

Impact of Interprofessional Orientation on New Employee Attitudes

Regarding Interprofessional Teamwork

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ABSTRACT

Interprofessional teamwork is recognized as a major contributing factor to safe patient care and improved patient outcomes. Healthcare professionals' attitudes impact successful teamwork. A large, not-for-profit healthcare organization in the southwestern United States conducted a new employee orientation that included content on interprofessional teamwork, and collected quality improvement data that included responses to the TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ). This retrospective, non-experimental, before-after, comparative study analyzed this quality improvement data to determine if there was a significant impact of the interprofessional teamwork-focused orientation on individual team member's attitudes regarding teamwork as measured by the T-TAQ. The principles of Adult Learning Theory guided this study. The results of the paired-samples t-test ($N = 81$) showed a significant increase in mean scores between the pre-orientation T-TAQ ($M = 4.44, SD = .328$) and the post-orientation T-TAQ ($M = 4.64, SD = .326; t(80) = -6.35, p < .000$, two-tailed; mean increase in scores = $-.1997$, 95% $CI: -.262$ to $-.137, d = .34$). Recommendations include that healthcare organizations consider: the addition of teamwork content to their new employee orientations with the goal of improving new employee attitudes regarding teamwork, utilizing the TeamSTEPPS® tools and materials provided by the Agency of Healthcare Research and Quality in the education that they provide to their staff to improve the teamwork within their organizations, use of the T-TAQ to evaluate teamwork attitudes within their organization, and evaluation of attitudes regarding teamwork prior to hire of new employees.

Keywords: Interprofessional teamwork, TeamSTEPPS ®, new employee orientation, interprofessional orientation, interprofessional education

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CHAPTER 1: INTRODUCTION

Every patient that entrusts themselves to the healthcare system deserves to receive the best care and outcomes possible. The unfortunate reality is that often this does not occur. The 1999 Institute of Medicine (IOM) report *To Err is Human* created transparency that had never existed regarding the large numbers of errors occurring in healthcare settings and their resulting impact on patient outcomes (Kohn, Corrigan, & Donaldson, 2000). This IOM report estimated that the number of patient deaths caused by healthcare errors was 98,000 each year. Recent information suggests that the number of patient deaths caused by errors that are preventable is actually closer to 440,000 per year (Schyve, 2014).

Primary causes of errors and poor patient outcomes have been identified as poor communication, collaboration, and teamwork between the different healthcare disciplines that care for patients (Lancaster, Kolakowsky-Hayner, Kovacich, & Greer-Williams, 2015; McKay & Wieck, 2014). Communication issues are estimated to be a root cause of up to 70% of all sentinel events (Dingley, Daugherty, Derieg, & Persing, 2008). Good communication between all healthcare disciplines and the resulting improvements in teamwork are important components of patient safety. Acute care settings with decreased interprofessional collaboration have been shown to have higher mortality rates, longer lengths of stay and increased costs (McKay and Wieck, 2014).

The Institute of Medicine (IOM) began advocating for improvements in collaboration and teamwork between healthcare workers in the 1960s. Throughout their publications over the intervening years IOM has advocated for improvements in interdisciplinary communication, teamwork, and collaboration (Greiner & Knebal, 2003; IOM, 2001; IOM, 2011; Interprofessional Education Collaborative Expert Panel, 2011). The recognition of the need for

improvements in collaboration and teamwork between healthcare workers is not limited to the United States. The World Health Organization (WHO), as well as other countries besides the United States, have made recommendations and taken action towards improving collaboration and teamwork between healthcare workers around the world (CAIPE, 2015; The Registered Nurses' Association of Ontario, (2013); Yan, Gilbert, & Hoffman, 2007). The World Health Organization (2010) defined a healthcare worker as anyone who works to improve health, including the licensed professionals who have clearly defined areas of expertise, as well as the non-licensed support staff that assist with the provision of patient care. Together, all these healthcare workers constitute what is often interchangeably referred to in the literature as the interdisciplinary or interprofessional team.

While the call for improved teamwork between the healthcare workers began in the 1960s, action towards achieving improved teamwork has been slow to occur. Within their publications, the IOM identified interprofessional education (IPE) as the major strategy for improving teamwork between the different healthcare workers (Casimiro, MacDonald, Thompson, & Stodel, 2009; Greiner & Knebal, 2003). Other organizations, such as the World Health Organization, have also repeatedly over the years identified interprofessional education as the means to achieve improved teamwork among healthcare workers (WHO, 2010).

A great deal of effort has been expended in academic settings to make interprofessional education a reality (Rosenfield, Oandasan, & Reeves, 2011). Academic nursing education responded to the recommendation by including *Teamwork and Collaboration* as one of the six competencies for pre-licensure nursing education identified by the Quality and Safety Education for Nurses (QSEN) initiative (Preheim, 2009; QSEN Institute, 2015). The Interprofessional Education Collaborative (IPEC) consists of representation from the American Association of

Colleges of Nursing (AACN), the American Association of Colleges of Osteopathic Medicine (AACOM), the American Association of Colleges of Pharmacy (AACCP), the American Dental Education Association (ADEA), the Association of American Medical Colleges (AAMC), and the Association of Schools of Public Health (ASPH). In 2011 IPEC published the core interprofessional competencies that all healthcare professionals should demonstrate and promoted interprofessional education as the methodology to achieve this goal. These core competencies fall within four overall domains: values/ethics for interprofessional practice, roles/responsibilities, interprofessional communication, and teams and teamwork (IPEC, 2011).

The IOM (2001) recommended that healthcare professionals be trained within the multidisciplinary teams they will be working in beginning during their academic preparation and continuing throughout the course of their careers. Review of the literature on interprofessional education demonstrates that a large percentage of the work on implementing interprofessional education is taking place in academic settings. In recent years, there has been a trend towards incorporating interprofessional education in academic preparation to impact the perspectives and attitudes of new entrants into the professions (Rosenfield, Oandasan, & Reeves, 2011).

Many healthcare professionals currently working in healthcare settings around the world were educated prior to this trend of incorporating interprofessional education in academic preparation. To address the needs of these healthcare professionals, education is starting to be designed that is focused on improving interprofessional teamwork in healthcare practice settings. The United States Department of Health and Human Services has designed education activities to improve teamwork, collaboration, and communication between healthcare professionals in practice settings.

Two such programs from agencies within the Department of Health and Human Services are *TeamSTEPPS*® (Team Strategies and Tools to Enhance Performance and Patient Safety) and *Partnering to Heal*. The *TeamSTEPPS*® program is run by the Agency for Healthcare Research and Quality (AHRQ) and is designed to improve teamwork and communication between healthcare professionals in established teams within multiple types of practice settings to improve patient safety and outcomes (AHRQ, 2015a). *Partnering to Heal* is a video training program designed by the Office of Disease Prevention and Health Promotion (2015) to improve teamwork and communication to decrease healthcare associated infection and improve patient outcomes. These two programs provide tools and methodologies to assist with interprofessional education designed to improve teamwork in practice settings.

Problem Statement

Interprofessional education conducted with the intent to improve collaboration and teamwork between healthcare professionals has largely been addressed from the perspective of educating new entrants into each of the professions. The Committee on the Health Professions Education Summit (2003) included working with interdisciplinary teams as one of the five core competencies that should be taught to all healthcare professionals. No matter their specific discipline, healthcare professionals should “cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable” (Greiner & Knebal, 2003, p. 45).

Ongoing improvement in interprofessional teamwork within practice settings requires ongoing interprofessional education. Relatively little focus has been placed on the interprofessional education of healthcare professionals in practice settings. In their white paper entitled *Developing and Sustaining Interprofessional Health Care: Optimizing patients/clients, organizational, and system outcomes*, the Registered Nurses' Association of Ontario (2013)

identified interprofessional teamwork and education in practice settings as an area where more research is needed. A review of the literature found limited information on interprofessional education in practice settings. The information that was available in the literature regarding practice settings discussed interprofessional education conducted with established interdisciplinary teams, and not interprofessional education conducted as part of new employee orientation. The extremely limited amount of information available regarding interprofessional education in practice settings, particularly as part of new employee orientation, justifies the need for the this capstone study and the information that it may provide.

Some employees who completed their academic education in recent years have had interprofessional education as part of their pre-professional training. Many healthcare professionals practicing today received their formal education without the benefit of experiencing interprofessional education in their academic programs. Traditionally, healthcare professionals were trained separately within their disciplines and came to work in practice settings without the skills and competencies required to work collaboratively with other healthcare disciplines (IOM 2001).

There are numerous types of practice settings for healthcare professionals that include hospitals, outpatient clinics, and home health care settings. Educators associated with clinical education departments frequently conduct the education of professional staff in these practice settings. Staff education recipients can be conceptualized as two populations that consist of new and established employees. Each of these two populations has distinct education needs with resulting educational strategic differences required to meet these needs.

This comparative study focused on newly employed multidisciplinary healthcare workers hired to work in a southwestern United States healthcare system, who attended a new employee

interprofessional orientation (IPO). This study evaluated the impact of the interprofessional education components provided during initial new employee orientation on attitudes regarding interprofessional teamwork. Attitudes held by healthcare professionals regarding working as a team and healthcare disciplines other than their own are major factors impacting successful interprofessional teamwork (Delunas & Rouse, 2014; Lindqvist, Duncan, Shepstone, Watts & Pierce, 2005).

Background

A world-wide need for interprofessional education to improve teamwork among healthcare professionals was announced as necessary to improve patient outcomes and world health by the Institute of Medicine (IOM) in 1972 and the World Health Organization (WHO) in 1978 (Interprofessional Education Collaborative Expert Panel, 2011; Ross, 2007). The terms collaboration and teamwork are used interchangeably in the literature. While definitions of the two terms are very similar, the primary difference is that with teamwork the decision making process is shared, while with collaboration decisions may still be made unilaterally (McComb & Simpson, 2013; Xyrichis & Ream, 2008).

The key method identified for improving interprofessional teamwork is to educate healthcare professionals using interprofessional education strategies. The Committee on the Health Professions Education Summit in 2003 stated that training for healthcare professionals of all disciplines should include interprofessional education that teaches how to incorporate the use of information technologies, the best available evidence, and continuous quality improvement strategies in the patient care that is delivered while including the patient as an integral member of the team (Greiner & Knebal, 2003). Although there is some debate on whether interprofessional collaboration can be taught, in general the consensus is that interprofessional education can

improve collaboration, especially if supported by structure and management (Casimiro, MacDonald, Thompson, & Stodel, 2009).

The literature identified that improvement in interprofessional teamwork is needed to improve patient outcomes and that interprofessional education is the identified strategy to improve this teamwork (Casimiro, MacDonald, Thompson, & Stodel, 2009; Greiner & Knebal, 2003; WHO, 2010). Much of the information available in the literature regarding interprofessional education is from the perspective of academic settings. The information that was provided by this study may help to provide information regarding interprofessional education and teamwork in a practice setting.

Benefits of improved interprofessional teamwork can be viewed from both the patient perspective as well as the healthcare professionals' perspective. Through improved teamwork patients should not only have improved outcomes, but also an improved healthcare experience due to improvements in coordination of care and communication between the healthcare professionals providing their care. In addition, healthcare costs decrease with improved interprofessional teamwork (Bajnok, Puddester, Macdonald, Archibald, & Kuhl, 2012). Delunas and Rouse (2014) pointed to less than ideal relationships between healthcare providers, primarily between nurses and physicians, as a contributing factor for nurse dissatisfaction and burnout, and as a primary reason for nurses leaving their positions in acute care settings. Increased interprofessional teamwork results in improved job satisfaction, and the resulting improvement in the experience of healthcare professionals providing care may assist in alleviating worldwide and national healthcare shortages (World Health Organization, 2010; Xyrichis, & Ream, 2008). A key component in participation in interprofessional education, as well as in interprofessional

teamwork, is the attitudes of healthcare workers (Delunas & Rouse, 2014; Lindqvist, Duncan, Shepstone, Watts & Pierce, 2005).

Purpose

Attitudes held by healthcare providers regarding interprofessional collaboration have been shown to impact their degree of collaboration with other healthcare professionals (Delunas & Rouse, 2014; Lindqvist, Duncan, Shepstone, Watts, & Pearce, 2005). In addition, attitudes regarding interprofessional teamwork can be improved and the core competencies for interprofessional collaboration can be taught through the process of interprofessional education (Bajnok et al., 2012; WHO, 2010). The purpose of this study was to determine if the interprofessional orientation, a form of education, provided to new employees as part of their initial new employee orientation impacted their attitudes regarding teamwork. The information obtained from this study may be used to improve the interprofessional orientation conducted by the healthcare system. The study may also help achieve the goal of improving interprofessional teamwork within the organization to improve patient outcomes.

Significance of the Study

Teamwork between practitioners of the different healthcare disciplines must be improved to improve the outcomes of patients (Greiner & Knebal, 2003; IOM, 2001; IOM, 2011; WHO, 2010). Improved teamwork between healthcare workers has been shown to have additional benefits in addition to improved patient outcomes. Improvements in interprofessional teamwork are also expected to decrease the costs associated with healthcare, as well as improve job satisfaction and decrease turnover among healthcare professionals (Bajnok, et al., 2012; Xyrichis, & Ream, 2008). Education is a key mechanism for improving teamwork between the different healthcare workers (Bajnok et al., 2012; WHO, 2010).

Interprofessional orientation (IPO) is a form of interprofessional education. The goal of the IPO is to improve attitudes of employees regarding interprofessional teamwork, which in turn is expected to increase the level and quality of interprofessional teamwork within the organization. New employees come to the organization with varying amounts of education and experience related to working in interprofessional teams. To ensure that all new employees have had exposure to the same base-line level of information regarding the organization's expectations regarding interprofessional teamwork, all new employees are required to attend the new employee orientation. New employee orientation provides exposure to the organization's policy, procedure, values, culture and expectations, including the expectation that all disciplines will work together as a team to achieve optimal patient outcomes.

Assessing and evaluating the effectiveness of education provided to employees is critical to provide the outcome information needed for educators to refine educational content and processes to improve the education provided during orientation. The information from this study may be used to improve the education provided during the orientation experience to help the organization progress towards the ultimate goal of improved interprofessional teamwork. In addition, this information can contribute to the currently sparse body of information in the literature regarding interprofessional education in practice settings. Improved interprofessional education helps improve interprofessional teamwork, resulting in improved patient outcomes (Greiner & Knebal, 2003; IOM, 2001; IOM, 2011).

The Nature of the Project

The organization where this study occurred was interested in improving the effectiveness of education provided to its employees during orientation. To this end, the organization implemented a quality improvement project to improve the education provided to new

employees during the orientation that was designed, in part, to improve the attitudes of new employees regarding teamwork. The organization used the TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ) as an evaluation tool to measure the effectiveness of the improved orientation. Permission from the organization allowed the researcher to conduct this study that provided a retrospective analysis of the quality improvement data obtained from the T-TAQ.

The organization collected data on the newly-hired clinical healthcare employees that interact with patients and attended the two-day interprofessional orientation. Physicians and mid-level providers attended a separate orientation and were not included in the data collection. The sample for this study consisted of the newly-hired licensed and unlicensed multidisciplinary healthcare employees that attended the two-day orientation conducted by the healthcare organization. Newly hired healthcare workers that attended the new employee orientation included registered nurses, licensed practical nurses, nurse technicians, operating room (OR) technicians, scrub technicians, telemetry technicians, patient care assistants, medical assistants, certified nursing assistants, unit secretaries, emergency medical technicians, and paramedics. The disciplines included in this retrospective study differ from the historical focus of interprofessional research, which has been on the relationships between physicians, nurses, and allied health professionals with rare inclusion of unlicensed assistive personnel (Lancaster, Kolakowsky-Hayner, Kovacich, & Greer-Williams, 2015).

Attendance at the new employee interprofessional orientation ranged from 16 to 45 new employees every two weeks. The retrospective data utilized was from five new employee orientation sessions conducted in February and March 2016. The data from 81 clinical employees that attended the orientation sessions and completed both the pre- and post-orientation data collection forms was included in the retrospective study. For purposes of this study, an a

priori power analysis was conducted using G*Power 3, which found that for a medium effect, a confidence level of 95% (p-value .05) and power of 95%, a sample size of 54 would be required (Faul, Erdfelder, Lang, & Buchner, 2007).

The independent variable for this study was the intervention that consisted of the new employee interprofessional orientation. The dependent variable was attitudes regarding teamwork as measured by the TeamSTEPPS® Teamwork Attitudes Questionnaire that was administered before and after the intervention. The organization's quality improvement project design allowed for measurement of attitudes regarding interprofessional teamwork before and after participation in the orientation. This study's retrospective detailed analysis of the quality improvement data obtained by the organization was appropriate for the research question that this study planned to answer. This study's design also accommodated the real-life logistical and resource limitations within this practice setting.

Research Question and Hypotheses

Does the inclusion of interprofessional teamwork content during new employee orientation for a southwestern healthcare system impact individual attitudes regarding interprofessional teamwork?

H₁: There is a difference in individual attitudes regarding interprofessional teamwork after participation in a new employee orientation that included interprofessional teamwork content.

H₀: There is no difference in individual attitudes regarding interprofessional teamwork after participation in a new employee orientation that included interprofessional teamwork content.

Theoretical Framework

The theory that was used to guide this study was the Adult Learning Theory (ALT) attributed to Malcolm Knowles. Adult Learning Theory, frequently called andragogy, was first introduced in the United States in the 1970s. Adult Learning theory is a humanistic learning theory and as such is based on the premises that human behavior is a result of a person's beliefs and value system, and that learning in adults is based on their individual motivation, goals, and aspirations (Utley, 2011). Adult Learning Theory incorporates the philosophy of constructivism through which adults create a personal worldview based on their experience in the world. Therefore, learning can be defined as the adjustment of one's personal worldview based on new experiences (Dumchin, 2010). A person's worldview encompasses their attitudes.

Six specific Adult Learning Theory core principles include that the learners: need to know the information, assume responsibility for their own learning; are impacted by previous learning and experiences, have a readiness to learn, are motivated to learn, and learn best from real world situations or examples (Mitchell & Courtney, 2005; Utley, 2011). Learners might not possess all six of the above attributes at the same time or to the same degree (Mitchell & Courtney, 2005). The model of Adult Learning Theory in Practice by Knowles, Holton and Swanson (1998) is presented in Figure 1.

The theoretical model for this study was based upon this model of Adult Learning Theory and began with newly hired healthcare workers who started employment with their pre-existing personal attitudes regarding interprofessional teamwork based on their individual knowledge, beliefs, values, behaviors, and experiences. The new employees then attended the centralized new hire interprofessional orientation that was intended to convey the organizational value and expectation that employees provide care using a collaborative teamwork approach. Adult

Learning Theory guided the interprofessional education provided through the orientation process to new employees. The anticipated result was new employees with improved attitudes regarding interprofessional teamwork as defined by their intent to practice collaboratively with all members of the healthcare team.

Premises of Adult Learning Theory are congruent with both the organization's philosophy used to conduct interprofessional orientation as well as this study. For each of the six assumptions within ALT there are considerations specific to interprofessional education.

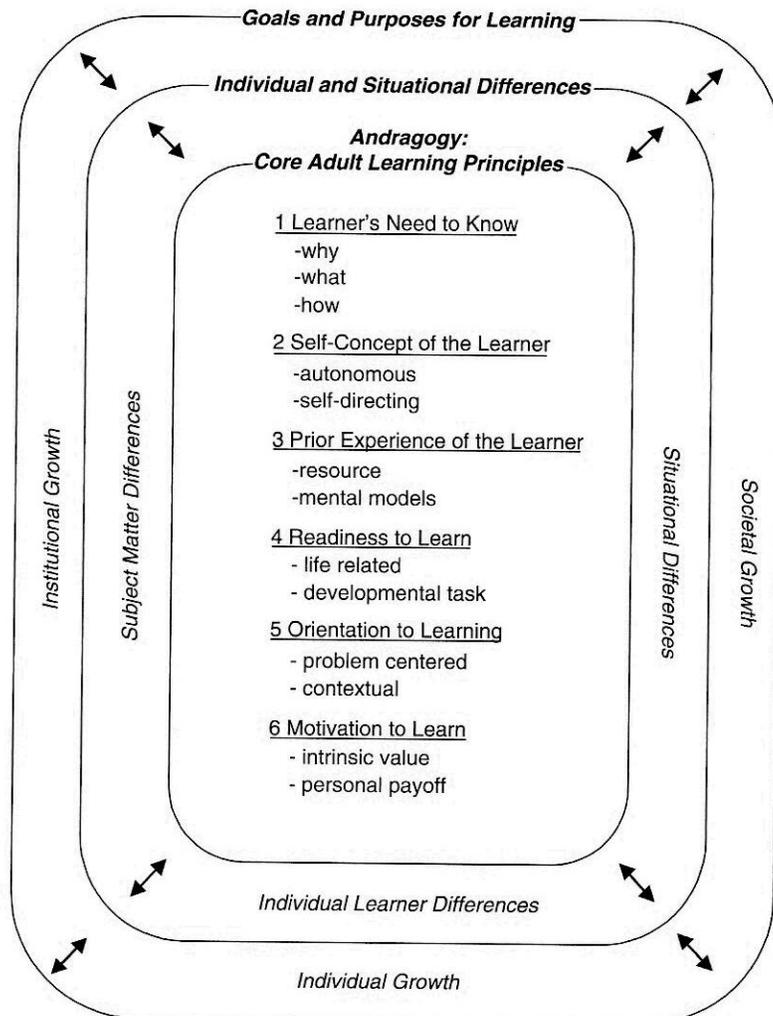


Figure 1. Andragogy in Practice (Knowles, Holton, & Swanson, 1998).

Need to Know

The most common reason that adults agree to participate in a learning experience is their personal recognition that change is needed in their knowledge, skills, behaviors, or attitudes (Russell, 2005). New employees are encouraged to learn the knowledge, skills, behaviors, and attitudes that will be required for them to succeed in their new positions (Bruce, 2013; Ragsdale & Mueller, 2005). Adult learners focus on learning that will enable them to be successful in their life activities, which in this case was success in their new employment setting (Bruce, 2103; Dumchin, 2010).

Responsible for Own Learning

Adults like to be autonomous and self-directed in their learning situations (Russell, 2006). Real world constraints required that the new employee orientation be conducted with multiple individuals during a finite time period (Bruce, 2013; Ragsdale & Mueller, 2005). These real world constraints resulted in learners not being able to choose or direct the learning experience to customize it for their personal preferences. The learners did, however, choose their level of attention and extent of participation during the learning experience as well as their conclusions at the end of the orientation. Adult learners bear the responsibility of the outcome of their learning experiences (Brady, 2013). The new employees will ultimately choose their behavior within their new positions and will be responsible for their professional practice.

Previous Learning Experiences

Unpleasant previous learning experiences can negatively impact the outcomes of future learning experiences (Brady, 2013). This was a critical consideration for the success of interprofessional orientation from the perspectives of both previous learning experiences as well as previous experiences interacting with other healthcare workers. In addition, learning in adults

is more successful when their previous experience is acknowledged and incorporated into the new learning experience (Dunchin, 2010).

New employees came to the orientation with extremely variable experiences and attitudes regarding interprofessional collaboration and teamwork. Adults synthesize their previous learning and life experiences with their new learning experiences (Fura, & Symanski, 2014). Therefore, pre-existing attitudes resulting from previous experiences interacting with other healthcare professionals influenced the outcomes of the new employee orientation.

Readiness to Learn

The new employee orientation attendees had a readiness to learn by virtue of starting a new position with the resulting recognition that new employees have much to learn about their new employer's expectations, culture, and requirements for successful employment (Adams et al., 2014; Ragsdale & Meuller, 2005). The degree of this readiness to learn varied between participants. Adults need learning to be applicable and relevant to actual life situations, such as their professional responsibilities (Brady, 2013; Dunchin, 2010). The interprofessional orientation provided information that assisted the new employees in their new employment roles.

Motivation to Learn

Adult learners are motivated by both intrinsic factors such as job satisfaction and extrinsic factors such as success in their new jobs (Dunchin, 2010). Adults learn when the information presented has relevance to their personal needs (Mitchell, 2005). In the new employee orientation the motivation to learn was the need to successfully fulfill their new employer's expectations and complete work responsibilities. Ideal learning situations for adults occur when the timing of the education coincides with motivating events (Russell, 2006).



Figure 2. Diagram of Theoretical Model

Learns Best from Real World Examples

Adults learn best from examples that reflect the real situations that they may experience (Mitchell & Courtney, 2005). A primary teaching strategy for the new employee interprofessional orientation was the use of videotaped scenarios and case studies representing patient care situations encountered in the real world followed by interactive learning activities (AHRQ, 2015a; Office of Disease and Health Promotion, 2015). The learners attending the orientation possessed a variety of learning styles and preferences (Brady, 2013; Dumchin, 2010). To accommodate the wide variety of new employee learning styles the interprofessional

orientation used a combination of teaching methodologies that included visual, verbal, tactile, and participatory activities.

Each of the six assumptions within ALT had pertinence and applicability to the interprofessional education that the new employees received, and were reflected within the theoretical model for this study. Adult Learning Theory was used to guide the conduction of the interprofessional orientation as well as this capstone study.

Definitions

Professional discipline: a group of individuals with a specialized role and knowledge base, frequently attained through many years of study, who possess an identification with and dedication to that role and knowledge base (Oandasan & Reeves, 2005).

Interprofessional: individuals representing multiple professional disciplines working together to accomplish common goals (Oandasan & Reeves, 2005).

Interdisciplinary: individuals representing all healthcare workers working together to accomplish common goals (WHO, 2010).

Healthcare worker: a member of any of the healthcare disciplines employed within the organization who works directly with patients. This includes licensed professionals who have clearly defined areas of expertise, as well as the non-licensed support staff that assist with the provision of patient care (WHO, 2010).

Interprofessional education: when two or more health care disciplines “learn about, from and with each other” to improve teamwork and collaboration (Interprofessional Education Collaborative Expert Panel, 2011, p. 2; WHO, 2010, p.13).

New employee orientation: the education provided to new employees within the first month of employment that includes introduction to patient safety and regulatory requirements as

well as to the overall organization's policy and procedure, values, culture, and expectations (Bruce, 2013; Adams et al., 2014; Ragsdale & Meuller, 2005). This orientation included content on the inextricably intertwined concepts of teamwork, patient safety, and patient and healthcare worker experience.

Interprofessional orientation: the interprofessional education as defined above provided as part of the new employee orientation as defined above.

Attitudes: the values or beliefs that a person possesses, whether the person is aware of them or not, that predispose that person to behave in a manner consistent with those values or beliefs (Altmann, 2008; Reeves et al., 2011).

Learning: the adjustment of personal worldview based on new experiences (Dumchin, 2010).

Interprofessional teamwork: shared decision making by healthcare workers that improves patient outcomes as a result of interprofessional collaboration (Indiana State Nursing Association, 2014; Reeves, Goldman, Gilbert, Tepper, Silver, Suter, & Zwarenstein, 2011; Xyrichis, & Ream, 2008).

Interprofessional collaboration: the processes employed by members of the healthcare team, comprised of multiple professional disciplines, whereby the expertise and perspectives of all disciplines are sought out, respected, and integrated into patient care by all members of the interdisciplinary team, resulting in enhanced teamwork that improves patient outcomes (Indiana State Nursing Association, 2014; Reeves, Goldman, Gilbert, Tepper, Silver, Suter, & Zwarenstein, 2011).

Scope and Limitations

Scope

The scope of this study was to see if the attitudes regarding interprofessional teamwork held by multidisciplinary healthcare workers recently hired to work for a not-for-profit, non-academic, multi-hospital system in the southwest, changed after participation in a new employee interprofessional orientation. This retrospective study analyzed the organization's quality improvement data that was collected on new employee attitudes regarding interprofessional teamwork before and after participation in the new employee orientation that included content on interprofessional teamwork. This study evaluated the impact of the interprofessional orientation that the new employees attended on their attitudes regarding interprofessional teamwork. The interprofessional orientation was conducted biweekly. The organization's quality improvement data collection occurred in February and March of 2016. Written permission to conduct the study was obtained from the organization where the data were collected (see Appendices A and B). Institutional Review Board (IRB) permission to conduct this study was obtained from the healthcare organization where the study was conducted (see Appendix C) as well as from the Institutional Review Board of American Sentinel University (see Appendix D).

The organization's quality improvement project consisted of having new employees who attended both days of the new employee interprofessional orientation complete the TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ) before and after the orientation. The T-TAQ is a tool with established reliability and validity that was designed to measure attitudes regarding interprofessional teamwork (AHRQ, 2015b; Baker, Amodeo, Krokos, Slonim, & Herrera, 2010). Content validity of the items within the T-TAQ was established through a series of reviews by panels of experts. Reliability co-efficient statistics were presented

by construct and have Cronbach's alphas that range from 0.70 to 0.83. The T-TAQ was specifically designed to measure attitudes of individual healthcare team members as either a one-time measure or as a before and after evaluation of team training.

Limitations

Limitations of this study are that the sample consisted of only new employees who were affiliated with the nursing department and included few employees from non-nursing healthcare disciplines. Also, the time available for participants to complete the surveys was limited due to the busy orientation schedules. Additional limitations may include that non-licensed participants may not have understood some of the words utilized within the T-TAQ and some new employees may not have been willing to take the time to carefully read and respond to the T-TAQ questions. Also, there is the potential for new employees to provide dishonest answers because they were new to their positions and wanted to be perceived in a positive light. There is the possibility of pre-test post-test bias because the orientation lasted two only days, necessitating the administration of the tool before the orientation started on Monday morning and again at the end of the day on Tuesday.

Potential internal threats to validity include that there were slight variations in the different sessions of the new employee orientation as normally conducted, and the possibility of pre-test post-test bias due to the time frame between the pre- and post-tests. A potential external threat to validity, or the potential for generalizability of this study to other settings, is due to the uniqueness of the sample and setting. The study design was able to control for some potential confounding variables, also known as control variables, by using only the quality improvement data collected on participants who attended both days of the new hire orientation in sequence. This helped to ensure that the measurement of post-orientation attitudes occurred before the

employees were exposed to the organization's existing employee attitudes regarding interprofessional teamwork. A confounding variable that could not be controlled for is the normal variation in the content and presenters of the orientation, because the organization's quality improvement data was collected on the orientation as it normally occurs. To assist other organizations to determine whether or not study results are generalizable to their setting, information about the sample and the orientation content is provided in this paper. This study did not collect data related to the suspected mediating or intervening variable, which is the quality of teamwork experiences with other healthcare disciplines previously experienced by participants. However, the goal of the orientation was that regardless of previous experiences, the orientation improved participant attitudes regarding interprofessional teamwork.

At the organizational level, the results from this study provided information about the immediate effectiveness of the orientation, and contributed valuable data towards possible revision of the orientation to improve effectiveness. In addition, this study provided useful information regarding the feasibility of ongoing use of the TeamSTEPPS® Teamwork Attitudes Questionnaire by the organization to evaluate effectiveness of the orientation's impact on new employee attitudes regarding teamwork. This study also provided information about the new employees' attitudes regarding interprofessional teamwork prior to attending orientation, which has the potential to influence future hiring strategies. The results of this study may also have the potential to provide valuable insights that can assist other similar organizations in their endeavors towards improving interprofessional teamwork within their institutions.

Summary

Interprofessional teamwork between healthcare workers has been identified as a critical area of needed improvement that must occur to improve health outcomes around the world.

While a great deal of information exists in the literature about what has been done in instituting interprofessional education in academic education settings, relatively little information exists regarding what has been done to implement and evaluate interprofessional education in practice settings. The purpose of this study was to determine how participation in an interprofessional orientation impacted the attitudes regarding interprofessional teamwork of newly hired multidisciplinary healthcare professionals in a practice setting. Chapter 2 will provide a review of the literature relevant to this proposed study.

CHAPTER 2: LITERATURE REVIEW

Introduction

Chapter 2 presents findings from the literature review that illuminated and drove this capstone study. The purpose of this study was to retrospectively analyze quality improvement data collected by the organization to determine if participation in an interprofessional orientation impacted the attitudes of new employees regarding interprofessional teamwork. The population that was studied was comprised of all newly hired employees from all healthcare disciplines within a southwestern healthcare organization who attended the two-day new employee interprofessional orientation. The intervention was the two-day interprofessional orientation that included content on teamwork, as normally conducted. Attitudes regarding teamwork were measured before and after the orientation, and the comparison was between each participant's pre- and post-orientation scores. The purpose of this study was to determine if there was a difference in each participant's attitudes regarding interprofessional teamwork after participation in the orientation.

The literature review was conducted using peer reviewed professional literature sources, primarily CINAHL, with inclusion of Institute of Medicine and World Health Organization conference proceedings, and professional healthcare organizations' position statements. ProQuest was also reviewed. The strategy was to find seminal works regarding the history and significance, as well as the current status, of interprofessional teamwork and education. Historical works were considered to be those prior to the year 2010, and current findings were those published in 2010 and later. While all professional peer reviewed articles were considered for inclusion, publications dedicated to interprofessional scholarship were especially valuable in this literature review. These included the Journal of Interprofessional Care and the Journal of

International Interprofessional Care, as well as the Interprofessional Education Collaborative. Publications from conference proceedings and position statements from the Institute of Medicine and the World Health Organization were also particularly relevant.

The primary area of inclusion was interprofessional teamwork and education in practice settings, while the majority of literature pertaining to academic settings was excluded. Other topics, themes, and definitions relevant to interprofessional teamwork and education were researched and include: definitions of commonly used terms, what constitutes a professional, teamwork principles, teamwork versus collaboration, purposes and strategies for interprofessional education, and impact of attitude on teamwork.

Historical Overview

Teamwork as a workforce strategy was first discussed in the United States in the 1940s with the post-World War II introduction of Japanese management strategies that assisted in revolutionizing the efficiency of the car industry (Casimiro, MacDonald, Thompson, & Stodel, 2009). The call for collaborative practice and teamwork between the different healthcare disciplines started to appear in the 1960s (IOM, 2001). The identified methodology for achieving collaborative practice and teamwork is interprofessional education. The Institute of Medicine (IOM) in 1972 promoted interprofessional education for U.S. health professions in the report from the first IOM Conference, *Interrelationships of Educational Programs for Health Professionals*, and in the related report *Educating for the Health Team* (Interprofessional Education Collaborative Expert Panel, 2011).

Improved interprofessional teamwork between healthcare professionals is a recognized worldwide need. In the 1970s the World Health Organization (WHO) began proposing initiatives towards instituting interprofessional education (IPE) between the different healthcare

professional disciplines (Casimiro et al., 2009). In 1978 and again in 1988 the WHO released reports discussing the need to establish and conduct mutiprofessional education for healthcare personnel to improve collaboration and teamwork (Yan, Gilbert, & Hoffman, 2007).

Real progress towards improving interprofessional collaboration and teamwork in healthcare did not occur until the IOM began initiatives to improve the quality of healthcare through convening of expert and stakeholder summits and the release of these proceedings through committee reports. The first two phases were reported in the publications *To Err Is Human: Building a Safer Health System* (2000) and *Crossing the Quality Chasm: A New Health System for the 21st Century* (2001). Both these reports reiterated the critical need for training to improve interprofessional teamwork between health care workers to decrease errors and improve patient outcomes.

The third phase of the IOM initiative to improve healthcare came from the Committee on the Health Professions Education Summit held in 2002. The report entitled *Health Professions Education: A Bridge to Quality* summarized the proceedings and recommendations of this summit. This report described the current state of healthcare as well as the education processes of the healthcare professions and determined five core competencies for healthcare professionals: quality improvement, patient-centered care, use of informatics, evidence-based practice, and inter-disciplinary teams (Greiner & Knebal, 2003). The Committee on the Health Professions Education Summit included working in interdisciplinary teams as one of the five core competencies that should be taught to all healthcare professionals no matter their specific discipline and stated that healthcare professionals need to improve communication and work together as an integrated team to provide optimal patient care (Greiner & Knebal, 2003).

In 2007 a brief announcement from the World Health Organization (WHO) proclaimed an urgent need for more progress towards world-wide implementation of interprofessional collaborative care and education, citing the current state of health in the world. They announced a study group for this issue and included a list of the objectives and international study partners for this study group (Yan, Gilbert, & Hoffman, 2007).

Current Findings

The movement towards improved interprofessional teamwork and the necessary interprofessional education required to improve teamwork has accelerated in recent years, propelled by increasing evidence that healthcare workers working collaboratively as a team results in improved patient outcomes and that healthcare workers learning together improves teamwork. In an editorial, Barr (2010) provided a summary of the *WHO Framework for Action on Interprofessional Education & Collaborative Practice* that included an extensive list of evidence-based findings related to benefits and improved outcomes as a result of interprofessional collaborative practice. The *WHO Framework for Action on Interprofessional Education & Collaborative Practice* (2010) presented a summary of key messages, theoretical models, and definitions of terms as well as a description of the need for interprofessional education and collaborative ready healthcare workers from a world health perspective. The WHO framework document stated that there is now ample evidence that collaboration between healthcare professionals improves patient outcomes and that well conducted interprofessional education is effective in improving interprofessional teamwork (WHO, 2010). Key messages provided by the WHO regarding interprofessional education included: policies for health and education must support IPE; legislatures need to remove barriers impeding collaborative practice; different locations and healthcare systems have unique challenges that must be

overcome; management support must be developed for interprofessional collaboration and education; there must be a commitment to changing the culture within healthcare; and current curricula for education must be changed to support interprofessional collaboration, teamwork, and education.

The IOM and the Robert Wood Johnson Foundation (RWJF) worked together to create a committee that made recommendations regarding what nursing needs to do to improve quality of nursing care and improve health outcomes in the United States. The resulting 2011 report, *The Future of Nursing: Leading Change, Advancing Health*, summarized the activities and recommendations from this committee. This report provided eight recommendations on how to transform nursing in practice, education, and leadership that included removing impediments to nurses practicing to the full extent of their education and ability, improving opportunities for nurses to lead changes to improve collaboration and improve health outcomes, increasing the level of education of nurses, and collection and evaluation of data on the interprofessional workforce. One of the key messages in this document was that nurses need to be recognized as equal partners as they work with the other disciplines towards the improvement of how healthcare is provided in the United States. This IOM report discussed the need for improved interprofessional collaboration and education and stated that the full range of expertise of team members from each discipline should be utilized in the context of well-functioning teams that respect all members of the team. The recommendations made by this report were evidence-based.

Nursing recognized the importance of interprofessional collaboration and initiated action towards improving collaboration and teamwork even before the 2011 IOM report. Beginning in 2005, the Quality and Safety Education for Nurses (QSEN) initiative developed and

implemented knowledge, skills, and attitude competencies for nursing education which identified six competency areas: patient-centered care; teamwork and collaboration; evidence-based practice; quality improvement; safety; and informatics (QSEN Institute, 2015). The inclusion of teamwork and collaboration in QSEN competencies demonstrated the value and necessity of this competency. Preheim (2009) discussed specific competencies for inclusion when teaching about interprofessional collaboration which included ensuring that all disciplines understand the education, roles, and scope of practice of each of the disciplines on the team and how these roles should work together to provide care, as well as systematic methods to ensure effective communication between team members. Interprofessional education should include ensuring that the different health care professionals understand the different roles and activities of the other professions to engender respect as well as an understanding of their contribution to patient care (Lancaster, Kolakowsky-Hayner, Kovacich, & Greer-Williams, 2015).

A multidisciplinary group called the Interprofessional Education Collaborative (IPEC) was formed to create support, develop a common understanding of the issues, and create core competencies upon which to base interprofessional education within the United States. IPEC has representation from the American Association of Colleges of Nursing (AACN), the American Association of Colleges of Osteopathic Medicine (AACOM), the American Association of Colleges of Pharmacy (AACP), the American Dental Education Association (ADEA), the Association of American Medical Colleges (AAMC), and the Association of Schools of Public Health (ASPH). In 2011, IPEC published *Core Competencies for Interprofessional Collaborative Practice: Report of an Expert Panel*. This document provided operational definitions of terms that relied heavily on definitions previously provided by the World Health Organization (WHO) and determined four overall categories of competencies for

interprofessional collaborative practice: Values/Ethics for Interprofessional Practice; Roles/Responsibilities; Interprofessional Communication; and Teams and Teamwork (Interprofessional Education Collaborative Initiative, 2011).

The Registered Nurses' Association of Ontario (RNAO) published a Canadian model for implementation of interprofessional education, collaboration, and teamwork in 2013 in an extensive document entitled *Developing and Sustaining Interprofessional Health Care: Optimizing patients/clients, organizational, and system outcomes*. This document covered a wider range than the U.S. document that spoke primarily to creation of competencies for interprofessional education in academic settings. A beginning point for this Canadian work was the creation of nine evidence-based best practice guidelines to create a healthy working environment for nurses, which would resultingly positively impact not only all the other professions, but patient outcomes as well. The conceptual framework developed for the Canadian model encompassed three domains: physical/structural policy, cognitive/psycho/socio-cultural, and professional/occupational. Recommendations and guidelines for interprofessional health care were then presented within the three domains along with their evidence base. The evidence was then rated on a scale that ranged from A to D levels with A being the highest level of evidence. Based on the evidence available regarding interprofessional collaboration and education, areas where additional research is needed, commonly called research gaps, were identified by RNAO in the three broad categories of practice, outcomes and health systems. RNAO identified interprofessional education and teamwork in practice settings as areas where research gaps existed and recommendations were made to increase research conducted on these topics. Readers were referred to an available toolkit to assist in implementation of best practices determined by the evidence base and were encouraged to include plans for evaluating and

monitoring the progress of the best practices. The Canadian model identified six categories of interprofessional competency: care expertise, shared power, collaborative leadership, optimizing professional role/scope, shared decision making, and effective group functioning (RNAO, 2013).

Improving interprofessional teamwork is an area of increasing focus in patient care and academic settings in response to the ever-enlarging evidence base and support from expert groups. Individual nurses are being called upon to improve and implement their personal interprofessional collaboration skills (Indiana State Nurses Association, 2014). Government sponsored programs have been implemented in patient care settings that have successfully improved interprofessional teamwork and thereby patient outcomes. These include programs such as The Institute of Health Care Improvement (IHI) program entitled the State Action on Avoidable Re-hospitalizations (STAAR) and Patient Centered Medical Homes (PCMH) (Indiana State Nurses Association, 2014). The STAAR program uses a team approach to facilitate patient transitions between levels of care before returning home to prevent readmissions. For example, readmissions for heart failure were decreased by 30% at DMC Sinai-Grace in Detroit Michigan through use of the STAAR Program (Indiana State Nurses Association, 2014). The PCMH, supported federally through the Affordable Care Act of 2010, is a primary care team model designed to maximize the skill utilization of all team members to meet patient needs and improve outcomes, and depending upon specific state legislation, allows for advanced practice nurses to function in the role of team leader (Indiana State Nurses Association, 2014). Successful collaboration and teamwork between interprofessional team members has resulted in the success of these two programs in meeting patient needs and improving outcomes.

To further improve teamwork, government sponsored interprofessional education has been developed for interdisciplinary team training in practice settings in response to the need to

improve interprofessional teamwork. Two such examples come from agencies within the Department of Health and Human Services and include the *TeamSTEPPS*® Program and *Partnering to Heal*. The Agency for Healthcare Research and Quality (AHRQ) in conjunction with the Defense Department developed the *TeamSTEPPS*® program that provides free materials and training towards the attainment of optimal teamwork and achievement of patient safety standards (AHRQ, 2015a). The *TeamSTEPPS*® program trains trainers who return to their healthcare setting to provide interactive workshops and training to established multidisciplinary teams to improve their communication, teamwork and patient safety outcomes. *TeamSTEPPS*® team training methodology includes the use of videotaped scenarios and debriefing of team members to enhance learning. *Partnering to Heal* is a video training program created by the Office of Disease Prevention and Health Promotion (2015) designed to increase awareness and improve teamwork and communication to prevent infections within hospitals and improve patient outcomes. This video training is designed in a way that participants can identify with the characters in the scenario and learn from their perspectives. Both training programs are available for interprofessional education within practice settings.

Current thought is that activities to improve interprofessional teamwork can be conceptualized as being comprised of three domains where improvements need to occur: education, practice, and organizational level changes (Reeves, Goldman, Gilbert, Tepper, Silver, Suter, & Zwarenstein, 2011). Oandeson and Reeves (2005) described three levels that must be addressed in for successful interprofessional education to occur: the micro level of socialization within professions, the meso level of administrative logistical obstacles, and the macro level of politics and support from the overall institution. Interprofessional education is the necessary first

step that can lead to improvements in interprofessional teamwork as well the organizational changes that must be made to provide support for interprofessional teamwork to occur.

Topics and Themes

A number of relevant topics and themes exist within the literature including: what constitutes a professional, teamwork principles, teamwork versus collaboration, purposes and strategies for interprofessional education, and the impact of attitude on teamwork. Relevant findings from the literature on these topics and themes will be now be presented.

What Constitutes a Professional

The definition for what constitutes a professional has some variation throughout the literature. The WHO (2010) broadly defined a professional as someone who has the knowledge, skills, and abilities to impact health. Clark (2014) defined a profession as consisting of those working within health and social occupations, and a discipline as occupations represented by departments within a university setting. Oandansan and Reeves (2005) defined a profession as possessing specialized knowledge and dedication, and a discipline as an area of study. While not all-inclusive, categories of healthcare professionals are implied by the composition of the Interprofessional Education Collaborative (IPEC) that was comprised of the American Association of Colleges of Nursing (AACN), the American Association of Colleges of Osteopathic Medicine (AACOM), the American Association of Colleges of Pharmacy (AACP), the American Dental Education Association (ADEA), the Association of American Medical Colleges (AAMC), and the Association of Schools of Public Health (ASPH).

Teamwork Principles

The IOM (2011) discussed the need for improved interprofessional teamwork that would be evidenced by teams of healthcare professionals working together toward the common goals of

improved communication and patient outcomes, while respecting each other as well as the expertise of each of the interdisciplinary team members. A healthcare team can be described as a group of healthcare professionals with shared goals working together to solve individual patient care problems (Plonien & Williams, 2015). TeamSTEPPS® (AHRQ, 2015a) adds the component of a time limitation for the team's existence to the definition of a team.

The TeamSTEPPS® model provides principles, or constructs, to further illuminate the concept of teamwork (AHRQ, 2015a). TeamSTEPPS® is an evidenced-based program for improving teamwork in healthcare practice settings, resulting in improvements in patient safety. The TeamSTEPPS® program was developed by the Agency for Healthcare Research and Quality (AHRQ) in conjunction with the Department of Defense, using safety achievements of primarily the aviation industry to create a model for healthcare teams.

TeamSTEPPS® defines teamwork through five construct areas, the first of which is team structure. In the TeamSTEPPS® model the team structure is defined by the organization and consists of multiple sub-teams that work together at different levels that include: the core team providing direct patient care, contingency teams such as rapid response teams that provide assistance as needed, a coordinating team providing management support, ancillary and support services teams, and the administration of the organization (AHRQ, 2015a). The other four TeamSTEPPS® construct areas of communication, leadership, situation monitoring, and mutual support are considered to be areas that can be improved upon through education provided to healthcare professionals (AHRQ, 2015a). Within TeamSTEPPS®, communication consists of learnable structured processes that contribute to all members of the team possessing the same understanding of the situation and plan of action, leadership includes both the formally identified leaders as well as the informal leaders that come forward as needed in any given situation as well

as the principles and strategies that guide leadership, situation monitoring consists of the processes whereby team members continuously observe and assess the situation and includes concepts such as quickly catching mistakes and monitoring the status of fellow team members, and mutual support includes assisting and supporting others on the team as well as providing feedback and speaking up when potential safety issues are identified (AHRQ, 2015a).

Clark (2014) discussed the differing perspectives and cultures of the various healthcare professions and their impact on teamwork. Clark described the need for self-awareness and how healthcare professionals must first possess a solid understanding of their individual professional identities, and then next understand their professional relationship with patients, before they can understand their interprofessional role within the healthcare team.

Teamwork Versus Collaboration

The terms teamwork and collaboration are used interchangeably in the literature. When providing a definition of one of the terms, the other term is frequently used in that definition. There are many differing interpretations of the meaning of interprofessional collaboration. While context can contribute to correct interpretation of meaning, correct interpretation is not guaranteed due to the fact that words mean different things not only to different people, but to different professions as well (Thistlethwaite, Jackson, & Moran, 2013). A case in point is the differences between the core competencies for interprofessional collaboration developed by the U.S. and Canada based on review of the same evidence.

Many different definitions of interprofessional collaboration can be found in the literature and include concepts such as communication, teamwork, sharing responsibility for patient care and intentional sharing of knowledge (Indiana State Nursing Association, 2014). McKay and Wieck (2014) discussed how The American Nurses' Association (ANA) defined collaboration as

“a partnership based on trust with shared power, recognition, and acceptance of separate and combined practice spheres of activity and responsibility” and emphasized that collaboration requires shared vision as well as respect for the attributes and skills that each profession brings to the collaboration (p. 249). Thannhauser, Russell-Mayhew, & Scott (2010) discussed interprofessional collaboration as two components that consist first of the team behavior of providing optimal patient care, and second of the construction of a respectful team culture where all members of the team are valued and respected. The WHO (2010) described collaboration as when the individuals from different professions work with each other, utilizing the skills of each professional to improve the health of clients that range from individuals to communities.

The IOM (2001) described collaborative behaviors such as communication, cooperation, and coordination of care with one another and with the patient to provide seamless experiences of high quality care. The IOM stated that the boundaries between the different healthcare professions and organizations must be removed. They further stated that the professions’ tendency to protect their own roles, authority, and prerogatives must cease, and a culture of cooperation and respect for the knowledge and expertise of other healthcare professions must be developed.

Interdisciplinary collaboration is a concept closely related to interprofessional collaboration. The term interdisciplinary collaboration is often used interchangeably with interprofessional collaboration, however this must be done cautiously due to potential conceptual differences between the words discipline and professional. A concept analysis of interdisciplinary collaboration conducted by Petri (2010) does have the potential to help illuminate the concept of this collaboration. Petri determined that interdisciplinary collaboration is first a process, that this process requires trust and respect for other disciplines, and that this

process results in the objectives, responsibility, decision-making, and power being shared among the different disciplines when caring for patients. Petri promoted interdisciplinary education as the means to improve communication, trust, respect, and knowledge of the other disciplines scope of practice and abilities.

Xyrichis and Ream (2008) made the point that while there are similarities between the definitions of collaboration and teamwork, they are distinct concepts. This distinction is based on the fact that teamwork results in shared decision making, while collaboration can still result in a unilateral decision after the input from other disciplines (McComb & Simpson, 2013; Xyrichis & Ream, 2008).

Purposes and Strategies for Interprofessional Education

The purpose of providing interprofessional education is to produce healthcare workers who have the knowledge, skills, attitude, and competencies to work collaboratively with other healthcare workers as fully functioning team members. The definition of interprofessional education as “when two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes” that was provided by the WHO (2010) has become the prevailing definition cited in the literature (p. 13). While this is a slightly revised version of the definition initially provided by CAIPE in 1997, the universally accepted definition of what constitutes interprofessional education has remained virtually unchanged for almost three decades (Oandansan & Reeves, 2005).

The most common objectives for interprofessional education are to improve teamwork, communication, and understanding of professional roles (Reeves, et al., 2011). Delunas and Rouse (2014) stated that while there is a widely held belief that interprofessional education improves communication and collaboration, the authors referenced evidence that

interprofessional education does not always result in improvements in communication and teamwork. A reason for this may be related to the methodology used as well as the resulting quality of each actual interprofessional education offering. Evaluation of the effectiveness of interprofessional education is critical to identify less than ideal education to enable revisions to improve quality.

There are differing strategies and methodologies for bringing the different professions together to provide interprofessional education. Common strategies for interprofessional education in academia are to have shared classes, combined simulation training, or to bring students together in interprofessional study groups to work on projects (Hean, O'Halloran, Craddock, Hammick, and Pitt, 2013). Different strategies must be used in practice settings. The IOM (2001) recommended that training occur with established teams of healthcare professionals that actually work together in patient care settings. Both the *TeamSTEPPS*® and *Partnering to Heal* training programs were developed to train existing teams using multiple training methodologies including use of videos and team debriefing strategies (AHRQ, 2015a; Office of Disease Prevention and Health Promotion, 2015). The IOM report *To Err is Human: Building a Safer Health System* recommended use of well-proven training methodologies when conducting team training, and provided the use of simulation training as an example of a well-proven training methodology (Kohn, Corrigan & Donaldson, 2000). Casimiro, MacDonald, Thompson, and Stodel (2009) in their discussion of education strategies for interprofessional education proposed that technologies such as e-learning be utilized as a vital component of the process.

Impact of Attitude on Teamwork

Attitudes of healthcare professionals towards professions other than their own are a major factor impacting successful interprofessional teamwork (Delunas & Rouse, 2014; Lindqvist,

Duncan, Shepstone, Watts & Pierce, 2005). Clark (2014) discussed how changes in attitude must begin in academic settings during the academic preparation of new professionals for a change in healthcare culture and practice to occur. Definitions for attitude commonly include how individuals' inclination to behave in a certain way is based on their state of mind, whether they are aware of it or not, as well as their belief and value systems (Altmann, 2008). Altman further concluded that attitude includes thought processes, emotions and behavior, and generally occurs as a reaction to stimuli. Altman recommended caution when measuring attitude, as the act of measuring attitude may influence attitude, people may not be aware of their true attitude, or people may not be willing to share their true attitude.

Being aware of the viewpoints and attitudes of the different professions regarding interprofessional education, as well as their readiness to participate in collaborative education and practice, is critical for interprofessional education to be successful (Barr, 2013; Lancaster, Kolakowsky-Hayner, Kovacich, & Greer-Williams, 2015). Hudson (2002) acknowledged that while things were changing, one of the issues impeding the progress of interprofessional collaboration at that time was the perception that physicians were considered full professionals and nurses were considered semi-professional due to limited knowledge and scope of practice. Mohaupt, van Soeren, Andrusyszyn, MacMillan, Devlin-Cop, and Reeves (2012) discussed the fact that healthcare professionals frequently possess negative stereotypes of one another. Lindqvist, Duncan, Shepstone, Watts and Pierce (2005) discussed how professional stereotypes of entrants into academic preparation existed and influenced attitudes towards other professions. The authors advocated for more research to determine exactly which educational interventions improved student attitudes about other professions.

While the traditional hierarchy of healthcare that placed physicians at the top and in charge may be changing, many students enter their academic programs with the belief of physician superiority and there are many academic programs that still perpetuate this belief (Delunas & Rouse, 2013). Belief in this hierarchy also still persists in many practice settings (Lancaster, Kolakowsky-Hayner, Kovacich & Greer-Williams, 2015). The literature demonstrates that some professions have more interest in participating in interprofessional education and collaboration than do others. McKay and Wieck (2014) discussed how nurses within the United States have more positive attitudes towards interprofessional collaboration than physicians. Wamsley, Staves, Kroon, Topp, Hossaini, Newlin, Lindsay, and O'Brien (2012) found that physicians were less interested in participating in interprofessional learning activities than other healthcare professionals. Kuper and Whitehead (2012) discussed a strategy employed by some in the medical profession whereby they outwardly proclaim support for interprofessional teamwork and education while within their profession they are developing strategies to maintain their position at the top of the hierarchy.

Regardless of the range of support and opinion, the evidence is clear that improvement in interprofessional teamwork is required to improve patient outcomes. The identified strategy for achieving this improved teamwork is provision of interprofessional education, therefore interprofessional education must be implemented.

Conclusion

The literature reviewed demonstrates that there is a worldwide consensus on the need to improve interprofessional teamwork among healthcare workers to improve patient outcomes. It is generally accepted that to achieve improved interprofessional teamwork there needs to be the provision of effective interprofessional education. Attitudes of healthcare professionals

regarding other professions have a significant impact on willingness to participate in interprofessional education and collaborative practice. To date the majority of the literature on this topic reflects activity within the academic settings where professionals receive their pre-professional educational preparation. Research gaps exist related to interprofessional education to improve interprofessional teamwork in healthcare practice settings. Additional research is needed to address interprofessional education and its impact on attitudes regarding interprofessional teamwork in real world practice settings.

Summary

A literature review was conducted to help guide a capstone study that was designed to determine if the inclusion of interprofessional teamwork content during new hire orientation for a southwestern healthcare system impacted individual team member's attitudes regarding interprofessional teamwork. This chapter provided a summary of this review of the relevant literature and included the historical and current status of interprofessional education and teamwork.

While the call for improvements in collaborative practice and teamwork between the different healthcare disciplines started to appear in the 1960s, progress towards achieving this goal has accelerated in recent years based on the worldwide recognition of the need to improve interprofessional teamwork among healthcare professionals to improve patient outcomes. Multiple experts and organizations continue to promote improved interprofessional teamwork and education, with major longtime notable proponents that include the Institute of Medicine (IOM) and the World Health Organization (WHO). Information from the literature illuminated relevant topics and themes that included: what constitutes a professional, what are teamwork

principles, what constitutes interprofessional collaboration, purposes and strategies for interprofessional education, and the impact of attitude on collaboration.

Interprofessional teamwork is recognized as a major contributing factor to safe patient care and patient outcomes. Within practice settings, change is needed to improve teamwork between healthcare professionals and can be accomplished through improving attitudes regarding teamwork with other healthcare professionals. Interprofessional education has been identified in the literature as a major strategy to improve interprofessional teamwork. This literature review demonstrated that a need exists for additional evidence to determine if the provision of interprofessional education within healthcare practice settings has an effect on improving attitudes regarding interprofessional teamwork. Chapter 3 will describe this capstone study that was designed to provide needed information regarding the effectiveness of an interprofessional orientation in impacting attitudes regarding interprofessional teamwork, with the ultimate goal of improving interprofessional teamwork in practice settings.

CHAPTER 3: METHODS

Introduction

Chapter 3 will describe the methodology used by this capstone study and will include the rationale for the study design. This chapter will summarize the study design, sampling and setting, instruments, data collection, management, and analysis strategies, human subject protections, methodology appropriateness, and feasibility and appropriateness for this capstone study.

Project Design

The purpose of this capstone study was to determine if the inclusion of interprofessional teamwork content during new hire orientation for a southwestern healthcare system impacted individual team member's attitudes regarding interprofessional teamwork. This before-after non-experimental comparative study, using retrospective quality improvement data and equivalent controls, determined if there was a significant impact of the interprofessional teamwork-focused orientation on TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ) scores post intervention. The independent variable was the intervention consisting of the interprofessional orientation that included interprofessional teamwork content, as normally conducted. The dependent variable was attitudes regarding teamwork as measured by the T-TAQ. This study was non-experimental as there was no randomization to groups, and the interprofessional orientation occurred in the past and was not under the control of the researcher. The T-TAQ was administered by the organization as part of quality improvement data collection before and after the intervention. The population that was studied was comprised of all newly hired employees from all healthcare disciplines within a southwestern United States healthcare organization who attended the interprofessional orientation. Physicians and mid-level providers

attended a separate orientation and as a result were not included in the quality improvement data collection, and they were not included in this study. The new hire orientation included both licensed and non-licensed healthcare workers, therefore the capstone study studied both licensed and non-licensed healthcare workers. This orientation was conducted every two weeks.

The intervention was the two-day interprofessional orientation as normally conducted by the healthcare organization. This orientation included content on teamwork, as well as on how teamwork is inextricably intertwined with patient safety and the experience of healthcare by both the patients and employees. The organization's new hire orientation was conducted using the principles of Knowles Adult Learning Theory. Adult Learning Theory principles were also applicable to interprofessional teamwork education and were used to guide this study (Craddock, O'Halloran, McPherson, Hean, and Hammick, 2013).

As part of the organization's quality improvement project, attitudes regarding teamwork were measured before and after the orientation using the TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ). While the organization looked primarily at aggregate data, this capstone study compared each participant's pre- and post-orientation scores on the T-TAQ to determine the effectiveness of the orientation in impacting participant attitudes regarding interprofessional teamwork. The organization's quality improvement data collection occurred in February and March 2016 during five separate sessions of the new hire orientation. All new employees attending both days of the orientation were expected to complete the pre- and post-orientation TeamSTEPPS® Teamwork Attitudes Questionnaires. There were no consequences to the attendees regardless of whether or not they completed the surveys.

This before-after non-experimental study design was chosen after careful consideration of the research question and the real world practice setting limitations. The rationale for this study

design was that it would allow the researcher to answer the research question, using sound research methodology and existing data from the organization. This research strategy was realistic in that it provided the capability of accommodating the limitations of the actual setting where the research occurred, and through use of retrospective data caused no disruption of the orientation process.

Sampling and Setting

Sampling

The sample for this capstone study came from the organization's quality improvement data that utilized the non-random convenience sample of all newly hired healthcare workers who attended the new hire orientation. This new hire orientation trained new employees who would be working within the centralized urban area. Specific inclusion and exclusion criteria were delineated for the quality improvement project, which were also used for this capstone study.

Inclusion criteria for potential subjects included all healthcare workers who attended the centralized new employee interprofessional orientation that was conducted every two weeks, and who would be working at one of the four centralized hospitals or centrally located outpatient clinics in the healthcare organization. Newly hired healthcare workers that attended the new employee orientation included registered nurses, licensed practical nurses, nurse technicians, operating room (OR) technicians, scrub technicians, telemetry technicians, patient care assistants, medical assistants, certified nursing assistants, unit secretaries, emergency medical technicians, and paramedics. The organization oriented 15 to 60 new hires within the aforementioned roles every two weeks. Exclusion criteria included anyone not attending both days of the new hire orientation, those who did not attend the two orientation days in the correct

sequence, physicians and midlevel providers, and those who were not a member of a recognized healthcare discipline providing patient care within the organization.

For purposes of this study, an a priori power analysis was conducted using G*Power 3 to determine the required sample size for this study (Faul, Erdfelder, Lang, & Buchner, 2007). The a priori power analysis was conducted using two-tailed, matched pair t-tests to determine the difference between two dependent means, for a medium effect size of 0.5. Results of this power analysis were that for a medium effect, a confidence level of 95% (p-value .05) and power of 95%, a sample size of 54 was required. When changing the confidence level to .01 a sample size of 75 was needed. The quality improvement project data yielded 81 matched-by-participant sets of pre-and post-orientation T-TAQ questionnaires that were used by this study.

Setting

The setting for this study was a large, not-for-profit healthcare organization within the southwestern United States. The employees that attended the new hire orientation were hired to work within the centrally located urban area facilities of the healthcare organization. These urban area facilities include: four hospitals with their inpatient areas, operating rooms, emergency rooms and procedural areas, as well as eight urgent care locations, several outpatient procedural areas, and 12 outpatient clinic locations that include both primary and specialty care. The orientation was conducted in the auditorium of the learning center at the organization's administrative complex. The quality improvement data collection took place in this orientation setting. The first day of the orientation was conducted by the organization's Learning Center staff, and the second day of the orientation was conducted by Clinical Education staff. The researcher for this capstone study is the coordinator and main facilitator for the second day of the orientation. Written permission to conduct this study was obtained from the Directors of both

the organization's Learning Center and Clinical Education departments (see Appendices A and B).

Instrument

There were two hardcopy forms used for the quality improvement project data collection conducted by the organization, one of which was administered at the beginning of the first day of orientation and the other which was administered at the completion of the second day of the orientation (see Appendices E and F). Both the pre-and post-intervention orientation quality improvement data collection forms included questions from the TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ). The demographic data collected by the organization included the following information: age range, gender, healthcare discipline, highest education attained, years in practice, and exposure to interprofessional education in their academic preparation.

The TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ), as well as all TeamSTEPPS® materials, are considered part of the public domain so additional permission to use this tool was not required. The T-TAQ was developed by the Agency for Healthcare Research and Quality (AHRQ) in collaboration with the Department of Defense to measure an individual team member's opinions regarding aspects of teamwork in the five construct areas of: team structure, leadership, communication, situation monitoring, and mutual support (AHRQ, 2015b; Baker, Amodeo, Krokos, Slonim, & Herrera, 2010). The T-TAQ is a 30-item questionnaire composed of six questions in each of the five construct areas. The T-TAQ is specifically designed to measure attitudes of individual healthcare team members as either a one-time measure or as a pre-and post-evaluation of team training. Content validity of the items within the T-TAQ was established through a series of reviews by panels of experts. Reliability co-efficient statistics were presented by construct and have Cronbach's alphas that range from

0.70 to 0.83. The manual states that the T-TAQ can be customized through the addition of demographic background information, which did occur through the collection of demographic information by the organization's quality improvement project.

Data Collection, Management and Analysis Plans

Data Collection

Permission to conduct the study was obtained from the both the organization-wide Directors of the Learning Center and Clinical Education (see Appendices A and B). Permission to conduct this study was also obtained from the Institutional Review Board (IRB) of the organization where this study occurred (see Appendix C) as well as the IRB of American Sentinel University (see Appendix D). The data from the quality improvement project data collection forms was entered into Excel spreadsheets for data analysis by the organization. The completed data collection forms from the quality improvement study, as well as the Excel spreadsheets containing the data from these forms, were provided to the researcher for use in this study.

The organization's collection of the quality improvement data occurred through use of hardcopy forms that consisted of two data collection forms, each of a different color for pre- and post-orientation (see Appendices E and F). The data collection forms explained why the data was being collected and explained that all information collected would remain anonymous. All new employees who attended both days of the orientation received the forms to complete. The first of the two data collection forms contained the pre-orientation T-TAQ questions, and was administered prior to the orientation on Monday. The post-orientation quality improvement data collection form included the post-orientation T-TAQ questions and the demographic questions, and was administered after completion of the interprofessional orientation on Tuesday. The two

forms were linked together by a unique code for each of the subjects, created by the subjects, to ensure anonymity. Each subject created their unique anonymous identifier that consisted of a four-character code made up of their mother's first and middle initials, and their father's first and middle initials.

Prior to the orientation on Monday morning, all new hires scheduled to attend both days of the orientation were given a copy of the pre-orientation data collection form to complete by the facilitator of the second day of the orientation. The new employees were asked to complete the pre-orientation quality improvement survey form that was comprised of the T-TAQ. The participants then participated in the two-day centralized new hire orientation as normally conducted. After completion of the orientation on Tuesday, the new employees were asked to complete the post-orientation quality improvement survey form that included the T-TAQ and demographic questions that the organization was collecting for the purpose of improving the orientation. After completion by the participants, each form was collected and placed in a locked file cabinet in a locked office.

Data Management

Data were managed in a way to ensure that all data remained secure and anonymous. All quality improvement data obtained from the organization for the purposes of this study was securely transported and stored in a locked cabinet in the researcher's office. All hardcopy data forms will be kept in the locked cabinet until they are securely destroyed five years after the study is completed. All data from the hardcopy forms, with the associated unique anonymous code created by each participant, was entered into an Excel spreadsheet by the organization. All electronic data was stored on password-protected computers with anti-virus protection. The data on the Excel spreadsheet was screened, cleaned, and coded prior to importing it into Statistical

Package for the Social Sciences (SPSS). The primary investigator is the only person with access to both the hardcopy and electronic data.

An a priori code book was created that includes the demographic and TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ) questions and potential responses (see Appendix G). The demographic data in the code book consisted of the following variables with their potential responses: age range, gender, healthcare discipline, highest education attained, years in practice, and exposure to interprofessional education in their academic preparation. The code book information for the T-TAQ tool consisted of the 30 questions on the T-TAQ, as well as potential answers for each of the 30 questions, for both the pre- and post-orientation administrations. The code book included fields for each participant's overall mean scores on the T-TAQ, from both before and after the intervention.

Data Analysis

Data analysis was accomplished using the SPSS analysis software. All data were de-identified anonymous data, obtained through unique identifiers known only by the participants. Quality improvement project data collection forms without a matched unique identifier counterpart, as well as data forms from attendees who did not attend the orientation days in sequence, were excluded from the data analysis for this capstone study.

Descriptive statistics such as frequencies and percentages were used to describe the sample population and item-level responses. Preliminary statistics were performed to test the assumptions for parametric t-tests. Parametric tests are used with data that are normally distributed (Moran, Burson, & Conrad, 2014). A Paired Sample t-test is a parametric test that is used when the data consists of paired samples from the same subjects; for example, data from before and after an intervention on the same participants (Tappen, 2011). A Paired Samples t-

test was used to compare the mean scores for the same subject's pre- and post-tests. Eta-squared was calculated for effect size and was interpreted as small effect = .01, moderate effect = .06 and a large effect = .14.

Protection of the Rights of Human Subjects

Human subject rights were protected through achieving Institutional Review Board (IRB) approval from both the healthcare organization where the study was conducted (see Appendix C) as well as American Sentinel University (see Appendix D). As a non-experimental study using retrospective quality improvement data, this study qualified for exempt review through the healthcare organization's IRB, however the organization's IRB required ongoing involvement in the study. Ongoing oversight of the study will occur through both IRBs to ensure protection of the rights of human subjects.

Participants' privacy was protected by the fact that the data were anonymous and coded with unique identifiers known only to the participants. The participants created the unique identifier linking their pre- and post-tests together, which consisted of a four character code made up of their mother's first and middle initials, and their father's first and middle initials. This process to ensure anonymity was included in the quality improvement project to encourage honest responses during data collection. Participants' privacy was additionally protected through the data management plan described above.

Methodology Appropriateness

The design and methodology for this study were appropriate for the research questions that this study planned to answer. The study utilized retrospective quality improvement study data in which the participants were not randomly assigned. The methodology was appropriate as the study utilized retrospective data that measured attitudes regarding interprofessional teamwork

before and after the intervention, which consisted of participation in the new hire orientation. The T-TAQ tool was designed to measure the outcome of interest, which is attitudes of individual healthcare team members regarding interprofessional teamwork. This study design was also appropriate for the organization where the study was conducted as it accommodated the real-life logistical and resource limitations common to practice setting education where the interprofessional orientation occurred. Strengths of this study are that it was realistic for the actual setting and situation in which it was conducted, it provided information about the effectiveness of the orientation in impacting attitudes about teamwork, the anonymity of the participants was protected, and the data collection tool that was used has established reliability and validity.

Feasibility and Appropriateness

This study was feasible for several reasons. First, the healthcare organization expressed approval for the study to be conducted using retrospective quality improvement data collected during the centralized new employee interprofessional orientation. The quality improvement project resulted in matched pre- and post-orientation data forms for 81 participants, which was an adequate number to allow for the study's planned statistical analyses in that this number surpassed the required number of paired tests needed for significance as determined by the results of the a priori power analysis. The use of retrospective data from the quality improvement project conducted during new employee orientation allowed the study to be completed within the required time frame. The study related costs were borne by the researcher and included costs of the copies of the hardcopy data collection forms, and the SPSS program. The study design was reasonable and appropriate for the setting and situation. This study

accommodated the real-life limitations that exist within practice settings, the healthcare organization, and the centralized new employee orientation.

Summary

This capstone study was a retrospective detailed analysis of the data obtained from a healthcare organization's quality improvement project conducted using a non-experimental, comparative, before and after study design. Data collection for the organization's quality improvement project occurred in February and March 2016. The intervention being evaluated consisted of the interprofessional orientation that incorporated interprofessional teamwork content. The sample for this study consisted of all the newly hired healthcare workers from all healthcare disciplines from within the healthcare organization that attended a centralized two-day new employee interprofessional orientation. The measurement tool was the TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ), a tool with established reliability and validity, which was designed to measure individual team member attitudes regarding teamwork. The sample size was 81 subjects. Institutional Review Board (IRB) permission to conduct this study was obtained from the organization's IRB as well as from the American Sentinel University IRB. Retrospective analysis of the data for this capstone study commenced after IRB approval was obtained. Details regarding data analysis methodology, methodology appropriateness, feasibility and appropriateness, and human subject protections were outlined. The design of this study was appropriate to answer the research question. The study design enabled the research to be conducted within the required timeframe.

CHAPTER 4: FINDINGS

Introduction

Chapter 4 discusses the data collection and data analysis processes used in this capstone study, and also presents the findings generated from this study. The purpose of this study was to determine if participation in an interprofessional orientation impacted the attitudes regarding interprofessional teamwork of newly hired multidisciplinary healthcare professionals who attended the new employee orientation that contained teamwork content. This study was conducted in a healthcare practice setting.

The Purpose of the Project

The purpose of this capstone study was to determine if the inclusion of interprofessional teamwork content during new hire orientation for a southwestern healthcare system impacted individual team member's attitudes regarding interprofessional teamwork. This study used retrospective quality improvement data and equivalent controls to determine if the interprofessional teamwork-focused orientation impacted participant attitudes regarding teamwork as measured by the TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ). The T-TAQ was administered by the organization before and after the interprofessional orientation that included interprofessional teamwork content. The quality improvement data collected by the organization was evaluated retrospectively for this before-after non-experimental comparative study.

The population that was studied was comprised of both licensed and unlicensed newly hired employees from all healthcare disciplines within a southwestern United States healthcare organization who attended the interprofessional orientation. Physicians and mid-level providers were not included in the quality improvement data collection, or this study, as they attended a

separate orientation. The orientation was conducted every two weeks and included content on teamwork and how teamwork is inextricably intertwined with patient safety and the experience of healthcare by both patients and employees. The orientation utilized some components of the TeamSTEPPS® curriculum, but interspersed them with other content such as organizational initiatives, cultural expectations of the organization, empathy, respect for diversity, safety concepts, and expected employee behaviors related to not only generating exceptional patient experiences, but exceptional experiences for all who work within the organization.

The goal of the quality improvement project was to analyze data and evaluate the effectiveness of this relatively new orientation content with the ultimate goal of improving this orientation. All new employees who attended both days of the orientation received the quality improvement survey forms to complete. The pre-orientation T-TAQ questions were administered prior to the orientation on Monday and the post-orientation T-TAQ questions, with the demographic questions, were administered after completion of the interprofessional orientation on Tuesday. The two forms were paired by a unique code created by each subject that consisted of a four-character code made up of their mother's first and middle initials, and their father's first and middle initials.

The organization's quality improvement project collected data before and after five separate new hire orientations conducted in February and March 2016. The quality improvement data yielded 113 pre-orientation completed surveys and 123 post-orientation completed surveys. This resulted in 91 matched-by-unique-identifier paired forms, 85 pairs of which were matched in sequence, and six pairs which were out of sequence and were excluded from the study. Of the 85 remaining matched pairs, four pairs also required exclusion from the study because the participants did not complete the reverse side of one of the forms, resulting in a missing page of

data. The final number of matched pair forms available for data analysis for this study was 81. The organization shared the hardcopy data collection forms, as well as the Excel spreadsheet containing the data, with this researcher for purposes of this study.

Discussion of Demographics

This study was conducted with employees hired to work within the centrally located urban facilities of a large, not-for-profit healthcare organization within the southwestern United States. These facilities included: four hospitals with their inpatient areas, operating rooms, emergency rooms and procedural areas, as well as eight urgent care locations, several outpatient procedural areas, and 12 outpatient clinic locations that include both primary and specialty care. Newly hired healthcare workers that attended the new employee orientation, and were represented in this study, included registered nurses (RNs), licensed practical nurses (LPNs), nurse technicians, operating room (OR) technicians, scrub technicians, telemetry technicians, patient care assistants (PCAs), medical assistants (MAs), certified nursing assistants (CNAs), unit secretaries, emergency medical technicians (EMTs), and paramedics.

The organization collected the quality improvement project data as a means to determine how to improve their orientation. Therefore, the demographic data available for this study was grouped into categories that were defined based on the needs of the organization. The demographic data available included the professional disciplines attending the orientation, the range of years the participants had worked in their healthcare disciplines, the highest level of education the participants had completed, whether or not they had participated in class activities with students from other healthcare disciplines during their academic preparation, age range based on the generational cohort definitions used by the organization, and gender. For purposes of this study, the data regarding whether or not they had participated in class activities with

students from other healthcare disciplines during their academic preparation was excluded due to the vagueness of the question and the resulting concerns about the validity of that data.

The data on the Excel spreadsheet provided by the organization were screened and cleaned and imported into the Statistical Package for the Social Sciences (SPSS) for analysis using descriptive statistics. Due to the data being categorical in nature, the demographic data were analyzed by frequency and percent. The demographic information demonstrates the great diversity in the participants who attended the interprofessional new employee orientation.

As expected, the largest professional discipline attending the new employee orientation, and thus participating in the data collection, was that of RNs at 48.1% (see Table 1). RNs comprise the largest number of employees for the healthcare organization, as well as the largest number of new hires for the organization. The second largest group participating in the orientation was that of MAs at 14.8%, followed by PCAs, who function as patient transporters for the organization, at 7.4%. Other disciplines attending the orientation were represented at percentages of less than 5%.

Table 1

Demographics of the Sample - Professional Disciplines

Discipline	Frequency	Percent
RN	39	48.1
LPN/LVN	1	1.2
Medical Assistant	13	14.8
Certified Nursing Assistant	1	1.2
Unit Secretary	2	2.5
Emergency Medical Technician	3	3.7
Paramedic	3	3.7

Other

Telemetry Tech	1	1.2
Patient Care Assistant	6	7.4

Note: N = 81

The years the participants had worked in the professional disciplines are summarized in Table 2. Over 60% of the participants had been practicing in their professional discipline for less than five years, with 37% of these participants having less than one year experience in their healthcare discipline. This indicates a large number of new graduates entering the organization's workforce. This illuminates the opportunity to provide orientation education that impacts the behavior of these new entrants into healthcare throughout the course of their careers, either at this organization or wherever their careers may take them.

Table 2

Demographics of the Sample – Years in Discipline

Years in discipline	Frequency	Percent
Less than 1 year	30	37.0
1 to 5 years	19	23.5
6 to 10 years	14	17.3
11 to 20 years	14	17.3
21 to 30 years	1	1.2
31 or more years	3	3.7

Note: N = 81

The level of education completed by the participants ranged from 30.1% who completed high school or successfully passed their General Educational Development (GED) test, 39.5% with an associate degree, to 24.7% with a baccalaureate degree (see Table 3). Only 4.9% of the participants possessed a graduate degree. The fact that approximately a third of the participants were prepared at the high school level highlights the diversity of the orientation attendees, and indicates the need to present information at a level that ensures comprehension for all those attending, without alienating those with a higher level of education.

Table 3

Demographics of the Sample - Education Completed

Education completed	Frequency	Percent
High School/GED	25	30.9
Associate Degree	32	39.5
Baccalaureate Degree	20	24.7
Master's Degree	3	3.7
Doctoral Degree	1	1.2

Note: N = 81

Age ranges of the participants were based on the generational cohorts as defined by the organization (see Table 4). The organization defines age group cohorts as the Baby Boomers as those born between 1943 and 1960, Generation X as those born between 1961 and 1981, and the Millennials/Generation Y as those born between 1982 and 2002 (PHS, 2010). The organization attempts to incorporate training methodologies that appeal to each of the different generational cohorts into their educational offerings. The participants that completed the orientation were

comprised of only four participants from the Baby Boomer generation, with roughly a third of the participants being from each of the three younger generational cohorts.

Table 4

Demographics of the Sample - Age Ranges

Age range	Frequency	Percent
24 years or less	23	28.4
25 to 34 years	28	34.6
35 to 55 years	25	30.9
56 years or greater	4	4.9
No response	1	1.2

Note: $N = 81$

With regard to gender, the majority of the participants were female. Females ($n = 60$, 74.1%) outnumbered males ($n = 16$, 19.8%) participating in the orientation by approximately 4 to 1. Five participants (6.1%) chose to not provide information relating to their gender.

Data Analysis

The data collection tool used for the organization's quality improvement project and for study was the TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ). The T-TAQ is a 30-item questionnaire developed by the Agency for Healthcare Research and Quality (AHRQ) in collaboration with the Department of Defense to measure an individual team member's opinions regarding aspects of teamwork in the five construct areas of: team structure, leadership, communication, situation monitoring, and mutual support (AHRQ, 2015b; Baker, Amodeo, Krokos, Slonim, & Herrera, 2010). The T-TAQ was specifically designed to measure attitudes of individual healthcare team members as either a one-time measure or as a pre-and post-

evaluation of team training, as was the case for this orientation. The organization entered the T-TAQ data from this quality improvement project into an Excel spreadsheet, using the instructions provided in the T-TAQ manual (AHRQ, 2015) as a guide to code the data. The organization utilized the numbers 1 through 5 to correspond with the Likert scale range of responses to each of the 30 questions on the T-TAQ, with 1 indicating the least desirable attitude response regarding teamwork, and 5 indicating the most desirable attitude response regarding teamwork.

The organization provided the Excel spreadsheet, along with the hardcopy data forms to the researcher for purposes of this study. The data entry done by the organization was double-checked by the researcher through comparison with the hardcopy data forms, then the data were screened and cleaned to ensure accuracy. Confirmation was obtained during this process that the four reverse coded items on the T-TAQ were coded correctly by the organization on the Excel spreadsheet. Rows containing data that did not meet the criteria for inclusion into this study were deleted from the Excel spreadsheet.

The organization had coded items that participants had neglected to answer with a zero. All Excel spreadsheet entries with a value of 0 were double-checked with the hardcopy data forms, and then the 0 values were changed to a blank field. The reason for this is that SPSS recognizes blank fields as missing data elements and then adjusts the analyses to accommodate for these missing data elements (Pallant, 2013). On three of the questions one respondent checked both 4 and 5 as their response. These responses were coded as a 4.5. On one of the questions the respondent checked both 3 and 4 as their response. These responses were coded as a 3.5. Both the 4.5 and 3.5 responses were included in the data analysis as the analysis computation was a mean score.

The Excel spreadsheet was then programmed to make the calculations required for the calculated variables required by this study, which consisted of: the pre-orientation T-TAQ question mean for each participant, the post-orientation T-TAQ question mean for each participant, and the difference between the pre-orientation T-TAQ question mean and the post-orientation T-TAQ question mean for each participant. These calculation formulas were then randomly spot-checked with hand calculations of these values. The Excel spreadsheet was then uploaded into the Statistical Package for the Social Sciences (SPSS) for data analysis.

Item-level responses to the T-TAQ were analyzed using frequency and percent (see Appendices H and I). The reverse coded items were the questions numbered 20, 21, 24 and 30. The item level analysis suggested that a few participants may have not read all the questions carefully and did not notice the differences reflected in the reverse coded items. Upon review of the item-level responses, as well as the analysis results for the pre-orientation and post-orientation means, the few outlying data values were deemed to not be significant in contribution to the overall results due to the 5% trimmed mean results being close to the actual mean values (see Table 5). Therefore, the few outliers were left in the data set for the analysis. The histograms for the distribution of the pre- and post-orientation T-TAQ means were reviewed and showed a shift to the right after the orientation, indicating an improvement in T-TAQ scores (see Appendices J and K). Comparison of the skewness statistics for the pre-orientation T-TAQ means (-.270) and the post-orientation T-TAQ means (-.938) confirmed this observation.

Table 5

Pre- and Post-Orientation T-TAQ Mean Score Data

Statistic	Pre-Orientation	Post-Orientation
Mean	4.44	4.64

5% Trimmed Mean	4.44	4.66
Median	4.5	4.73
95% CI	4.37 - 4.51	4.57 – 4.71
SD	.33	.33
Minimum	3.66	3.63
Maximum	5.0	5.0
Skewness	-.270	-.938
Kurtosis	-.740	-.058

Note: CI = confidence interval; SD = Standard Deviation

The differences between the pre-orientation and post-orientation T-TAQ score means were analyzed for normality using the Descriptive Statistics Explore function of SPSS to determine if a paired-sample t-test could be used to analyze the data (see Table 6). The Kolmogorov-Smirnov statistic was .067 with a non-significant significance value of .200, indicating that the differences in the means between the pre-and post-orientation scores were normally distributed. The histogram for the differences between the pre-orientation and post-orientation T-TAQ score means was visually inspected and demonstrated a relatively normal distribution (see Appendix L). Based on the statistical analysis and the review of the histogram, the differences in the means between the pre- and post-orientation T-TAQ scores proved to be normally distributed, therefore the paired-samples t-test was used to analyze the data.

Table 6

Normality Analysis Results for the Differences between Pre- and Post-Orientation T-TAQ Mean Scores

Statistic	Result
Mean	.1997
5% Trimmed Mean	.1961
Median	.20
95% CI	.14 - .26
SD	.28
Minimum	-.45
Maximum	.9
Skewness	.17
Kurtosis	-.02
Kolmogorov-Smirov	.067 sig = .20

Note: CI = confidence interval; SD = Standard Deviation; sig = significance

The data were analyzed using the paired-samples t-test analysis within SPSS (see Table 7). The analysis was run utilizing the exclude data pairwise feature in SPSS to accommodate for the 16 missing data elements, 10 from the pre-orientation administration and six from the post-orientation administration. The paired-samples t-test provided results that showed there was a significant increase in mean scores between the pre-orientation T-TAQ ($M = 4.44$, $SD = .328$) and the post-orientation T-TAQ ($M = 4.64$, $SD = .326$; $t(80) = -6.35$, $p < .000$, two-tailed). These results showed a statistically significant improvement in T-TAQ scores after the orientation (mean difference = $-.1997$, 95% CI : $-.262$ to $-.137$). The effect size was manually calculated

using eta squared and was interpreted as small effect = .01, moderate effect = .06 and a large effect = .14. The resulting eta squared statistic was .34, indicating a large effect size.

Table 7

Paired-Samples T-Test Results

Statistic	Result
Mean	-.1997
SD	.28
Std. Error Mean	.03
95% CI	-.26 - -.14
<i>t</i>	-6.35
df	80
Sig.(2-tailed)	.000
Eta Squared	.34

Note: SD = Standard Deviation; Std. = standard; CI = confidence interval; *t* = t-test statistic; df = degrees of freedom; sig. = significance

Paired-sample t-tests was the appropriate statistical analysis to use to analyze these data to answer the research question for this study. The paired-samples t-test is also referred to as the repeated measures t-test, and is used to analyze data obtained on the same participants at two different times, a common example being research that incorporates use of pre- and post-tests in their design (Pallant, 2013). The paired-samples t-test utilizes differences between the means of paired samples and can be used when these means are normally distributed, as was the case with this study.

Research Question

The research question for this study asked if the inclusion of interprofessional teamwork content during new employee orientation for a southwestern healthcare system impacted individual attitudes regarding interprofessional teamwork. The results were that there was a significant increase in mean scores between the pre-orientation T-TAQ ($M = 4.44$, $SD = .328$) and the post-orientation T-TAQ ($M = 4.64$, $SD = .326$; $t(80) = -6.35$, $p < .000$, two-tailed; mean increase in scores = $-.1997$, 95% CI : $-.262$ to $-.137$). The eta squared statistic (.34) indicated a large effect size.

The results of this study found that the inclusion of interprofessional teamwork content during new employee orientation for a southwestern healthcare system does impact individual attitudes regarding interprofessional teamwork. The hypothesis that there is a difference in individual attitudes regarding interprofessional teamwork after participation in a new employee orientation that included interprofessional teamwork content was accepted. The null hypothesis that there is no difference in individual attitudes regarding interprofessional teamwork after participation in a new employee orientation that included interprofessional teamwork content was rejected.

Reliability/Validity

Reliability and validity of a study can be evaluated by the tool used for data collection as well as by the aspects of the study design itself. The T-TAQ data collection tool utilized by the quality improvement project, and by this study, had pre-established reliability and validity. Content validity of the items within the T-TAQ was established through a series of reviews by panels of experts, and reliability co-efficient statistics for the T-TAQ have Cronbach's alphas

that range from 0.70 to 0.83 for the five constructs incorporated within the tool (AHRQ, 2015b; Baker, Amodeo, Krokos, Slonim, & Herrera, 2010).

Reliability results for the T-TAQ by construct are presented in Table 8, comparing the published reliability coefficients of the T-TAQ with the reliability results for the sample used in this study. Reliability co-efficient results for the T-TAQ for the sample in this study increased from the pre-orientation administration, with Cronbach's alphas ranging from .67 to .82, to the post-orientation administration, with Cronbach's alphas ranging from .68 to .85. These results suggest that the tool was more reliable after participant exposure to teamwork concepts. The one construct with pre- and post-orientation Cronbach's alphas with this sample, at .67 and .68, which are slightly below the established published value of .70, is the construct of mutual support. This finding would require additional exploration and is perhaps due to the demographic constitution of the participants attending the orientation. The Cronbach's alphas increased again when the pre-orientation and the post-orientation administrations of the T-TAQ were evaluated together. The combined pre- and post-orientation Cronbach's alpha values ranged from .80 to .86. The conclusion from the reliability evaluation of the T-TAQ is that the tool had acceptable reliability with this sample.

Table 8

T-TAQ Reliability Coefficients by Construct Using Cronbach's Alpha

Construct	*T-TAQ Manual	Pre-Orientation	Post-Orientation	Combined
Team Structure	.70	.69	.76	.82
Leadership	.81	.71	.82	.83
Situation Monitoring	.83	.82	.85	.86
Mutual Support	.70	.67	.68	.80

Communications	.74	.72	.72	.80
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Note: Combined = pre-orientation and post-orientation together

*From the Agency for Healthcare Research and Quality [AHRQ] (2015b). TeamSTEPPS Teamwork Attitudes Questionnaire Manual. *AHRQ website*. Retrieved from: http://teamstepps.ahrq.gov/taq_index.htm

Other factors can impact the reliability and validity of a research project. These factors include the congruence of the study design with the aim of the study, and the realities of the setting and situation where the study is conducted. The design, methods, and analysis for this study were congruent with the research question and the real life practice setting in which the study occurred.

Potential limitations of this study include that the participants were healthcare professionals that were affiliated with nursing departments and did not include allied health professionals from ancillary departments, there was limited time for the participants to complete the quality improvement survey forms resulting in the T-TAQ items being completed quickly, the grade level of verbiage in T-TAQ may have been difficult for some of the participants to understand, the possibility of participants not responding honestly because they wanted to be perceived in a positive way as they begin their new employment, and the possibility of pre-test post-test bias due to the short time frame between the Monday morning administration of the pre-orientation questionnaire and the Tuesday afternoon administration of the post-orientation questionnaire.

Possible internal threats to validity include slight variations in the five orientation sessions as normally conducted, variations in co-participant influence due to different participant interactions at the different sessions, the potential for pre-test post-test bias due to the short time between the pre- and post-tests, and the presence of confounding variables. Possible

confounding variables include previous teamwork experiences, the elimination of potential data forms due to lack of matching unique identifiers, and previous experience with TeamSTEPPS® content. The potential confounding variable of the influence the attitudes of existing organizational employees was controlled for through ensuring use of data forms from only those participants who attended the two days of new hire orientation in the correct sequence.

Possible external threats to validity, or the ability to generalize the results outside of the organization, include the uniqueness of sample, the uniqueness of setting, and the uniqueness of orientation content. The demographic characteristics of the sample population are potential mediating/moderating variables that may have influenced the results of this study, and included professional discipline, years worked in professional discipline, highest level of completed education, age range by generational cohort, and gender. Previous experiences with teamwork also have the potential to impact participant attitudes regarding interprofessional teamwork.

Conclusion

This before-after non-experimental comparative study, utilizing retrospective quality improvement data, was conducted to determine if the inclusion of interprofessional teamwork content during new hire orientation for a southwestern healthcare system impacted individual team member's attitudes regarding interprofessional teamwork. The quality improvement data was collected before and after five sessions of the new employee orientation conducted in February and March of 2016. The TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ) was used for the quality improvement project to evaluate participant attitudes regarding teamwork. The T-TAQ has established reliability and validity, which remained consistent when used with the participants from this study. This study found that there was a significant increase in mean scores between the pre-orientation T-TAQ ($M = 4.44, SD = .328$) and the post-

orientation T-TAQ ($M = 4.64$, $SD = .326$; $t(80) = -6.35$, $p < .000$, two-tailed; mean increase in scores = $-.1997$, 95% CI : $-.262$ to $-.137$). The eta squared statistic (.34) indicated a large effect size.

CHAPTER 5: DISCUSSION OF FINDINGS

Introduction

Chapter 5 elaborates on the significance of the findings for this Capstone project that was conducted to determine if participation in an interprofessional orientation impacted the attitudes regarding interprofessional teamwork of the newly hired multidisciplinary healthcare professionals who attended a new employee orientation containing teamwork content. Improvement in teamwork between the different healthcare disciplines that care for patients is required to decrease errors and improve patient outcomes (Lancaster, Kolakowsky-Hayner, Kovacich, & Greer-Williams, 2015; McKay & Wieck, 2014). Because the attitudes held by healthcare professionals regarding working as a team, as well as towards healthcare disciplines other than their own, are major factors impacting successful interprofessional teamwork, interventions must be implemented to improve these attitudes (Delunas & Rouse, 2014; Lindqvist, Duncan, Shepstone, Watts & Pierce, 2005). Improved attitudes relating to interdisciplinary teamwork are critical in achieving the enhanced levels of teamwork that results in better patient outcomes, decreased healthcare costs, improved job satisfaction, and decreased turnover among healthcare professionals (Bajnok, et al., 2012; Xyrichis, & Ream, 2008).

Healthcare organizations hire a wide array of new and experienced healthcare workers to care for the patients within their facilities. While some new employees who completed their academic education in recent years have had some interprofessional education as part of their pre-professional training, most healthcare workers come to work in practice settings without the skills and competencies required to work collaboratively with other healthcare disciplines (IOM 2001). Additionally, new employees may arrive with negative pre-existing teamwork attitudes

and behaviors resulting from less-than-ideal previous teamwork experiences within healthcare settings.

Interprofessional education has been identified as the major strategy to improve teamwork between healthcare workers (Casimiro, MacDonald, Thompson, & Stodel, 2009; Greiner & Knebal, 2003; WHO, 2010). Through the process of interprofessional education, attitudes regarding interprofessional teamwork can be improved (Bajnok et al., 2012; WHO, 2010). An interprofessional orientation is a form of interprofessional education that incorporates content on teamwork and communication skills, knowledge and respect for other roles on the team, and the organizational expectation that employees will work well together in effective teams. A large, not-for-profit healthcare organization in the southwestern United States implemented just such an interprofessional orientation. This study evaluated the difference in attitudes regarding teamwork before and after this orientation, using retrospective quality improvement data provided by the organization, which was collected utilizing the TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ). This study generated much needed information about the effectiveness of an interprofessional orientation designed to improve attitudes regarding teamwork. This study was conducted in a practice setting.

Interpretation of the Findings

The research question this study asked was if the inclusion of interprofessional teamwork content during the new employee orientation for a southwestern healthcare system impacted individual attitudes regarding interprofessional teamwork. The quality improvement data collected by the organization utilized the T-TAQ before and after the new employee orientation to measure employee attitudes regarding teamwork. The differences between these pre-and post-orientation T-TAQ means for each participant were analyzed using a paired-samples t-test. The

results of the data analysis showed a significant increase in mean scores between the pre-orientation T-TAQ ($M = 4.44$, $SD = .328$) and the post-orientation T-TAQ ($M = 4.64$, $SD = .326$; $t(80) = -6.35$, $p < .000$, two-tailed; mean increase in scores = $-.1997$, 95% CI : $-.262$ to $-.137$).

While these results of the paired-samples t-test showed a statistically significant improvement in attitudes, the eta-squared result of $.34$ indicated a large effect size. This large effect size demonstrates that there is an important practical significance of the difference between the pre- and post-orientation T-TAQ means in a real world setting. Based on the statistical analyses, the answer to the research question for this study is that the inclusion of interprofessional teamwork content during the new employee orientation for a southwestern healthcare system does not only impact individual attitudes regarding interprofessional teamwork, the interprofessional teamwork content during orientation improves these attitudes.

The statistical analysis results indicated a significant increase in the new employee attitudes regarding teamwork as measured by the T-TAQ after participation in the new employee orientation containing teamwork content. However, due to the fact that this study had a non-experimental design, caution must be exercised in interpreting the improvement in scores regarding teamwork attitudes and attributing them to the effectiveness of the new employee orientation. The possibility exists that a real change in employee attitudes regarding teamwork did not occur, and that as a result of participating in the orientation, the employees were more aware of the correct responses to the T-TAQ and therefore answered the questions based on what they knew was expected in their new employment setting. Additionally, although the quality improvement project data was collected anonymously using identifiers known only to the participants, there is a chance that the participants did not trust the anonymity of the process and responded as they believed that they should, instead of based on their true attitudes regarding

teamwork. The possibility also exists that pre-test post-test bias, due to the short turn-around-time between the administration of the tool before the orientation started on Monday morning and again at the end of the day on Tuesday, may have influenced the participants' responses.

Inferences about the Important Findings

This study provided results suggesting that new employee orientation with teamwork content can improve the attitudes regarding teamwork of those participating in the orientation. Ongoing improvement in interprofessional teamwork within practice settings is dependent on the attitudes about interprofessional teamwork held by healthcare workers, and requires ongoing interprofessional education to improve teamwork attitudes and skills. Improved attitudes regarding interdisciplinary teamwork results in better teamwork, which then results in better patient outcomes, decreased healthcare costs, improved job satisfaction, and decreased turnover among healthcare professionals (Bajnok, et al., 2012; Xyrichis, & Ream, 2008). Practice settings need to orient their new employees to the knowledge, skills, behaviors, and attitudes required to be successful in their new roles within the organization (Bruce, 2013; Ragsdale & Mueller, 2005). The results of this study suggest that incorporating teamwork content into an orientation can result in improvement of attitudes regarding teamwork, which could result in improved teamwork and outcomes within the organization.

The effectiveness of education provided to employees must be routinely assessed and evaluated to provide the outcome information needed for educators to refine educational content and processes. This study analyzed orientation outcome data and the results can be used by the organization to improve the education provided during orientation. This could contribute to the ultimate goal of improved interprofessional teamwork within the organization.

Organizations routinely evaluate the return on investment of the orientation dollars expended. The results from this study demonstrated that the orientation produced a statistically significant outcome in improving attitudes related to teamwork. This study also demonstrated the ongoing potential of using the T-TAQ to measure orientation outcomes related to teamwork attitudes.

Adult Learning Theory (ALT) is the theoretical model that guided the new employee orientation as well as this study. ALT incorporates six assumptions which include that participants need to know the information, assume responsibility for their own learning, are impacted by previous learning and experiences, have a readiness to learn, are motivated to learn, and learn best from real world situations or examples. All six of these ALT assumptions had relevance to the outcome of this orientation that contained teamwork content. The new employees attending this orientation had a need to know the knowledge, skills, behaviors, and attitudes, including those related to teamwork, that would be required for them to succeed in their new positions (Bruce, 2013; Ragsdale & Meuller, 2005). As adult learners are responsible for the outcome of their own learning experiences, participants chose their level of attention and extent of participation during the orientation, their conclusions at the end of the orientation, and ultimately their teamwork behavior within their new employment settings (Brady, 2013).

Participant learning is more effective when previous experience is acknowledged and incorporated into the new learning experience, as was done throughout the new employee orientation (Dunchin, 2010). New employees came to the orientation with pre-existing experiences and attitudes regarding interprofessional teamwork which influenced their orientation experience and their outcomes from the new employee orientation. Because adults synthesize their previous learning and life experiences with their new learning experiences, the

goal of the orientation was to mitigate negative previous experiences and build upon previous positive experiences (Fura, & Symanski, 2014).

The orientation participants had a readiness to learn due to starting a new position and recognizing that they had much to learn about their new employer's expectations, culture, and requirements for successful employment (Adams et al., 2014; Ragsdale & Meuller, 2005). The participants were motivated to learn as the orientation provided relevant information regarding how to successfully fulfill their new employer's expectations, complete work responsibilities, and succeed in their new jobs (Dunchin, 2010; Mitchell, 2005; Russell, 2006). Adults learn best from examples that reflect the real situations that they may experience (Mitchell & Courtney, 2005). The orientation utilized multiple teaching methodologies that included visual, verbal, tactile, and participatory activities, as well as videotaped scenarios and case studies representing patient care situations encountered in the real world followed by interactive learning activities (AHRQ, 2015a; Office of Disease and Health Promotion, 2015).

Each of the six assumptions within ALT had pertinence and applicability to the interprofessional orientation that the new employees attended. Therefore, each of the six assumptions within ALT had the potential to contribute to the study outcome of improved attitudes of the participants regarding interprofessional teamwork. Each individual participant was a unique blend of previous experiences and attributes that contributed to their personal orientation outcome regarding attitudes related to interprofessional teamwork.

Implications of Analysis for Leaders

Healthcare leaders, nursing leaders, and policy makers should be aware of the importance of healthcare worker attitudes regarding teamwork to improve interprofessional teamwork, as well as the need to conduct interprofessional education to improve these attitudes. They need to

know about the significant improvement in teamwork attitudes that can result from the incorporation of interprofessional teamwork content in new employee orientation, as demonstrated by the results of this study. The results from this study found that there was a significant improvement in new employee teamwork attitudes after participation in a new employee orientation that included teamwork content.

The majority of the literature on the interprofessional education of healthcare professionals reflects activity within the academic settings where professionals receive their pre-professional educational preparation. The literature has relatively little information available regarding interprofessional teamwork education provided to healthcare workers employed in practice settings. This study provided information on interprofessional education conducted in a practice setting and can contribute to the currently sparse body of information in the literature regarding interprofessional education in practice settings.

The information that is available in the literature regarding interprofessional education in practice settings is largely from the perspective of teamwork education with established teams from the same unit, department, or workgroup. TeamSTEPPS® tools and training methodology are often mentioned in these articles. The literature search did not produce information related to interprofessional teamwork content being presented during new employee orientation for a healthcare organization, or regarding the use of the T-TAQ to evaluate the effectiveness of a new employee orientation to impact attitudes regarding teamwork. Therefore, this study provides new information from the context of teamwork interprofessional education provided during new employee orientation.

With both the altruistic mission of healthcare, as well as the reimbursement for healthcare, being dependent on delivering optimal patient outcomes, healthcare organizations

employ every means possible to improve patient outcomes. Eliminating the errors and poor patient outcomes that result from poor communication, collaboration, and teamwork between the different healthcare disciplines that care for patients is a primary concern of healthcare leaders (Lancaster, Kolakowsky-Hayner, Kovacich, & Greer-Williams, 2015; McKay & Wieck, 2014). Improvement in interprofessional teamwork is needed to improve patient outcomes and interprofessional education is the identified strategy to improve this teamwork (Casimiro, MacDonald, Thompson, & Stodel, 2009; Greiner & Knebal, 2003; WHO, 2010). Attitudes held by healthcare providers regarding interprofessional teamwork impact their degree of teamwork with other healthcare professionals, and can be improved through the process of interprofessional education (Bajnok et al., 2012; Delunas & Rouse, 2014; Lindqvist, Duncan, Shepstone, Watts, & Pearce, 2005; WHO, 2010). An ideal time to influence employee attitudes and behaviors is when they are new to the organization, due to new employees' motivation to learn their new employer's expectations, culture, and requirements for successful employment because of their desire to be successful in their new positions (Adams et al., 2014; Ragsdale & Meuller, 2005). Results of this study suggested that incorporation of interprofessional teamwork content in new employee orientation can result in improved attitudes regarding teamwork.

A focus for healthcare leaders is to improve outcomes while decreasing costs. One of the critical aspects of decreasing costs is decreasing turnover and retention of staff. Improvements in interprofessional teamwork are expected to decrease healthcare costs, as well as improve job satisfaction and decrease turnover among healthcare professionals (Bajnok, et al., 2012; Xyrichis, & Ream, 2008). An additional concern of healthcare leaders is the cost-effectiveness of orientation programs to produce the desired outcomes for the organization. The results from

this study show a statistically significant improvement in attitudes regarding interprofessional teamwork after participation in the new employee orientation containing teamwork content.

With the wide array of experience of new healthcare employees, which ranges from new graduates to people with decades of experience, previous teamwork experiences of the new employees and their resulting attitudes can vary greatly. Teamwork content during orientation can help to provide a leveling of understanding regarding the organization's expectations regarding teamwork. Teamwork content provided during orientation can also help decrease the gap between those who received interprofessional teamwork training during their academic preparation and those who did not.

Organizations often struggle to find the right employee to fill their vacant positions. The T-TAQ can be used as an independent measure to evaluate attitudes regarding the core components of working successfully together in teams (AHRQ, 2015b). This study provides some introductory information suggesting the possibility of using the T-TAQ as a tool to evaluate potential new employees' attitudes regarding interprofessional teamwork prior to hire.

Educators consistently seek data to evaluate the orientations that they conduct. Assessing and evaluating the effectiveness of education provided to employees is critical to provide the outcome information needed for educators to refine educational content and processes to improve the education provided during orientation. This study found that the T-TAQ was a viable tool to evaluate the effectiveness of orientation content in impacting attitudes regarding interprofessional teamwork.

The content of the new employee orientation was unique to this organization and was a combination of some TeamSTEPPS® training content embedded with other organizational information. Regardless of the uniqueness of the content of this orientation, the results of this

study have the potential to provide valuable insights that can assist other similar organizations who are trying to improve interprofessional teamwork within their institutions through the addition of teamwork content in their orientations. The results from this study showed that the blend of teamwork content, interspersed throughout other content, improved attitudes regarding teamwork of the new employees participating in the orientation.

Recommendations

Based on the findings from this study, there are several recommendations for healthcare leaders. The results of the paired-samples t-test for this study showed that there was a significant increase in mean scores between the T-TAQs administered before the orientation containing interprofessional teamwork content ($M = 4.44$, $SD = .328$) and after the orientation ($M = 4.64$, $SD = .326$; $t(80) = -6.35$, $p < .000$, two-tailed; mean increase in scores = $-.1997$, 95% CI : $-.262$ to $-.137$). The eta squared statistic (.34) indicated a large effect size meaning that the statistically significant results also have a practical significance in a real world setting.

The first recommendation from this study is that organizations consider the addition of teamwork content to their new employee orientations with the goals to impact new employee attitudes regarding teamwork, and provide knowledge and skills regarding optimal teamwork behaviors. The inclusion of this teamwork content during orientation emphasizes the importance of effective teamwork as an organizational expectation. Inclusion of teamwork content during orientation also maximizes the openness to learning, illuminated by Adult Learning Theory, which is inherent during the new employment time period.

A second recommendation is that organizations consider utilizing the TeamSTEPPS® tools and materials, provided by the Agency of Healthcare Research and Quality, in the education that they provide to their staff, both new and existing, to improve the teamwork within

their organizations. These materials are evidence-based and have demonstrated effectiveness in improving teamwork among healthcare professionals (AHRQ, 2015a). The different TeamSTEPPS® materials can be used individually or the program can be used in its entirety.

Additionally, healthcare leaders should consider the use of the T-TAQ to evaluate teamwork attitudes within their organization. The T-TAQ can be used to evaluate attitudes regarding teamwork as either a one-time assessment or as a pre-and post-assessment of teamwork training that may or may not include TeamSTEPPS® training methodology (AHRQ, 2015b). Organizations might consider evaluating attitudes regarding teamwork prior to hire as part of their screening process, using a tool such as the T-TAQ.

The emphasis on improvement of interprofessional teamwork to improve patient outcomes is an imperative that everyone involved in the provision of healthcare should continuously work towards. Interprofessional education has been identified as a method to improve attitudes regarding interprofessional teamwork. The new employee orientation is a form of interprofessional education. This study found that new employee attitudes regarding interprofessional teamwork showed a statistically significant improvement after participation in a new employee orientation containing teamwork content, as measured by the T-TAQ. While this study provided needed information regarding the impact of teamwork content presented in a new employee orientation on new employee attitudes regarding interprofessional teamwork, additional research is needed on this topic.

Recommendations for Future Research

The results of this study provide tantalizing initial data regarding the effectiveness of interprofessional teamwork during new employee orientation to impact new employee attitudes

regarding interprofessional teamwork. These results stimulate additional questions related to this topic. Additional research is needed to provide answers to these questions.

A future study design could perhaps incorporate long term follow-up of the new employees who completed the new employee orientation. This idea for future research would be to re-administer the T-TAQ to the same new employees several months after their participation in the new employee orientation. This could provide information regarding the long term effectiveness of the orientation to impact attitudes regarding teamwork. Because this study used anonymized retrospective quality improvement project data, this follow-up administration of the T-TAQ will not be possible for participants in this study.

Exposure to existing employee attitudes regarding interprofessional teamwork has the potential to influence new employee attitudes. Evaluation of new employee teamwork attitudes after several months of employment could also provide information on the impact of existing employee attitudes and behaviors on the new employee's attitudes. Existing employee attitudes can impact new employee attitudes within a short period of time, and the new employees who attend the new employee orientation out of sequence can be exposed to existing employee attitudes for two or more weeks. This study intentionally eliminated this confounding variable through use of only the quality improvement data where confirmation existed that the participants had completed the two orientation days in sequence before starting to work in their designated department. However, a study that evaluated the impact of existing employee attitudes on new employee attitudes would provide interesting information.

This study did not collect data related to the suspected mediating, or intervening variable, which consisted of the quality of teamwork experiences with other healthcare disciplines previously experienced by new employees. A future study could explore how previous

teamwork experiences, with the resulting attitudes held by the new employees, influence the impact of the new employee orientation on new employee attitudes regarding teamwork. Adult learning theory illuminated how pre-existing attitudes resulting from previous experiences interacting with other healthcare professionals can influence the outcomes of the new employee orientation.

A limitation of this study was that the study was conducted only with participants who were affiliated with the nursing department, as the quality improvement data was collected prior to ancillary department new employee attendance at the new hire orientation. Ancillary departments include healthcare disciplines associated with radiology, pharmacy, respiratory therapy, and dietitian services. A future study could repeat this study with the addition of the ancillary healthcare disciplines, and even more importantly, with the inclusion of physicians and mid-level providers. An important factor to recognize is that within the healthcare organization nursing new hires are always significantly greater in number when compared to other healthcare disciplines. However, inclusion of data from disciplines not associated with nursing departments would provide more complete information regarding interprofessional attitude responses to the orientation.

Another area for future research is the how variations in the composition of the interprofessional teamwork content of the new employee orientation influence the impact of the orientation on the attitudes of the new employees who attend. Specific TeamSTEPPS® content in interprofessional education can vary from none, to some, to use of the complete TeamSTEPPS® program. This orientation used some TeamSTEPPS® materials and content, interspersed with other content. Future research could identify the ideal composition of teamwork content in an interprofessional orientation that would result in the maximum

improvement of new employee attitudes. Other research could be conducted to evaluate how differences in presenters or co-participants impact the dynamics of the orientation, and hence the resulting attitudes regarding interprofessional teamwork.

Healthcare leaders, nursing leaders, and policy maker support of ongoing research to provide answers to remaining questions regarding interprofessional attitudes and teamwork is crucial. The ideal composition and timing of interprofessional education that will result in the maximum improvement in interprofessional teamwork must be determined in a scientific manner through ongoing research. Although the results from this study are encouraging, more information is needed to assist healthcare leaders to guide healthcare organizations to provide effective interprofessional education within their organizations. Patients could benefit from the improved outcomes that result from optimal interprofessional teamwork.

Summary

Interprofessional teamwork is recognized as a major contributing factor to safe patient care and improved patient outcomes. Interprofessional teamwork between healthcare workers has been identified as a critical area that needs improvement and must occur to improve health outcomes around the world. Multiple experts and organizations have promoted improved interprofessional teamwork and education since the 1960s. Progress towards achieving this goal has accelerated in recent years based on the increasing worldwide recognition of the need to improve interprofessional teamwork among healthcare professionals to improve patient outcomes. While a great deal of information exists in the literature about what has been done in instituting interprofessional education in academic education settings, relatively little information exists regarding what has been done to implement and evaluate interprofessional education in practice settings.

The purpose of this study was to determine how participation in an interprofessional orientation impacted the attitudes regarding interprofessional teamwork of newly hired multidisciplinary healthcare professionals in a practice setting. Within practice settings, change is needed to improve teamwork between healthcare professionals. For this to be accomplished, attitudes regarding teamwork with other healthcare professionals must be improved.

Interprofessional education has been identified in the literature as a major strategy to improve healthcare workers attitudes regarding teamwork. Permission to conduct this study was obtained from the large not-for-profit healthcare organization in the southwestern United States where the study occurred. Institutional Review Board (IRB) permission to conduct this study was obtained from the organization's IRB as well as from the American Sentinel University IRB.

This study was designed to provide needed information regarding the effectiveness of an interprofessional orientation, a form of interprofessional education, in impacting attitudes regarding interprofessional teamwork. This study was a retrospective detailed analysis of the data obtained from a healthcare organization's quality improvement project and consisted of a non-experimental, comparative, before and after study design. The quality improvement data was collected before and after five sessions of the new employee orientation conducted in February and March of 2016. The intervention being evaluated consisted of the interprofessional orientation that incorporated interprofessional teamwork content. The sample for this study consisted of all the newly hired healthcare workers, from all healthcare disciplines from within the healthcare organization, who attended the centralized two-day new employee interprofessional orientation. The TeamSTEPPS® Teamwork Attitudes Questionnaire (T-TAQ) was used by the quality improvement project to evaluate participant attitudes regarding teamwork. The T-TAQ has established reliability and validity, which remained consistent when

used with the participants from this study. The sample size was 81 subjects. This study found that there was a significant increase in mean scores between the pre-orientation T-TAQ ($M = 4.44$, $SD = .328$) and the post-orientation T-TAQ ($M = 4.64$, $SD = .326$; $t(80) = -6.35$, $p < .000$, two-tailed; mean increase in scores = $-.1997$, 95% CI : $-.262$ to $-.137$). The eta squared statistic (.34) indicated a large effect size.

Recommendations from this study include that healthcare organizations consider: the addition of teamwork content to their new employee orientations with the goal of improving new employee attitudes regarding teamwork, utilizing the TeamSTEPPS® tools and materials provided by the Agency of Healthcare Research and Quality in the education that they provide to their staff to improve the teamwork within their organizations, use of the T-TAQ to evaluate teamwork attitudes within their organization, and evaluation of attitudes regarding teamwork prior to hire of new employees. Recommendations for future research include: follow-up administration of the T-TAQ to the new employees who completed the new employee orientation after several months of employment, exploration of how previous teamwork experiences influence the impact of the new employee orientation on the new employee attitudes regarding teamwork, repetition of this study with the addition of the ancillary healthcare disciplines as well as physicians and mid-level providers, studying how variations in the composition of the interprofessional teamwork content of the new employee orientation influence the impact of the orientation on the attitudes of the new employees who attend, and evaluation of how differences in presenters or co-participants impact the dynamics of the orientation and the resulting attitudes regarding interprofessional teamwork. Healthcare leaders, nursing leaders, and policy makers should be aware of the importance of healthcare worker attitudes regarding teamwork in improving interprofessional teamwork, the need for conducting

interprofessional education to improve these attitudes, and the significant improvement in attitudes that can result from the incorporation of interprofessional teamwork content in new employee orientation. It is recommended that individuals in leadership positions provide support for ongoing research regarding interprofessional attitudes and teamwork, as well as on what constitutes effective interprofessional education in healthcare practice settings.

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Appendix A

Permission to Conduct Study from Director of the Organization's Learning Center



P.O. Box 26666, Albuquerque, NM 87125-6666
505.923.5700

Dear IRB and Capstone Committee,

This letter indicates my permission for and support of the project proposed by Julie Rohr, MSN, RNC-NIC, RN-BC, CNS, entitled "Influence of Interprofessional Orientation on New Employee Attitudes Regarding Interprofessional Teamwork". Improved teamwork and collaboration between healthcare professionals has been identified as critical to improving patient outcomes and experience. The goal of the interprofessional orientation is to help facilitate the achievement of the organization's strategic goal of improved interprofessional teamwork.

Ms. Rohr's DNP capstone project is designed to provide valuable information about the effectiveness of the interprofessional education conducted as part of new hire orientation in impacting new hire attitudes regarding interprofessional teamwork. The employees attending the two day new hire orientation will be the project participants. The TeamSTEPPS Team Attitudes Questionnaire (T-TAQ) will be the tool used for data collection. The project will entail the administration of the T-TAQ before and after the two day new hire orientation, which will be conducted as usual.

It is my privilege to support Ms. Rohr in this project. Ms. Rohr has permission to conduct this proposed project at Presbyterian Healthcare Services during the two day new hire orientation. Please do not hesitate to contact me with any questions or concerns.
Sincerely,



Interim Director
Learning Center

Presbyterian exists to improve the health of the patients, members and communities we serve.

www.phs.org

Appendix B

Permission to Conduct Study from the Organization's Clinical Education Department

Dear IRB and Capstone Committee,

This letter indicates support of the DNP capstone project proposed by Julie Rohr, MSN, RNC-NIC, RN-BC, CNS, entitled "Influence of Interprofessional Orientation on New Employee Attitudes Regarding Interprofessional Teamwork". Improved teamwork and collaboration between healthcare professionals has been identified as critical to improving patient outcomes and experience. The goal of the interprofessional orientation is to help facilitate the achievement of the organization's strategic goal of improved interprofessional teamwork.

Ms. Rohr's project is designed to provide valuable information about the effectiveness of the interprofessional education conducted as part of new hire orientation in impacting new hire attitudes regarding interprofessional teamwork. The employees attending the two day new hire orientation will be the project participants. The TeamSTEPPS Team Attitudes Questionnaire (T-TAQ) will be the tool used for data collection. The project will entail the administration of the T-TAQ before and after the two day new hire orientation, which will be conducted as usual.

Ms. Rohr has permission to conduct this proposed project at Presbyterian Healthcare Services during the two day new hire orientation. Please do not hesitate to contact either of us with any questions or concerns.

Sincerely,



 MS, RN, RN-BC
PDS Director of Professional Development
Clinical Education & Informatics
(505) 823-8576
jstiesmey@phs.org



 MSN, RN
Manager of Professional Development
Clinical Education
(505) 823-8574
jstoddard@phs.org

Appendix C

Organization's IRB Approval



Office of Human Research Protections &
Institutional Review Board
1100 Central Ave., S.E., S1
Albuquerque, NM 87106
Phone: (505) 841-1436
www.phs.org

February 15, 2016

Julie Rohr, MSN
jrohr@phs.org

Dear Ms. Rohr:

On February 14, 2016 a member of the Presbyterian Healthcare Services (PHS) Institutional Review Board (IRB) reviewed the following submission:

Project Title:	[845103-1] Impact of Interprofessional Orientation on New Employee Attitudes Regarding Interprofessional Teamwork
Submission Type:	New Project
Investigator:	Julie Rohr, MSN
Review Type:	Expedited Review
Submission Approval Date:	February 14, 2016
Approval End Date:	February 13, 2017
Study Type/Category	Exempt [45 CFR 46.101(b)]

Documents Reviewed:

- Cover letter, dated February 5, 2016
- Exempt Study Application
- Protocol, version 2, dated February 11, 2016
- CV, License, CITI Training certification, Financial Conflict of Interest Form for Ms. Rohr
- Proctor/sponsor: Dr. Deborah Thompson

Documents Acknowledged:

- Pre-Orientation Survey
- Post-Orientation Survey

Regulatory Guidance/Waivers:

- Exempt Category 4: Research, involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

The PHS IRB has determined that this project is exempt from IRB review, according to federal regulations. Exempt studies are not subject to continuing review; however, the PHS IRB requests that you provide annual updates on the progress of your study, and that you notify them when the study closes.

We will retain a copy of this correspondence within our records. Review fees have been waived.

You may contact the PHS Office of Human Research Protections at 505-841-1436 if you have any questions. Written correspondence may be sent to the PHS IRB electronically via IRBNet through Project Id #845103.

Sincerely,

A large, irregular black redaction mark covering the signature of the sender.

 M.D., Chair
PHS IRB

Appendix D

American Sentinel University IRB Approval



July 22, 2016

Julie Rohr
DNP Student
American Sentinel University

Re: Impact of inter-professional orientation on new employee attitudes regarding inter-professional teamwork

Dear Ms. Rohr:

On July 22, 2016, the American Sentinel University Institutional Review Board reviewed the research proposal entitled "Impact of inter-professional orientation on new employee attitudes regarding inter-professional teamwork." The purpose of this project is to determine if the inclusion of inter-professional teamwork content during the new hire orientation for employees at a large healthcare organization in New Mexico impacted individual team member's attitudes regarding inter-professional teamwork as measured by TeamSTEPPS Teamwork Attitudes Questionnaire. The contingencies have been addressed and the IRB **approves** the protocol. Work on this project may begin. This approval is for a period of one year from the date of this letter and will require continuation approval if the research project extends beyond **July 22, 2017**.

If you make changes to the protocol during the period of this approval, you must submit a revised protocol to the American Sentinel University IRB for approval before implementing the changes.

If you have any questions regarding the IRB's decision, please contact me through irb@americansentinel.edu.

Sincerely,

A large black rectangular redaction box covers the signature of the sender.

_____, Ph.D.
Chair,
American Sentinel University IRB

c _____ – Chair



Appendix E

Pre - Orientation Survey

We are always trying to improve our orientation. Thank you for your assistance in completing our survey before orientation on Monday and after the orientation on Tuesday. Please answer honestly as your answers will be anonymous. Create your unique, anonymous identifier that only you will know by providing your:

Mother's first and middle initials: ____ ____

Father's first and middle initials ____ ____

Place a mark in the box best describing your level of agreement: (DISagree is on the left and Agree is on the right)

	Strongly D/Sagree	<i>D/Sagree</i>	Neutral	Agree	Strongly Agree
1. It is important to ask patients and their families for feedback regarding patient care.					
2. Patients are a critical component of the care team.					
3. This facility's administration influences the success of direct care teams.					
4. A team's mission is of greater value than the goals of individual team members.					
5. Effective team members can anticipate the needs of other team members.					
6. High-performing teams in health care share common characteristics with high-performing teams in other industries.					
7. It is important for leaders to share information with team members.					
8. Leaders should create informal opportunities for team members to share information.					
9. Effective leaders view honest mistakes as meaningful learning opportunities.					
10. It is a leader's responsibility to model appropriate team behavior.					
11. It is important for leaders to take time to discuss with their team members plans for each patient.					
12. Team leaders should ensure that team members help each other out when necessary.					
13. Individuals can be taught how to scan the environment for important situational cues.					
14. Monitoring patients provides an important contribution to effective team performance.					
15. Even individuals who are not part of the direct care team should be encouraged to scan for and report changes in patient status.					
16. It is important to monitor the emotional and physical status of other team members.					
17. It is appropriate for one team member to offer assistance to another who may be too tired or stressed to perform a task.					
18. Team members who monitor their emotional and physical status on the job are more effective.					
19. To be effective, team members should understand the work of their fellow team members.					

	Strongly D/Sagree	<i>D/Sagree</i>	Neutral	Agree	Strongly Agree
20. Asking for assistance from a team member is a sign that an individual does not know how to do his/her job effectively.					
21. Providing assistance to team members is a sign that an individual does not have enough work to do.					
22. Offering to help a fellow team member with his/her individual work tasks is an effective tool for improving team performance.					
23. It is appropriate to continue to assert a patient safety concern until you are certain that it has been heard.					
24. Personal conflicts between team members do not affect patient safety.					
25. Teams that do not communicate effectively significantly increase their risk of committing errors.					
26. Poor communication is the most common cause of reported errors.					
27. Adverse events may be reduced by maintaining an information exchange with patients and their families.					
28. I prefer to work with team members who ask questions about information I provide.					
29. It is important to have a standardized method for sharing information when handing off patients.					
30. It is nearly impossible to train individuals how to be better communicators.					

Thank you for your assistance in improving our orientation!

Appendix F

Post - Orientation Survey

We are always trying to improve our orientation. Thank you for your assistance in completing our survey before orientation on Monday and after the orientation on Tuesday. Please answer honestly as your answers will be anonymous. Rewrite your unique, anonymous identifier that only you know by providing your:

Mother's first and middle initials: ____ ____

Father's first and middle initials ____ ____

Place a mark in the box best describing your level of agreement: (DISagree is on the left and Agree is on the right)

	Strongly DISagree	<i>DISagree</i>	Neutral	Agree	Strongly Agree
1. It is important to ask patients and their families for feedback regarding patient care.					
2. Patients are a critical component of the care team.					
3. This facility's administration influences the success of direct care teams.					
4. A team's mission is of greater value than the goals of individual team members.					
5. Effective team members can anticipate the needs of other team members.					
6. High-performing teams in health care share common characteristics with high-performing teams in other industries.					
7. It is important for leaders to share information with team members.					
8. Leaders should create informal opportunities for team members to share information.					
9. Effective leaders view honest mistakes as meaningful learning opportunities.					
10. It is a leader's responsibility to model appropriate team behavior.					
11. It is important for leaders to take time to discuss with their team members plans for each patient.					
12. Team leaders should ensure that team members help each other out when necessary.					
13. Individuals can be taught how to scan the environment for important situational cues.					
14. Monitoring patients provides an important contribution to effective team performance.					
15. Even individuals who are not part of the direct care team should be encouraged to scan for and report changes in patient status.					
16. It is important to monitor the emotional and physical status of other team members.					
17. It is appropriate for one team member to offer assistance to another who may be too tired or stressed to perform a task.					
18. Team members who monitor their emotional and physical status on the job are more effective.					
19. To be effective, team members should understand the work of their fellow team members.					

	Strongly DISagree	DISagree	Neutral	Agree	Strongly Agree
20. Asking for assistance from a team member is a sign that an individual does not know how to do his/her job effectively.					
21. Providing assistance to team members is a sign that an individual does not have enough work to do.					
22. Offering to help a fellow team member with his/her individual work tasks is an effective tool for improving team performance.					
23. It is appropriate to continue to assert a patient safety concern until you are certain that it has been heard.					
24. Personal conflicts between team members do not affect patient safety.					
25. Teams that do not communicate effectively significantly increase their risk of committing errors.					
26. Poor communication is the most common cause of reported errors.					
27. Adverse events may be reduced by maintaining an information exchange with patients and their families.					
28. I prefer to work with team members who ask questions about information I provide.					
29. It is important to have a standardized method for sharing information when handing off patients.					
30. It is nearly impossible to train individuals how to be better communicators.					

What is your professional discipline?

RN LPN/LVN Nurse Tech Medical Assistant Certified Nursing Assistants
 Unit Secretary Social Workers EMT Paramedic Other (list): _____

How many years have you worked in your healthcare discipline?

Less than 1 year 1 to 5 years 6 to 10 years 11 to 20 years 21 to 30 years 31 or more years

What is the highest level of education that you have completed?

High School/GED Associate Degree Baccalaureate Degree Master's Degree Doctoral Degree

During your academic preparation for your profession, did you participate in class activities with students from other healthcare disciplines? Yes No

What is your age range?

24 years or less 25 to 34 years 35 to 55 years 56 years or greater

What is your gender? Male Female

Appendix G

A Priori Code Book

SPSS VarName	Label	Variable Type	Measure	Values		Description of Variable /Survey Question
ID	N/A	N/A	N/A	N/A	N/A	Participants anonymous unique identifier consisting of mother's first and middle initials, and father's first and middle initials
Pre_Mean		Continuous	Scale	calculated mean	1 to 5	Mean of participant scores on answered pre-orientation T-TAQ questions
Post_Mean		Continuous	Scale	calculated mean	1 to 5	Mean of participant scores on answered post-orientation T-TAQ questions
DifMeans		Continuous	Scale	calculated difference between Pre-Mean and Post-Mean	0-0.9	Difference between pre and post orientation means of answered T-TAQ scores for purpose of determining normality
Disc	Professional Discipline	Categorical	Nominal	RN LPN/LVN Nurse Tech Medical Asst Cert Nursing Asst Unit Secretary Social Worker EMT Paramedic Other	1 2 3 4 5 6 7 8 9 10	What is your professional discipline? (potential mediating/moderating variable)
Yrs_Disc	Years in Healthcare Discipline	Categorical	Ordinal	Less than 1 year 1 to 5 years 6 to 10 years 11 to 20 years 21 to 30 years 31 or more years	1 2 3 4 5 6	How many years have you worked in your healthcare discipline? (potential mediating/moderating variable)
Edu	Highest Level of Education	Categorical	Ordinal	High School/GED Associates Degree Baccalaureate Degree Master's Degree Doctoral Degree	1 2 3 4 5	What is the highest level of education that you have completed? (potential mediating/moderating variable)

Acad	Interprofesional Education in Academic Preparation	Categorical	Nominal	Yes No	1 2	During your academic preparation for your profession, did you participate in class activities with students from other healthcare disciplines? (potential mediating/moderating variable)
Age	Generational Cohort	Categorical	Ordinal	24 years or less 25 to 34 years 35 to 55 years 56 years or greater	1 2 3 4	What is your age range? (potential mediating/moderating variable)
Gen	Gender	Categorical	Nominal	Male Female	1 2	What is your gender? (potential mediating/moderating variable)
PreQ1	Pre Q1 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is important to ask patients and their families for feedback regarding patient care.
PreQ2	Pre Q2 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Patients are a critical component of the care team.
PreQ3	Pre Q3 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	This facility's administration influences the success of direct care teams.
PreQ4	Pre Q4 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	A team's mission is of greater value than the goals of individual team members.
PreQ5	Pre Q5 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Effective team members can anticipate the needs of other team members.
PreQ6	Pre Q6 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	High-performing teams in health care share common characteristics with high-performing teams in other industries.

PreQ7	Pre Q7 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is important for leaders to share information with team members.
PreQ8	Pre Q8 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Leaders should create informal opportunities for team members to share information.
PreQ9	Pre Q9 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Effective leaders view honest mistakes as meaningful learning opportunities.
PreQ10	Pre Q10 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is a leader's responsibility to model appropriate team behavior.
PreQ11	Pre 11 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is important for leaders to take time to discuss with their team members plans for each patient.
PreQ12	Pre Q12 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Team leaders should ensure that team members help each other out when necessary.
PreQ13	Pre Q13 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Individuals can be taught how to scan the environment for important situational cues.
PreQ14	Pre Q14 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Monitoring patients provides an important contribution to effective team performance.
PreQ15	Pre Q15 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Even individuals who are not part of the direct care team should be encouraged to scan for and report changes in patient status.

PreQ16	Pre Q16 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is important to monitor the emotional and physical status of other team members.
PreQ17	Pre Q17 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is appropriate for one team member to offer assistance to another who may be too tired or stressed to perform a task.
PreQ18	Pre Q18 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Team members who monitor their emotional and physical status on the job are more effective.
PreQ19	Pre Q19 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	To be effective, team members should understand the work of their fellow team members.
PreQ20	Pre Q20 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	5 4 3 2 1	Asking for assistance from a team member is a sign that an individual does not know how to do his/her job effectively.
PreQ21	Pre Q21 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	5 4 3 2 1	Providing assistance to team members is a sign that an individual does not have enough work to do.
PreQ22	Pre Q22 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Offering to help a fellow team member with his/her individual work tasks is an effective tool for improving team performance.
PreQ23	Pre Q23 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is appropriate to continue to assert a patient safety concern until you are certain that it has been heard.
PreQ24	Pre Q24 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	5 4 3 2 1	Personal conflicts between team members do not affect patient safety.

PreQ25	Pre Q25 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Teams that do not communicate effectively significantly increase their risk of committing errors.
PreQ26	Pre Q26 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Poor communication is the most common cause of reported errors.
PreQ27	Pre Q27 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Adverse events may be reduced by maintaining an information exchange with patients and their families.
PreQ28	Pre Q28 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	I prefer to work with team members who ask questions about information I provide.
PreQ29	Pre Q29 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is important to have a standardized method for sharing information when handing off patients.
PreQ30	Pre Q30 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	5 4 3 2 1	It is nearly impossible to train individuals how to be better communicators.
PostQ1	Post Q1 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is important to ask patients and their families for feedback regarding patient care.
PostQ2	Post Q2 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Patients are a critical component of the care team.
PostQ3	Post Q3 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	This facility's administration influences the success of direct care teams.

PostQ4	Post Q4 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	A team's mission is of greater value than the goals of individual team members.
PostQ5	Post Q5 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Effective team members can anticipate the needs of other team members.
PostQ6	Post Q6 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	High-performing teams in health care share common characteristics with high-performing teams in other industries.
PostQ7	Post Q7 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is important for leaders to share information with team members.
PostQ8	Post Q8 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Leaders should create informal opportunities for team members to share information.
PostQ9	Post Q9 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Effective leaders view honest mistakes as meaningful learning opportunities.
PostQ10	Post Q10 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is a leader's responsibility to model appropriate team behavior.
PostQ11	Post Q11 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is important for leaders to take time to discuss with their team members plans for each patient.
PostQ12	Post Q12 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Team leaders should ensure that team members help each other out when necessary.

PostQ13	Post Q13 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Individuals can be taught how to scan the environment for important situational cues.
PostQ14	Post Q14 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Monitoring patients provides an important contribution to effective team performance.
PostQ15	Post Q15 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Even individuals who are not part of the direct care team should be encouraged to scan for and report changes in patient status.
PostQ16	Post 16 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is important to monitor the emotional and physical status of other team members.
PostQ17	Post Q17 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is appropriate for one team member to offer assistance to another who may be too tired or stressed to perform a task.
PostQ18	Post Q18 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Team members who monitor their emotional and physical status on the job are more effective.
PostQ19	Post Q19 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	To be effective, team members should understand the work of their fellow team members.
PostQ20	Post Q20 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	5 4 3 2 1	Asking for assistance from a team member is a sign that an individual does not know how to do his/her job effectively.
PostQ21	Post Q21 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	5 4 3 2 1	Providing assistance to team members is a sign that an individual does not have enough work to do.

PostQ22	Post Q22 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Offering to help a fellow team member with his/her individual work tasks is an effective tool for improving team performance.
PostQ23	Post Q23 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is appropriate to continue to assert a patient safety concern until you are certain that it has been heard.
PostQ24	Post Q24 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	5 4 3 2 1	Personal conflicts between team members do not affect patient safety.
PostQ25	Post Q25 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Teams that do not communicate effectively significantly increase their risk of committing errors.
PostQ26	Post Q26 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Poor communication is the most common cause of reported errors.
PostQ27	PostQ27 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	Adverse events may be reduced by maintaining an information exchange with patients and their families.
PostQ28	Post Q28 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	I prefer to work with team members who ask questions about information I provide.
PostQ29	Post Q29 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	1 2 3 4 5	It is important to have a standardized method for sharing information when handing off patients.
PostQ30	Post Q30 T-TAQ	Categorical	Ordinal	Strongly Disagree Disagree Neutral Agree Strongly Agree	5 4 3 2 1	It is nearly impossible to train individuals how to be better communicators.

Appendix H

Pre-Orientation T-TAQ Item Level Responses by Frequency (%)

Question Number	1	2	3	4	5	Missing
1	0	0	2 (2.5)	18 (22.2)	61 (75.3)	0
2	0	0	0	13 (16)	68 (84.0)	0
3	0	0	4 (4.9)	31 (38.3)	45 (55.6)	1 (1.2)
4	0	4 (4.9)	14 (17.3)	33 (40.7)	30 (37.0)	0
5	0	2 (2.5)	2 (2.5)	32 (39.5)	44 (54.3)	1 (1.2)
6	0	0	10 (12.3)	34 (42)	36 (44.4)	1 (1.2)
7	0	0	0	21 (25.9)	58 (71.6)	2 (2.5)
8	1 (1.2)	0	4 (4.9)	33 (40.7)	43 (53.1)	0
9	0	0	1 (1.2)	35 (43.2)	45 (55.6)	0
10	0	0	1 (1.2)	18 (22.2)	62 (76.5)	0
11	0	0	11 (13.6)	29 (35.8)	41 (50.6)	0
12	0	0	0	27 (33.3)	54 (66.7)	0
13	0	0	5 (6.2)	32 (39.5)	44 (54.3)	0
14	0	0	1 (1.2)	36 (44.4)	44 (54.3)	0
15	0	2 (2.5)	4 (4.9)	29 (35.8)	46 (56.8)	0
16	0	0	3 (3.7)	36 (44.4)	42 (51.9)	0
17	0	0	8 (9.9)	28 (34.6)	45 (55.6)	0
18	0	1 (1.2)	5 (6.2)	28 (34.6)	47 (58.0)	0
19	*	0	2 (2.5)	31 (38.3)	47 (58.0)	0
20	2 (2.5)	1 (1.2)	3 (3.7)	36 (44.4)	39 (48.1)	0

21	2 (2.5)	0	2 (2.5)	40 (49.4)	37 (45.7)	0
22	0	1 (1.2)	10 (12.3)	44 (54.3)	26 (32.1)	0
23	0	0	5 (6.2)	33 (40.7)	43 (53.1)	0
24	2 (2.5)	2 (2.5)	9 (11.1)	35 (43.2)	32 (39.5)	1 (1.2)
25	1 (1.2)	0	2 (2.5)	32 (39.5)	46 (56.8)	0
26	1 (1.2)	2 (2.5)	4 (4.9)	38 (46.9)	34 (42.0)	2 (2.5)
27	0	1 (1.2)	8 (9.9)	44 (54.3)	28 (34.6)	0
28	0	0	22 (27.2)	33 (40.7)	26 (32.1)	0
29	0	1(1.2)	2 (2.5)	39 (48.1)	37 (45.7)	2 (2.5)
30	2 (2.5)	3 (3.7)	3 (3.7)	42 (51.9)	31 (38.3)	0

* One respondent checked both 4 and 5 as their response. These responses were coded as 4.5. (1.2%)

Appendix I

Post-Orientation T-TAQ Item Level Responses by Frequency (%)

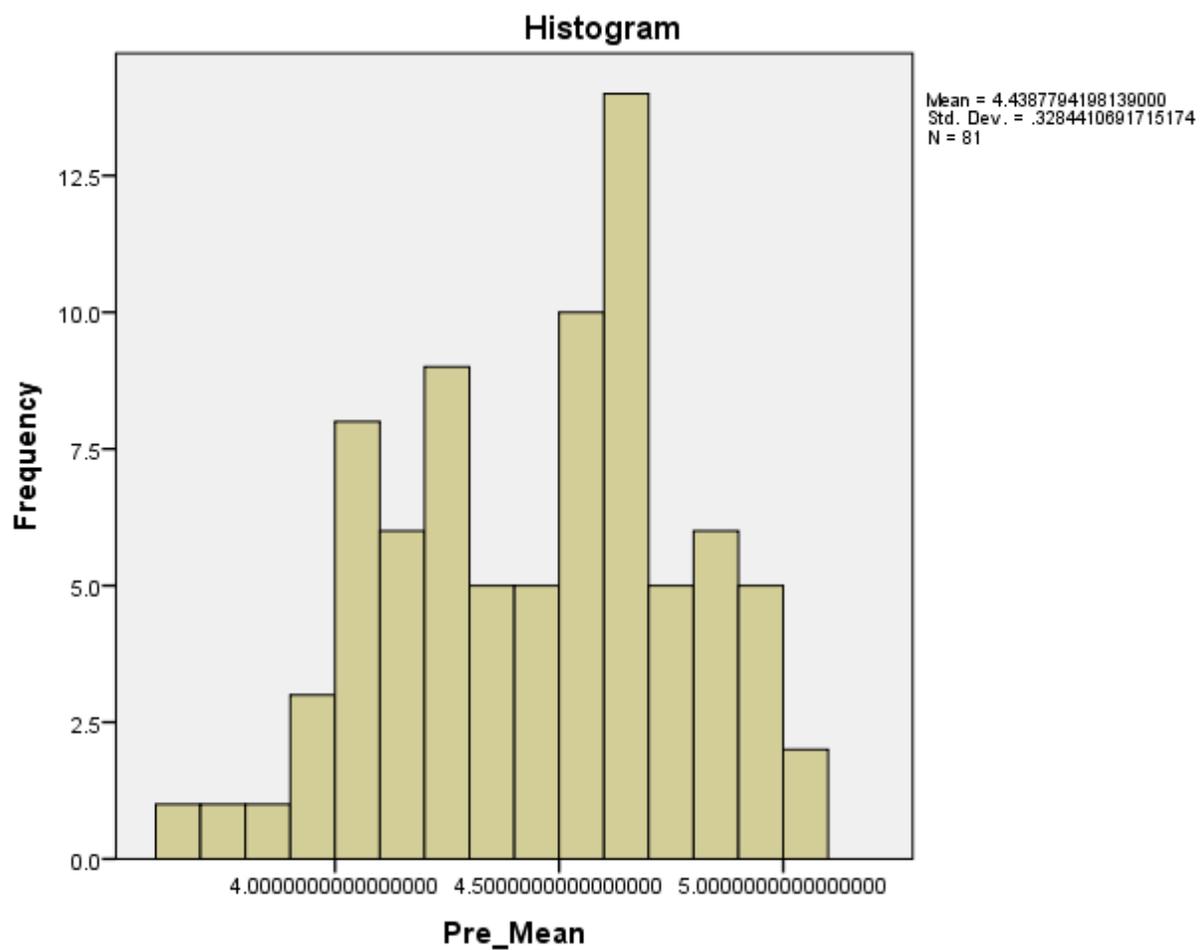
Question Number	1	2	3	4	5	Missing
1	0	0	0	17 (21.0)	64 (79.0)	0
2	0	0	0	11 (13.6)	70 (86.4)	0
3	0	0	0	23 (28.4)	58 (71.6)	0
4	1 (1.2)	2 (2.5)	5 (6.2)	34 (42.0)	39 (48.1)	0
5	0	0	4 (4.9)	26 (32.1)	51 (63.0)	0
6	0	0	5 (6.2)	25 (30.9)	51 (63.0)	0
7	0	0	0	13 (16.0)	67 (82.7)	1 (1.2)
8	*	0	3 (3.7)	22 (27.2)	55 (67.9)	0
9	0	0	0	23 (28.4)	57 (70.4)	1 (1.2)
10	0	0	3 (3.7)	10 (12.3)	68 (84.0)	0
11	0	0	5 (6.2)	19 (23.5)	57 (70.4)	0
12	0	0	1 (1.2)	24 (29.6)	56 (69.1)	0
13	0	0	2 (2.5)	26 (32.1)	53 (65.4)	0
14	0	0	0	16 (19.8)	64 (79.0)	1 (1.2)
15	1 (1.2)	1 (1.2)	0	24 (29.6)	55 (67.9)	0
16	0	0	0	22 (27.2)	59 (72.8)	0
17	0	0	1 (1.2)	19 (23.5)	61 (75.3)	0
18	0	0	2 (2.5)	25 (30.9)	54 (66.7)	0
19	0	0	2 (2.5)	22 (27.2)	57 (70.4)	0
20	2 (2.5)	1 (1.2)	1 (1.2)	25 (30.9)	52 (64.2)	0

21		1 (1.2)	0	3 (3.7)	26 (32.1)	50 (61.7)	1 (1.2)
22		1 (1.2)	2 (2.5)	4 (4.9)	28 (34.6)	46 (56.8)	0
23		0	0	0	19 (23.5)	62 (76.5)	0
24	**	4 (4.9)	1 (1.2)	6 (7.4)	20 (24.7)	48 (59.3)	1 (1.2)
25		1 (1.2)	0	0	19 (23.5)	61 (75.3)	0
26		1 (1.2)	0	2 (2.5)	17 (21.0)	61 (75.3)	0
27		0	0	1 (1.2)	25 (30.9)	54 (66.7)	1 (1.2)
28		0	1 (1.2)	6 (7.4)	31 (38.3)	43 (53.1)	0
29	*	0	0	2 (2.5)	1 (1.2)	62 (76.5)	0
30		1 (1.2)	2 (2.5)	10 (12.3)	27 (33.3)	41 (50.6)	0

* One respondent checked both 4 and 5 as their response. These responses were coded as 4.5. (1.2%) **One respondent checked both 3 and 4 as their response. These responses were coded as 3.5. (1.2%)

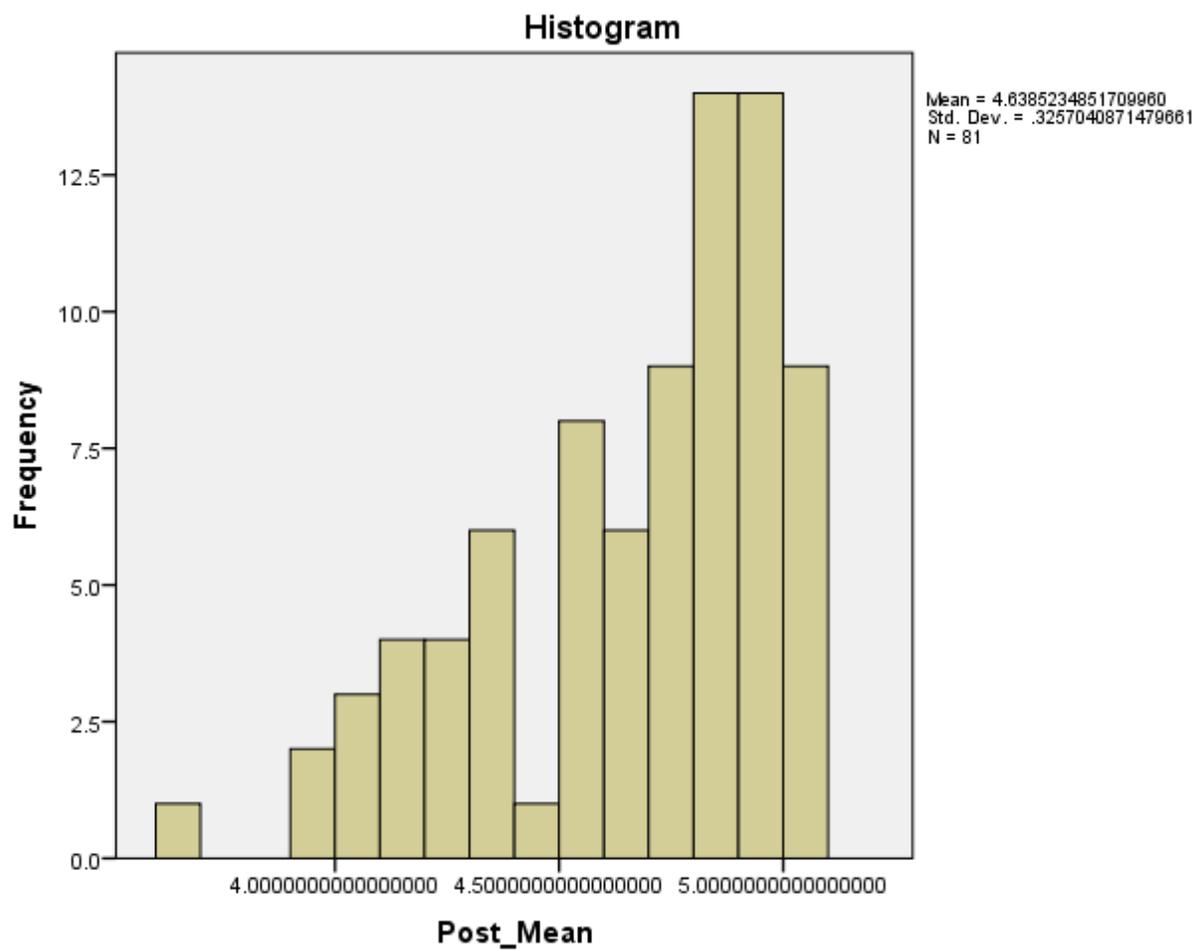
Appendix J

Distribution of Pre-Orientation T-TAQ Mean Scores



Appendix K

Distribution of Post-Orientation T-TAQ Mean Scores



Appendix L

Distribution of the Differences Between the Mean Pre- and Post-Orientation T-TAQ Scores

