasized the importance for dental hygiene academia to embrace interprofessional strategies. Being that dental hygiene leaders view this pedagogy in a positive light, potential exists for transformative initiatives to be achieved.
Administration and leadership roles are a necessity in making shared teaching and learning successful. They must be present and encouraging to stimulate change. Leaders need to effectively communicate the importance of IPE with those that are expected to be involved with the development and implementation of interprofessional plans. The vision of this teaching typology should be conveyed from the top down, compelling faculty to become involved. This will result in educators uniting, actively working towards integrating IPE within curricula. The attainment of collaborative pedagogy is possible if leadership is supportive and motivating.

Other disciplines have already welcomed IPE, intertwining it into curricula, demonstrating that dental hygiene is falling behind. The health care system has transitioned resulting in a team-based paradigm relying on a collaborative educational network. The profession of dental hygiene relies on the transformation of academia since it is the starting point for which practice is based off of (ADHA, 2015c). Because of this study, the desire of dental hygiene administrators and faculty to become more familiar with IPE has become evident. This longing should be addressed because confidence can increase as a result of awareness. If these individuals are better versed, future dental hygienists can one day assume the position of being a crucial component of the interprofessional team.

Findings from this study can be used as a needs assessment to determine voids that are present in dental hygiene curricula and recognize desires to improve deficiencies. The results indicated that although the majority of administrators and faculty do favor IPE, their affiliated programs are not structured on interprofessional models. The aspiration exists for dental hygiene academia to grow beyond IPE commencement. This aim can become reality if leadership is equipped with the necessary building blocks to enhance their competence and skill set. Administrators and faculty should be encouraged and provided with the opportunity to
participate in workshops, seminars, and skill-based training. Professional development approaches will address interests and points of concern presented within the findings of this study. If advocacy is present and motivating, progression is likely.

This study champions the incorporation of IPE within dental hygiene curricula as a strategy to improve professional, student, and community needs. Dental hygienists have expressed uncertainty and inadequacy when working with professionals from other disciplines (Bell et al., 2012). IPE develops an individual identity in individuals while simultaneously fostering their awareness about others and team-working abilities. At the center of IPE is the student as well as the patient. Interprofessional application within curricula will effectively prepare dental hygiene students to become a part of modern medical practices. By interacting with those from other disciplines, learners acquire the knowledge, skill set, perspectives, and values to effectively participate in teams. As an end result patients will benefit because they will be provided with optimal treatment that prioritizes their needs. Collaborative practice improves access to care, health outcomes, and patient treatment.

As the health care reform continues to evolve it is incumbent for dental hygiene education to adapt. The findings presented in this research study serve as evidence that the administrators and faculty members responsible for guiding this transformation are enthused to do so. However, increased resources and opportunities with a focus on IPE are necessary to attain desired proficiency. Once a higher degree of competence and skill is achieved, interprofessional strategies can be integrated within curricula. This will bring dental hygiene one-step closer to bridging the gap between oral and systemic health, expanding oral care, joining collaborations, and advancing the profession (ADHA, 2015c).
REFERENCES


APPENDIX A

COVER LETTER TO PARTICIPANTS

December 15, 2015

Dear Participant:

Your assistance is requested for a doctoral research project at the University of New England. The purpose of this study is to understand how dental hygiene administrators and faculty members perceive interprofessional education (IPE). In addition, this study will explore the reasons for reported attitudes. You are being asked to participate because you are a dental hygiene administrator and/or faculty member that can offer valuable insight on this learning style.

This study has two parts, a survey and focus group interview. Please note that all participants will complete the survey. However, not all participants will participate in the focus group interview. If you decide to be in this study, your part will involve completing a survey, which will take approximately 10 to 15 minutes. Survey completion is appreciated by January 15, 2016. The survey is completely subjective, meaning that there are no right or wrong answers. For those participants that are conveniently selected to take part in the focus group interview, this should take approximately 90 minutes to two hours.

Your participation in this study is voluntary. You have the right to withdraw from this study at any point in time without offering a reason and without penalty. In addition, if selected to be interviewed, you have the right to refuse to answer any question without providing an explanation. To maintain anonymity, you will not provide any personal information on the survey. For those partaking in the focus group, to preserve confidentiality, you will be assigned a participant number to be used on data sheets. You will never be referred to by name in any reports of the study. There is no risk or discomfort involved in being in this study.

The results of the study may be published as articles in professional journals or presented at professional conferences. All materials will be retained on a password-protected database for five years subsequent to conducting the study. All materials will be considered confidential.

If you have any questions about the study, you may contact me at (631) 420-2282, or by email at CCasa@une.edu. Alternately, you may contact the Chair of this study, Carey Clark, Ph.D., RN, AHN-BC by email at CClark14@une.edu, or Olgun Guvench, M.D. Ph.D., Chair of the UNE Institutional Review Board at (207) 221-4171 or by email at irb@une.edu for questions regarding your rights or if you experience any research related discomfort.

Thank you for your assistance.

Sincerely,

Cristina Casa RDH, MS
Principal Investigator, Farmingdale State College
Doctoral Candidate University of New England
APPENDIX B

INFORMED CONSENT FORM FOR SURVEY

Project Title: Expanding interprofessional learning opportunities: How dental hygiene administrators and faculty perceive interprofessional education

Researcher:
Cristina Casa RDH, MS
Principal Investigator, Farmingdale State College
Doctoral Candidate University of New England
CCasa@une.edu

Faculty Advisor:
Carey Clark Ph.D., RN, AHN-BC
Adjunct Faculty
College of Graduate and Professional Studies
Doctor of Education in Educational Leadership
University of New England
CClark14@une.edu

You are invited to participate in a research study that assesses dental hygiene administrator and faculty attitudes towards interprofessional education (IPE). In addition, this study will explore the reasons for reported attitudes. It is expected that data obtained from this research can be used to benefit dental hygiene academia by offering useful information that can be used for incorporating IPE into dental hygiene curricula. You are being asked to participate because you are a dental hygiene administrator or faculty member.

The researcher will utilize a survey to guide this study. The survey will take approximately 10 to 15 minutes to complete. Survey completion is appreciated by January 15, 2016. The survey will consist of a 28-item Likert scale and two multiple-choice questions. Additionally, demographic information will be collected. There are no right or wrong answers, so please respond based on your personal viewpoints.

The survey is designed to be anonymous, please do not include any information anywhere on the survey that may individually identify you or anyone else. The protections in place for electronic survey data are as follows: the survey software will not capture IP addresses, and secure socket layer (SSL) will be used to ensure that data entered into surveys by respondents is encrypted before it is sent over servers.

Survey data will be placed on coded worksheets for computer analysis and will be stored on a password-protected database. All materials will be retained for five years subsequent to
conducting the study and then be destroyed. The researcher is the sole individual that will have access to this data.

Your participation in this study is voluntary. You can decline to participate at any point in time or you can refuse to answer any question without penalty. There are no known risks or discomforts associated with participating in this research study. There will be no costs or payment for your participation in this study. The results of the study may be published as articles in professional journals or presented at professional conferences.

For information, questions about your rights as a research subject, comments regarding this study, or to obtain a copy of results please contact me by email at CCasa@une.edu or by phone at (631) 420-2282. Alternately, you may contact the Chair of this study, Carey Clark, Ph.D., RN, AHN-BC by email at CClark14@une.edu, or Olgun Guvench, M.D. Ph.D., Chair of the UNE Institutional Review Board at (207) 221-4171 or by email at irb@une.edu.

You may print/keep a copy of this consent form.

By reading this consent form and proceeding with this survey I acknowledge that I have been made aware of, understand, and agree to the research study protocol and implications associated with my participation as a research subject that have been described in this document.

Thank you for your valuable contribution to this research.

Sincerely,

Cristina Casa
APPENDIX C

SURVEY ITEMS

Demographic Questions:

1. What best describes your professional role?
   a. Dental hygiene administrator
   b. Dental hygiene faculty

2. Gender:
   a. ______ Male
   b. ______ Female

3. How many years have you been working in higher education?
   a. Less than 1 year
   b. 2 to 5 years
   c. 6 to 10 years
   d. 11 to 20 years
   e. 20 plus years

4. How would you describe your current knowledge in regard to interprofessional education (IPE)?
   a. No knowledge
   b. Some knowledge
   c. Knowledgeable
   d. Extremely knowledgeable

Close-ended Multiple Choice Question:

5. Currently, within the dental hygiene curriculum at your institution, to what extent is IPE utilized?
   a. IPE is not a component of the dental hygiene curriculum
   b. IPE is in its beginning stages of emerging within the dental hygiene curriculum
   c. IPE is in its intermediary stages of emerging within the dental hygiene curriculum
   d. IPE is a major component of the dental hygiene curriculum
Like Scale Items:

All Likert scale items will use a five-point rating system, where five equals strongly agree and one equals strongly disagree.

The Attitudes towards Interprofessional Education Subscale was adapted by Curran et al. (2007) from Parsell and Bligh (1999). Table C.1 lists the items used in the study.

The Attitudes towards Interprofessional Learning in the Academic Setting Subscale was adapted by Curran et al. (2007) from Gardner et al. (2002). Table C.2 lists the items used in the study.

Table C.1

Attitudes towards Interprofessional Education

<table>
<thead>
<tr>
<th>Number</th>
<th>Scale Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interprofessional learning will help students think positively about other health care professionals</td>
</tr>
<tr>
<td>2</td>
<td>Clinical problem solving can only be learned effectively when students are taught within their individual department/school</td>
</tr>
<tr>
<td>3</td>
<td>Interprofessional learning before qualification will help health professional students to become better team-workers</td>
</tr>
<tr>
<td>4</td>
<td>Patients would ultimately benefit if health care students worked together to solve patient problems</td>
</tr>
<tr>
<td>5</td>
<td>Students in my professional group would benefit from working on small-group projects with other health care students</td>
</tr>
<tr>
<td>6</td>
<td>Communication skills should be learned with integrated classes of health care students</td>
</tr>
<tr>
<td>7</td>
<td>Interprofessional learning will help to clarify the nature of patient problems for students</td>
</tr>
<tr>
<td>8</td>
<td>It is not necessary for undergraduate health care students to learn together</td>
</tr>
<tr>
<td>9</td>
<td>Learning with students in other health professional schools helps undergraduates to become more effective members of a health care team</td>
</tr>
<tr>
<td>10</td>
<td>Interprofessional learning among health care students will increase their ability to understand clinical problems</td>
</tr>
</tbody>
</table>
Table C.1 (continued)

<table>
<thead>
<tr>
<th>Number</th>
<th>Scale Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Interprofessional learning will help students to understand their own professional limitations</td>
</tr>
<tr>
<td>12</td>
<td>For small-group learning to work, students need to trust and respect each other</td>
</tr>
<tr>
<td>13</td>
<td>Interprofessional learning among health professional students will help them to communicate better with patients and other professionals</td>
</tr>
<tr>
<td>14</td>
<td>Team-working skills are essential for all health care students to learn</td>
</tr>
<tr>
<td>15</td>
<td>Learning between health care students before qualification would improve working relationships after qualification</td>
</tr>
</tbody>
</table>

Table C.2

*Attitudes towards Interprofessional Learning in the Academic Setting*

<table>
<thead>
<tr>
<th>Number</th>
<th>Scale Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interprofessional learning better utilizes resources</td>
</tr>
<tr>
<td>2</td>
<td>It is important for academic health center campuses to provide interprofessional learning opportunities</td>
</tr>
<tr>
<td>3</td>
<td>Interprofessional learning should be a goal of this campus</td>
</tr>
<tr>
<td>4</td>
<td>Students like courses taught by faculty from other academic departments</td>
</tr>
<tr>
<td>5</td>
<td>Students like courses that include students from other academic departments</td>
</tr>
<tr>
<td>6</td>
<td>Faculty should be encouraged to participate in interprofessional courses</td>
</tr>
<tr>
<td>7</td>
<td>Faculty like teaching to students in other academic departments</td>
</tr>
<tr>
<td>8</td>
<td>Faculty like teaching with faculty from other academic departments</td>
</tr>
<tr>
<td>9</td>
<td>Interprofessional efforts weaken course content</td>
</tr>
<tr>
<td>10</td>
<td>Interprofessional efforts require support from campus administration</td>
</tr>
<tr>
<td>11</td>
<td>Interprofessional courses are logistically difficult</td>
</tr>
<tr>
<td>12</td>
<td>Faculty should be rewarded for participation in interprofessional courses</td>
</tr>
<tr>
<td>13</td>
<td>Accreditation requirements limit interprofessional efforts</td>
</tr>
</tbody>
</table>
Close-ended Multiple Choice Question:

6. Please select the factor that best explains your perspectives towards IPE.

a. Lack of leadership support for IPE
b. Presence of leadership support for IPE
c. Unfamiliarity with IPE
d. Familiarity with IPE
e. Risks associated with IPE
f. Benefits associated with IPE
g. Lack of training for IPE
h. Presence of training for IPE
i. Against working with other professions
j. Favor working with other professions
k. Perceived barriers associated with IPE
APPENDIX D

INFORMED CONSENT FORM FOR FOCUS GROUP

**Project Title:** Expanding interprofessional learning opportunities: How dental hygiene administrators and faculty perceive interprofessional education

**Researcher:**
Cristina Casa RDH, MS
Principal Investigator, Farmingdale State College
Doctoral Candidate University of New England
CCasa@une.edu

**Faculty Advisor:**
Carey Clark Ph.D., RN, AHN-BC
Adjunct Faculty
College of Graduate and Professional Studies
Doctor of Education in Educational Leadership
University of New England
CClark14@une.edu

**Focus Group Date:** January 11, 2016

You are invited to participate in a research study that assesses dental hygiene administrator and faculty attitudes towards interprofessional education (IPE). In addition, this study will explore the reasons for reported attitudes. It is expected that data obtained from this research can be used to benefit dental hygiene academia by offering useful information that can be used for incorporating IPE into dental hygiene curricula. You are being asked to participate because you are a dental hygiene administrator or faculty member.

To guide this study, a focus group interview protocol has been developed by the researcher. Convenience sampling will be used to select focus group participants. The focus group interview will take approximately 90 minutes to two hours to complete. There are no right or wrong answers, so please respond based on your personal viewpoints.

To preserve focus group participant confidentiality, you will be assigned a participant number to be used on data sheets to avoid linking responses to individual participants. The names of focus group participants will never be used on any research documents. The focus group interview will be recorded. The researcher is the only individual that will have access to this recording. Once the recording is transcribed, it will be erased. You are kindly asked to not repeat what is discussed during the focus group interview. However, the researcher cannot ensure that each focus group member will respect other participants’ privacy.
Focus group data will be placed on coded worksheets for computer analysis and will be stored on a password-protected database. All materials will be retained for five years subsequent to conducting the study and then be destroyed. The researcher is the sole individual that will have access to this data.

Your participation in this study is voluntary. You can decline to participate at any point in time or you can refuse to answer any question without penalty. There are no known risks or discomforts associated with participating in this research study. There will be no costs or payment for your participation in this study. The results of the study may be published as articles in professional journals or presented at professional conferences.

For information, questions about your rights as a research subject, comments regarding this study, or to obtain a copy of results please contact me by email at CCasa@une.edu or by phone at (631) 420-2282. Alternately, you may contact the Chair of this study, Carey Clark, Ph.D., RN, AHN-BC by email at CClark14@une.edu, or Olgun Guvench, M.D. Ph.D., Chair of the UNE Institutional Review Board at (207) 221-4171 or by email at irb@une.edu.

Please keep a copy of this consent form.

Your completion and signature on this Informed Consent form implies your consent to participate in this research study according to the outlined procedures. I agree to take part in the research and do so voluntarily.

**Focus group participant signature:**

**Printed name:**

**Date:**

Please return this signed informed consent form in the enclosed, self-addressed stamped envelope.

Thank you for your valuable contribution to this research.

Sincerely,

Cristina Casa
APPENDIX E

FOCUS GROUP PROTOCOL

Time of Focus Group: 10:00 am EST
Date: January 11, 2016
Place: Zoom
Interviewer: Cristina Casa
Interviewees: Four dental hygiene administrators and/or faculty
Position of Interviewees: Dental hygiene administrators and/or faculty

Focus Group Process:

- Introduce myself.
- Welcome and thank all for their participation.
- Provide a brief overview of the topic.
  Interprofessional education (IPE) is a learning style that requires educators and students from diverse disciplines to work together to increase learning, communication, teamwork skills, student outcomes, and patient outcomes.
- Explain the purpose of the study.
  The purpose of this study is to document the perspectives of dental hygiene administrators and faculty about the value of IPE within dental hygiene curricula. In addition, this study will explore the reasons for reported attitudes.
- Explanation of data collection procedures.
  Data collection for this study will consist of a mixed methods design that will gather both quantitative and qualitative data. A survey will be utilized to collect quantitative data. This focus group will be conducted to collect qualitative data.
that is rich in detail. The rationale for this mixed methods approach is that collectively, quantitative and qualitative data, offer a better understanding of the research topic under investigation.

- **What will be done with the data to protect the confidentiality of the interviewees?**
  To preserve focus group participant confidentiality, you will be assigned a participant number to be used on data sheets. Your personal information will never be used on any research documents. Your focus group data will be placed on coded worksheets for computer analysis and will be stored on a password protected database. I will be the only individual with access to this database.

- **Length of interview.**
  Approximately 90 minutes to two hours.

- **Explain focus group process.**
  I, the facilitator, will ask questions and explain terms. An explanation will be offered so that participants understand that the focus group will be recorded and that it will be erased after the information has been compiled.

- **Establish ground rules.**
  All participants will be encouraged to participate. They will be advised that opposing views/answers are acceptable and that there are no right or wrong answers. Participants will be instructed to speak one person at a time. In addition, they will be advised to respect the confidentiality of the group. Lastly, participants will be informed that they can stop partaking in the focus group at any point in time, without penalty.
Questions:

1. Please describe your professional academic training. Does this influence your style of teaching?

2. Describe your level of familiarity in regard to interprofessional education (IPE).

3. Please describe your experience with IPE.

4. Please describe the extent, if any, that IPE is utilized within the dental hygiene curriculum at your institution.

5. Detail the level of leadership advocacy supporting IPE within your dental hygiene program.

6. Explain how you feel about working with others from diverse professions.

7. What do you believe are the benefits and/or disadvantages of incorporating IPE into dental hygiene curricula?

8. Do you have anything to add about IPE?

Thank participants for their time.
APPENDIX F

PERMISSION TO USE SURVEY: CORRESPONDENCE WITH DR. CURRAN

vcuran@mun.ca
To: ccasas97@aol.com
Cc: Adam.Reid@reid.mun.ca
RE: Seeking your approval to use survey from your 2007 publication for research

Hi Christina, no problem and best of luck with your research study.

Vernon Curran, PhD
Associate Dean of Educational Development
Professor of Medical Education
Room # H1050F
Faculty of Medicine
Memorial University
St. John's, NL
CANADA
A1B 3V6

Phone #: (709) 777-7542
Fax #: (709) 777-6576

ccasas97@aol.com
To: ccasas97@aol.com
Re: Seeking your approval to use survey from your 2007 publication for research

On Aug 13, 2015, at 5:36 PM, Cristina Casa <ccasas97@aol.com> wrote:

Hi Dr. Curran,

Please let me reintroduce myself. My name is Cristina Casa and I am a doctoral student at the University of New England. I was in contact with yourself and Adam Reid back in February 2015, seeking your approval to use the Attitudes Towards Interprofessional Education scale that appeared in your 2007 Medical Education publication, Attitudes of Health Sciences faculty members towards interprofessional teamwork and education, which was also authored by Dennis Sharpe and Jennifer Fontanel. You were both extremely helpful and gracious to grant me permission to use this tool for my doctoral dissertation in which I plan to study dental hygiene administrator and faculty attitudes towards interprofessional education. Please note I attached a copy of your approval letter to this email for your reference.

As I am nearing my dissertation proposal, I feel that my study would benefit from including the Attitudes Towards Interprofessional Learning in the Academic Setting scale that was also presented in your Medical Education publication. The purpose of this e-mail is to ask your permission to use this tool in addition to the Attitudes Towards Interprofessional Education scale.

Thank you for your consideration and assistance.

Kindly,
Cristina Casa RDH, MS
E-mail: CCAcasas97@aol.com

August 13, 2015
February 4, 2015 12:28 PM

Hello Cristina,

Dr. Curran forwarded your request to me. We're happy to give permission to use the Attitudes toward Interprofessional Education scale; a copy is attached, along with scoring and interpretation notes. We'd also appreciate it if the scale appears with the appropriate references. We would love to hear about your experiences using the scale, the outcomes of your study, and any scale validity/reliability data you might be willing to share.

If you encounter any issues or require any support please let me know!

Adam Reid
Research Coordinator
Centre for Collaborative Health Professional Education
Health Sciences Centre Room 1650
St. John's NL
T: 709.777.8806
E: adan.reid@med.mun.ca

From: Cristina Casa [mailto:ccasa97@aol.com]
Sent: February-04-15 12:04 AM
To: Curran, Vernon
Subject: Seeking your approval to use survey from your 2007 publication for research

February 3, 2015

To Vernon Curran,

Let me begin by introducing myself, my name is Cristina Casa. Currently, I am pursuing a doctoral degree in education (EdD) at the University of New England. I am highly interested in the area of interprofessional education, specifically assessing and further understanding student and faculty attitudes and perceptions towards this style of learning.

While reviewing the literature I was introduced to many of your publications. Your 2007 publication, *Attitudes of health sciences faculty members towards interprofessional teamwork and education*, which was also authored by Dennis Sharpe and Jennifer Ferristall, was truly insightful and interesting.

As I am nearing my dissertation proposal I have been looking for a tool that I can potentially employ to collect data for my proposed study. I would like to know if I can have your permission to utilize your survey that was included in your 2007 Medical Education volume 41 issue 9 publication entitled *Attitudes of health sciences faculty members towards interprofessional teamwork and education for my own research.*

Feel free to contact me if you have any questions or concerns at the email address below. Please get back to me at your convenience. I appreciate your assistance and consideration with this matter.

Kindly,
Cristina Casa, RDH, MS
CCasa97@aol.com