PRIMARY TEAM NURSING (PTN) AND TEAMSTEPPS®

AS AN INTERVENTION FOR CHANGE

A Thesis Presented to the
Faculty of the College of Education
University of Houston

In Partial Fulfillment of the
Requirements for the Degree

Doctor of Education

by

Christella G. Whitcher

December 2015

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December 2015

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Abstract

Healthcare systems recognize a need to develop effective teams for patient safety. In 2012, a National Cancer Institute (NCI) designated comprehensive cancer center selected the TeamSTEPPS® Model and Essentials Curriculum as the training framework to transition inpatient nursing staff to a new patient care delivery system, Primary Team Nursing (PTN). The uniqueness of this more contemporary PTN model was that it included a clinical nurse leader at its helm. The purpose of this retrospective research study was to examine the effect of incorporating TeamSTEPPS curriculum on nursing staff perceptions of teamwork. This study also analyzed which TeamSTEPPS core component demonstrated the greatest change as perceived by the nurses. A Wilcoxon-rank sum test determined the statistical significance between the survey conducted before and after TeamSTEPPS training to evaluate seven inpatient units collectively followed by an analysis of each unit individually. The effect of incorporating the TeamSTEPPS Model and Essentials Curriculum as the training framework for clinical staff as measured by the Teamwork Perceptions questionnaire was statistically significant (p=0.004). Scores were higher at month six compared to baseline for all the components, i.e. team structure, team leadership, situation monitoring, mutual support, and communication. With the exception of team structure and team leadership, components were statistically significant. The TeamSTEPPS core component that demonstrated the greatest change was situation monitoring with an increase in 0.13 on average (3.93-3.80). Identifying that TeamSTEPPS enhances teamwork, in the context of PTN, helps to establish the groundwork for future research linking TeamSTEPPS scores to patient safety outcomes.

Keywords: Team, Teamwork, Nursing, Primary Team Nursing, TeamSTEPPS

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Chapter I

Introduction

Hospital accrediting agencies, like The Joint Commission, have documented that

"inadequate communication between care providers [themselves] or between care

providers and patients/families is consistently the main root cause of sentinel events"

(The Joint Commission, 2007, p. 46). Inadequate communication accounts for over 60%

of all unexpected occurrences that involve death (The Joint Commission, 2007).

Outcomes data, such as the Institute of Medicine's (IOM) comprehensive reports on

medical errors, intensified actions for safety innovations in healthcare. The first report

from the IOM Committee on Quality of Health Care in America, *To Err Is Human:*

Building a Safer Health System (1999), focused on patient safety. The second report,

Crossing the Quality Chasm: A New Health System for the 21st Century, was a call to

action that focused on goals for health-care delivery systems to achieve in order to

improve care and offered recommendations that included the development of effective

teams (2001, p. 12).

Statement of the Problem

The IOM's 1999 report revealed that between 44,000 and 98,000 deaths annually

in the United States could be attributed to medical error (Kohn, Corrigan, & Donaldson,

2000). This finding forced health-care professionals throughout the nation to redesign

care practices in ways that would help reduce medical errors. Underscoring the call to

action, James (2013) exposed even more errors that led to patient harm, with an estimated

400,000 Americans experiencing associated preventable adverse events in the hospital

each year. Additionally, patient safety concerns related to the aging nursing workforce

brings clarity to the urgency for health-care organizations to consider efforts that will promote safe, effective outcomes through skill development and program initiatives. Cohen (2006) advocates for organizational culture change to support senior nursing staff in the face of a looming nursing shortage.

Significance of the Problem

Given the current focus on healthcare outcomes, the IOM call to action, and the need to develop effective teams, it is appropriate for health-care leaders to examine ways to make better use of human resources, identify ways to manage the complexities facing the health-care industry of today, and prepare for the expected nursing shortages. For example, the role of the clinical nurse leader (CNL) emerged through a proposal by the American Association of College of Nurses (AACN, 2007) to support a need for leadership within a microsystem. The CNL is a master's-prepared generalist skillful at designing, implementing, evaluating, and coordinating patient care at the point of care delivery. "The CNL assumes accountability for health-care outcomes for a specific group of clients within a unit" (Tornabeni & Miller, 2008, p. 610). Approved in 2007 by the AACN, it is a fairly new role that requires an environment that has evolved enough to support it (AACN, 2007).

Context for the Study

In 2012, a new nursing professional practice model, based on Duffy's (2009) *Quality Caring in Nursing* theoretical framework, was created to give structure to nursing practice in an NCI-designated comprehensive cancer center. Incorporated into this model was a new patient care delivery system, Primary Team Nursing (PTN), described as a group practice culture where nursing groups focus on a cohort of patients. PTN, more closely aligned to the

professional practice model, replaced a case staffing model where care of the patient was assigned to one member of the nursing staff. The principles of PTN, as described by Nelson and Anderson (2012), include safe and effective care, synergy of patient needs and nursing expertise, nursing team satisfaction and vitality, team-based professional practice development, interdisciplinary/inter-professional collaboration, and continuity of care providers/care coordination. Together, each primary nursing team is collectively accountable and responsible for outcomes of care delivered to patients in the group practice (Nelson & Anderson, 2012). The PTN model with a CNL as an integral component, as described by Adornetto-Garcia (2013), is unique in this setting. Although the primary nursing team is collectively accountable and responsible for outcomes of care, patients are assigned to a registered nurse for continuity of care purposes. In addition to the CNL, the team includes the registered nurse, the nurse assistant, and the patient service coordinator under the guidance of a nurse manager, associate director, and director. Implementation of the new PTN patient care delivery model on the inpatient units includes incorporating the TeamSTEPPS Model and Essentials Curriculum as the training framework.

Implementation of PTN was staged to occur in phases guiding cohorts of three to six inpatient unit teams through one year of operation. The first cohort, termed *demonstration units*, included one medical, one surgical, one hematological, and one pediatric unit. Since implementation with the demonstration units in 2012, there were two additional cohorts that transitioned to the PTN patient care delivery model. In 2013, Group A, which included two surgical units and one hematological unit, was operationalized. In 2014, Group B, which included one medical unit, two surgical units, two hematological units, and the ICU, was operationalized. The uniqueness of this

contemporary model and selected training component was worthy of investigation to determine if a culture of teamwork emerged.

Significance of the Study

Relationship initiatives such as *Transforming Care at the Bedside* set standards for building relationships of trust toward a common goal of improving the effectiveness of the entire care team (Lee, Shannon, Rutherford, & Peck, 2008). Currently, the trend is to refine team functioning behaviors in ways that promote more effective multidisciplinary health-care team functioning (Sutton, Liao, Jimmieson, & Restubog, 2011). Quantifiable metrics from reports like patient satisfaction surveys and employee turnover rates are used to measure the effectiveness of teamwork initiatives and provide further clarification of team functioning behaviors for best practice and further research.

The U.S. Department of Health and Human Services is a governmental agency that works to protect the health of all Americans. Within this agency are 11 operating divisions, one of which is the Agency for Healthcare Research and Quality (AHRQ). The AHRQ, created in 1989, offers easily accessible web-based support, including educational curriculum tools and materials, such as TeamSTEPPS, for healthcare professionals to create a culture of safety. TeamSTEPPS, an acronym for Team Strategies and Tools to Enhance Performance and Patient Safety, is described as an "evidence-based teamwork system aimed at optimizing patient outcomes by improving communication and teamwork skills among health care professionals" (AHRQ, n.d., p. 1).

According to the AHRQ website, the TeamSTEPPS resource was originally developed by the Department of Defense for its aviation program. This model incorporates several transformational change factors that aim to create a safety culture

from the organizational system level to the individual level. To ensure optimal functioning of a team, TeamSTEPPS training consists of the following core components: (1) team structure, (2) leadership, (3) situation monitoring, (4) mutual support, and (5) communication (AHRQ, n.d.). A national implementation plan to increase the number of master trainers for this curriculum is currently in effect to extend this knowledge to an even greater audience.

Research Questions

The research questions posed for this study were:

1.   What was the effect of incorporating the TeamSTEPPS Model and Essentials Curriculum as the training framework for nursing staff as measured by the Teamwork Perceptions questionnaire?

2.   Which TeamSTEPPS core component (team structure, leadership, situation monitoring, mutual support, or communication) demonstrated the greatest change as perceived by the nursing staff?

Educational Value of the Study

Although the term *teamwork* is generally used to describe nearly all work groups, it was important to analyze teamwork from the perspective of the clinical nurse in the acute-care setting where there are ever-changing circumstances, situations, and a complexity of care that need to be addressed. Atwal and Caldwell (2006) noted that two barriers hinder teamwork: differing nurse perceptions of teamwork and different levels of skills acquisition to function as a team member. Beyond the intervention of introducing TeamSTEPPS skills to all clinical staff within the PTN model, as described, it was also

necessary to examine perceptions of teamwork in order to sustain efforts in creating a culture of quality and patient safety.

Definitions of Key Concepts

It was essential to define certain terms or variables operationally for the focus of this study; therefore, a literature search included a review of conceptual definitions. According to the *American Heritage Online Dictionary* (2014), teamwork is defined as the "cooperative effort by the members of a group or team to achieve a common goal" (para. 1). Success is defined as the "favorable or desired outcome" (Merriam-Webster, 2014, para. 1); therefore, generally speaking, teamwork success describes members of a group who jointly function in a favorable manner. Effective is defined as producing a result that is "having an intended or expected effect" (Merriam-Webster, 2014, para. 1). If the training is effective, the team will function as intended; therefore, effective teamwork is a desired outcome.

According to the TeamSTEPPS Teamwork Perceptions Questionnaire (T-TPQ) Manual (American Institutes for Research, 2010), change is reflected in an increase from pretest to posttest, which constituted the operational definition of teamwork.

Purpose of the Study

The purpose of this research was to study the effect of incorporating TeamSTEPPS training used as the framework for transitioning inpatient nursing staff from a Case Staffing Model to a PTN patient care delivery model. This research study was not intended to link perception of teamwork to patient safety outcomes at this time. The intent was to reveal the outcome of TeamSTEPPS Essentials Curriculum training. Additionally, identifying the TeamSTEPPS core component that demonstrated the

greatest change might contribute to identification of ongoing training needs and future research directions.

Summary

In summary, PTN contains the word *team* in its title but this does not necessarily mean that teamwork exists. This study was necessary to help establish that TeamSTEPPS training contributed to a perception of teamwork. If teamwork can be supported with evidence, this may be the segue to linking teamwork to patient safety outcomes in future research. Chapter two will provide a literature review that will discuss other staffing models and groups that have used the TeamSTEPPS Model and Fundamentals Curriculum. This will be followed by Chapter three, which will present the methodology of this study. Chapters four and five will follow to provide results and discussion as well as future research considerations.

Chapter II

Literature Review

This study sought to measure the impact of the TeamSTEPPS Model and Essentials Curriculum as the training framework for a new PTN patient delivery model. Examining a nursing staff's perception of teamwork would help to determine if the training produced the desired results. Additionally, this study explored which of the TeamSTEPPS' core components, (1) team structure, (2) leadership, (3) situation monitoring, (4) mutual support, and (5) communication, demonstrated the greatest effect. The purpose of this literature search was to identify comparative initiatives, to identify gaps in the literature, and to explore the use of the TeamSTEPPS curriculum and Teamwork Perception Questionnaire.

TeamSTEPPS Teamwork Initiatives

The literature search identified a variety of healthcare entities that have selected TeamSTEPPS as the intervention strategy for developing teamwork training. Heiner (2013), in his mixed-methods study, measured both student attitudes and perceptions of teamwork with student nurse anesthetists in the operating room following implementation of TeamSTEPPS training. Both the TeamSTEPPS teamwork attitudes questionnaire and the TeamSTEPPS perceptions questionnaire were administered pre-training, post-training, and four months later to provide the quantitative statistical results. This was followed by small-group interviews. The qualitative anecdotal reports reflected instances where the effective use of teamwork skills prevented errors. In summary, both the junior and senior student nurse anesthetists' attitudes and perceptions of teamwork were positive before and more positive after training, and they believed effective teamwork to

be important in the operating room. Heiner (2013) reflected on the importance of repeat introduction to teamwork concepts to "establish a better understanding and appreciation for these skills" (p. 187).

Thomas and Galla (2013) evaluated the results of a hospital survey on patient safety culture before and after TeamSTEPPS training in their 239-bed community hospital and saw significant change indicating that team training is effective. This study reinforced findings from a meta-analysis conducted by Salas, E., Dana, E, and Sims, C. (2005) who supports team training as "an appropriate intervention for influencing team processes and performance" (p. 431).

In a study conducted in a large veterans' facility inpatient unit by Vertino (2014), results supported the effectiveness of TeamSTEPPS training with frontline inpatient nursing staff to improve attitudes toward teamwork. There were many other positive improvements such as reduced turnover and enhanced job satisfaction. Higher levels of patient satisfaction with care as well as better clinical outcomes were also demonstrated (Vertino, 2014). Interestingly, significant increases in total scores as well as statistical significance were identified (Vertino, 2014).

A series of studies by Kalisch and colleagues centered on a connection already established between safety and teamwork. In a mixed-methods study, Kalisch, Weaver, and Salas (2009) examined the working relationship between registered nurses (RN) and nurse assistants (NA) as it related to teamwork. A discrepancy was identified in ratings between the RN and NA that showed a need for several components of teamwork for the relationship to be successful: closed-loop communication, mutual trust, leadership, team orientation, and shared mental models. The skills component identified for enhancement

is within the domain of communication and included how to give effective feedback. The Salas conceptual framework of teamwork was applied to provide practical suggestions and interventions in order to optimize nursing teamwork and patient care. The study demonstrated a need to "rectify communication disconnects and barriers to effective teamwork within nursing teams" (Kalisch et al., 2009, p. 305). TeamSTEPPS was offered as one such solution to optimize teamwork within nursing.

Other Teamwork Training Initiatives

According to Clark (2009), the training of teams, in addition to creating a healthier work environment, leads to higher quality, safer patient care. The Joint Commission, a not-for-profit group that accredits and certifies more than 20,500 health-care organizations and programs in the United States is striving for this very outcome—higher quality, safer patient care by creating National Patients Safety Goals (NPSG) [Joint Commission, 2007, p. 34]. One initiative, aimed at developing teamwork, was able to link it to job satisfaction of nursing staff and improved patient outcomes (Lee et al., 2008).

A cross-sectional study that explored nursing teamwork, staff characteristics, work schedules, and staffing concluded "formal training and culture change efforts were necessary to move each patient care unit toward high-performing teamwork" (Kalisch & Lee 2009, p. 333). This study focused on the level of teamwork in the acute care setting using patient units as the target for examination in two different hospitals. The community hospital had undergone training for teamwork. The academic hospital had not. This study suggests that training for teamwork contributed to higher teamwork results for the community hospital.

Kalisch, Curley, and Stefanov (2007) applied educational teamwork and engagement strategies to affect outcomes in their study that sought to measure improvements in patient fall rates, patient satisfaction scores, and turnover rates on a hospital unit. The authors note that although the scope of the intervention was extensive, the positive outcomes appear to justify the effort.

Patient Care Staffing Delivery Models

To understand patient delivery models, Daeffler's (1975) study was reviewed. The quantitative study examined patient perceptions of care in all patient units of an acute medical surgical hospital (except intensive care units) to survey perceived difference of care between team nursing and primary nursing. In the context of the study, staffing patterns were described as follows.

- Case: Total care of the patient is assigned to one member of the nursing staff.

- Functional: Emphasis is task-oriented and jobs are grouped.

- Team: A group of caregivers work together to meet the needs of a number of patients.

The team method was further described as a "synthesis of case and functional methods" (Daeffler, 1975, p. 21). In Daeffler's (1975) study, the evidence identified significant differences that showed satisfaction with primary nursing overall. The primary nursing staffing model was more representative of the case-staffing pattern.

The PTN Model was first developed in the late 1980s in response to a nursing shortage (Hyams-Franklin, Rowe-Gilliespie, Harper, & Johnson, 1993). Minnick and Mion (2007) looked at nursing work team models and team nursing model characteristics that organized nursing care around modules or teams. Their model construct included one registered nurse

who assigned tasks to a licensed vocational nurse and a nurse assistant to be performed on a group of patients. Additionally, schedules were made to facilitate this pairing (Minnick & Mion, 2007). Albeit, the licensed vocational nurse role is no longer a part of many inpatient nursing teams, their description of primary team nursing does resemble the current model. In contrast to the historical model, PTN, as described in the introduction by Adornetto-Garcia (2013), provides evidence of an evolved, more contemporary patient care delivery model, given its emphasis on continuity of care. A 2001 mixed-methods study conducted in an intensive care unit (ICU) environment compared primary nursing with other methods of care. The results indicated that ICU nurses perceived that continuity of care was a primary advantage of primary care nursing (Goode & Rowe, 2001).

A systematic review of models of care in nursing concluded that "team nursing does present a better model for inexperienced staff to develop, a key aspect in units where skill mix or experience is diverse" (Fernandez, Johnson, Tran, & Miranda, 2012, p. 324). Fernandez, et al. (2012) further identified that under other staffing models, a novice workforce is at a disadvantage in terms of supervision and at risk for managing patients beyond their skills and experience. Health-care institutions are becoming aware of the need to help nurses develop coping mechanisms to address their work-related stressors. In a descriptive study conducted by Wu, Fox, Stokes and Adam (2011), newly graduated nurses indicated their top coping strategy was having someone to talk to for information and this support was a key in workforce retention.

TeamSTEPPS Teamwork Perception Questionnaire

TeamSTEPPS Teamwork Perception Questionnaire (T-TPQ) is a measurement tool that helps to determine how an individual perceives the current state of collective

teamwork within an organization, including the strength or weakness for each of the five components of the TeamSTEPPS model (AHRQ, 2010). This questionnaire measures an individual's awareness that the team is or is not working together as well as the strength or weakness for each of the five components of the TeamSTEPPS model. In the T-TPQ manual, James Battles, Ph.D., its creator, described his literature review results that supported the need for the development of the T-TPQ. He stated that "few measures exist that provide assessments of the individuals' perceptions of teamwork, particularly ones oriented towards healthcare" (American Institutes for Research, 2010, p. 3). This literature review did not identify any other instrument used to measure team perception other than the T-TPQ.

The literature search revealed use of the instrument known as The TeamSTEPPS T-TPQ. The basis for the selection of this instrument was to evaluate whether the "TeamSTEPPS intervention produces desirable changes in perceptions regarding teamwork" (American Institutes for Research, 2010, p. 8). In that study, which examined teamwork skills and behaviors in medical-surgical bedside nurses, the survey demonstrated internal consistency reliability of 0.83–0.94 with a total survey reliability of 0.93, demonstrating that the T-TPQ is a valid and reliable survey (Castner, 2012). The study used the brief T-TPQ (Brief T-TPQ), which includes the five components of the TeamSTEPPS essentials curriculum: team structure, team leadership, mutual support, situation monitoring, and communication.

A cross-sectional survey was conducted after a TeamSTEPPS training that studied organization teamwork development, an initiative to support effective teamwork in a five-hospital health-care system (Castner, Foltz-Ramos, Schwartz, and Ceravolo, 2012).

The brief TeamSTEPPS Brief T-TPQ was used to measure RN perceptions of teamwork skills and behaviors in their work environment after TeamSTEPPS training. The results identified "leadership as a needed improvement to achieve effective teamwork" and a "necessary catalyst for success" (Castner et al., 2012, p. 470).

Teamwork

The Canadian Patient Safety Institute publication examined *Teamwork and Communication in Healthcare* in a comprehensive literature review (Lo, 2011). The executive summary reported findings related to teamwork conceptual models, instruments to measure the effectiveness of teamwork attitudes and behaviors, the safety culture, teamwork training programs, and the effectiveness of training. She also examined critical factors for successful implementation of team training programs in health care and specific tools to improve team processes. Some recommendations, based on her findings, were to "initiate teamwork training for health care professionals at the undergraduate level, a need to identify critical teamwork competencies within specific teams as a focus for training content, increased use of simulation to practice skills, incentives for professionals to attend teamwork training, implementation of structured communication tools, and evaluation of teamwork, use of structured tools and patient safety culture using clinical outcomes" (Lo, 2011, p. 43). Of note, in her literature review, a number of specific tools to improve team processes were taken from the TeamSTEPPS curriculum. Lo notes that the "strengths of TeamSTEPPS were: transferability to any health-care setting with materials to best meet an organization's specific teamwork needs, free resource availability on the web to specific tools, flexibility in implementation, consideration of organizational culture in TeamSTEPPS initiative: assessment, planning,

training, implementation, and sustainment. The weaknesses were that the training primarily operated by creating awareness and there were limited opportunities for practice" (Lo, 2011, p. 17).

Skills Needed for Effective Teams

AHRQ, with the U.S. Department of Health and Human Services, provides a website with numerous resources that elaborate on the conceptual framework for the TeamSTEPPS model of teamwork training and the skills or competencies that people must demonstrate to enhance performance, knowledge, and attitude as teamwork outcomes. AHRQ describes the skills needed for effective teams. These skills are described as follows.

- Team leadership involves collaborative decision-making, conflict resolution, resource management and establishing clear goals;

- Communication information exchange strategies are emphasized with tools established for safe hand-offs;

- Situation monitoring calls for team members to monitor behaviors and actions of its members and maintain general awareness of the environment. Additionally, shared mental models where team members understand one another and work to communicate, is emphasized;

- Mutual support advocates for the patient and calls for team members to work together in a way that helps resolve conflict and offers a constructive approach for managing patients and the workload (AHRQ, n.d.).

A heightened awareness to the connection between effective communication and patient safety has motivated health-care leaders in all levels of care, including the

academic setting, to amplify training and development of team structures to produce competent teams within the educational curriculum. For example, the Accreditation Council for Graduate Medical Education (ACGME) now requires that surgical residents address teamwork proficiency (Sanfrey, McDowell, Meier, and Dunnington, 2011). The research evidence in the study of communication and collaboration on health-care teams produced by seminal thinkers in the last 10 years also began to impact change. Dr. Lorelei Lingard, a University of Western Ontario medical school professor and leading researcher in the study of communication and collaboration on health-care teams, applauded progress made to link team communication and patient safety but cautioned, "Efforts to improve teamwork at the hospital management and policy levels need to acknowledge the complexity of the relationship between how teams communicate and the safety of the care they provide" (Lingard, 2012, p. 21).

Summary

The literature search did identify academic teams (Goliat, Sharpnack, Madigan, Baker, & Trosclair, 2013), interprofessional teams (Liaw, Zhou, Lau, Siau, & Chan, 2014), the emergency room (Turner, 2012), the operating room (Meier, Boehler, McDowell, Schwind, Markwell, Roberts, & Sanfey, 2012), critical care teams (Mayer, Cluff, Lin, Willis, Stafford, Williams, & Amoozegar , 2011), and others who have implemented use of the TeamSTEPPS training model and Essentials curriculum that supported the importance of teamwork in the health-care setting. The specific components of teamwork, team structure, leadership, situation monitoring, mutual support, and communication that make up the TeamSTEPPS training and teamwork perceptions were investigated as well as PTN. Additionally, a literature review to look at

team learning and innovation in nursing was done; however, low levels of evidence exist to document these factors on team learning (Timmermans, Linge, Petegem, Ropaey, & Denekens, 2012). A literature search was performed to identify other PTN initiatives, with and without a clinical nurse leader at its helm, who had participated in TeamSTEPPS training and no studies were found.

The literature review provided excellent examples of methods used to evaluate effective teams of all types with the exception of those distinctly described as a PTN model with or without a CNL. The aim of this study was to contribute to the literature by providing evidence to describe team perception of the nursing staff who function under the PTN model after experiencing training with the TeamSTEPPS Essentials curriculum. This study also explored the core component of TeamSTEPPS that demonstrated the greatest change.

Chapter III

Methodology

Strategies to address patient care issues in the acute care setting are driving

emerging health-care initiatives to improve patient care practice as evidenced by the

literature. In 2012, a new nursing professional practice model was introduced in an NCI-

designated comprehensive cancer center in Texas. Of significance was the intervention of

including a new patient delivery model, PTN, as a way to enhance performance with

patient care. The TeamSTEPPS Essentials training curriculum was selected as the

framework to prepare nursing staff for PTN implementation, which prompted this study.

Research Questions

The research questions posed for this study were:

1. What was the effect of incorporating the TeamSTEPPS Model and Essentials

    Curriculum as the training framework for nursing staff as measured by the

    Teamwork Perceptions questionnaire?

2. Which TeamSTEPPS core components (team structure, leadership, situation

    monitoring, mutual support, or communication) demonstrated the greatest change

    as perceived by the nursing staff?

Variables

The variables in this study were:

- Dependent variable—perception of teamwork as evidenced by the outcome of the
  survey

- Independent variable—TeamSTEPPS education.

Measures

The TeamSTEPPS T-TPQ instrument is a measurement tool that helps to determine how an individual perceives the current state of collective teamwork within an organization, including the strength or weakness for each of the five components of the TeamSTEPPS model (AHRQ, 2010). It is a 35-item self-report instrument that measures individuals' perceptions of group-level team skills and behavior across five core components of team functioning. Responses are selected using a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1).

The TeamSTEPPS T-TPQ Manual described the development of the T-TPQ. Each item was written to align with the TeamSTEPPS core components. In short, a total of 93 items were initially developed and through a process of cognitive interviews, small-group trials, and field tests, the final T-TPQ included 35 items. The results were published by the Agency for Healthcare Research and Quality in June 2010 (p. 6). Table 1 illustrates the T-TPQ Cronbach's Alpha Reliability Coefficients results of the final items tested.

Table 1

T-TPQ Cronbach's Alpha Reliability Coefficients Results

Construct	Number of Survey Items	Cronbach's Alpha
Team Structure	7	.89
Leadership	7	.95
Situation Monitoring	7	.91
Mutual Support	7	.90
Communication	7	.88

The T-TPQ, introduced with the TeamSTEPPS Essential curriculum training, can be used either as a site assessment prior to implementing TeamSTEPPS training and/or as an evaluation of perceptions of teamwork pre- and post-training.

Research Design

A quality improvement project, led by Dr. Debra Adornetto-Garcia, established the assessment of each team using the TeamSTEPPS T-TPQ. The procedure called for administering the survey to each individual anonymously just prior to education. The T-TPQ was administered one month prior to PTN implementation, and at three months, six months, and one year after implementation. Dr. Adornetto-Garcia used the application Survey Monkey to deliver the T-TPQ survey via a link to registered nurses, nurse assistants and patient service coordinators—those who worked on the units identified for PTN implementation. The survey was conducted over three weeks, with email reminders sent to staff at seven day intervals (Adornetto, 2014, p. 4). The aim of Dr. Adornetto-Garcia's quality improvement project was to "assess team functioning and interdisciplinary communication on four inpatient oncology units following the implementation of PTN" (Adornetto-Garcia, 2014, p. 1). Site assessment was the intent of her study.

Building upon this previous data, this study utilized retrospective analysis of available survey results to evaluate perception of teamwork pre and post training. Further, this educational research study sought to investigate the effectiveness of the TeamSTEPPS Essentials curriculum as the training education framework used to prepare nursing staff transitioned to PTN.

 Statistical Analysis

This was a quantitative retrospective study that analyzed comparative data to determine the statistical significance between teamwork perceptions prior to TeamSTEPPS training delivered before and after transitioning nursing staff to the PTN patient delivery model. A secondary analysis of T-TPQ archival data with permission from Dr. Adornetto-Garcia included cohorts that had been operational for at least one year. TPQ scoring was calculated using the average of the seven questions in each subscale seen in Appendix C; that is, Team Structure was calculated using questions one to seven, Leadership was calculated using questions 8-14, Situation Monitoring using questions 15-21, Mutual Support using questions 22-28. The Total score was the sum of all subscales. TPQ scores were compared by time point and within each unit by time using a Wilcoxon rank-sum test. Descriptive statistics were conducted on demographic data.

There were seven inpatient units in the two cohorts selected for this study. The original Demo Group Cohort had four units that transitioned to PTN in 2012, and the Group A Cohort had three units that transitioned to PTN in 2013. Each individual unit was de-identified and named as follows: Demo Group Cohort contains units A, B, C, and D, and the Group A Cohort contains units E, F, and G. Descriptive statistics were also conducted on demographic data.

Summary

Originally, the intent was to analyze three cohorts. This would have yielded archival data for 13 inpatient units. Once data was obtained; however, the principal investigator noted that post implementation archival data was not available for the Group B Cohort, which contained inpatient units that transitioned to PTN in 2014. It was only

feasible to analyze the responses from the nursing staff that worked on the seven inpatient units in the Demo Group Cohort and the Group A Cohort; the results for which will be presented in the next chapter.

Chapter IV

Results

This research investigation attempted to determine the effect of incorporating the TeamSTEPPS Model and Essentials Curriculum as the training framework for clinical staff as measured by the Teamwork Perceptions Questionnaire (TPQ). It also sought to identify the TeamSTEPPS core component that demonstrated the greatest change as perceived by the clinical staff. Archival data was analyzed and the results are presented in the following sections.

Research Questions

The research questions addressed in this study were:

1. What was the effect of incorporating the TeamSTEPPS Model and Essentials Curriculum as the training framework for nursing staff as measured by the Teamwork Perceptions questionnaire?

2. Which TeamSTEPPS core components (team structure, leadership, situation monitoring, mutual support, or communication) demonstrated the greatest change as perceived by the nursing staff?

Results

Table two includes the demographic statistics for all participants at each study time point, e.g. before TeamSTEPPS training indicated as Baseline and post PTN implementation indicated as six months. For the purpose of this study, only registered nurse data was analyzed due to a small sample size of nursing assistant and patient service coordinator responses. In this analysis, table two demographic statistics represents the sample of 400 registered nurses (RN) who completed the baseline TPQ survey before

training and 364 who completed the survey six months after training and PTN

implementation. The majority of the respondents to the baseline survey were primarily

White followed by Asian, African-American, Other and Hispanic. Six months after

implementation, the majority of respondents were White, followed by Other, Asian and

African-American. Of the 400 RN respondents at baseline, the majority reported fewer

than five years' experience as nurses and five years or less in their current role. The

majority of the respondents had a bachelor's degree in nursing and had achieved

professional certification. Most respondents had not served in leadership roles. The post-

survey results were similar on all counts.

Table 2

Participant Demographics at Each Study Time Point

	Baseline		6 months	
	N	%	N	%
Position on unit				
RN	400	100	364	100
Ethnicity				
Other	55	11.8	121	27.2
White	161	34.5	189	42.5
Asian	155	33.2	98	22.0
African-American	78	16.7	37	8.3
Hispanic	18	3.9	0	0
Years of experience in your current role?				
0-5	268	57.4	259	58.2
6-10	91	19.5	76	17.1
11-15	55	11.8	57	12.8
16-20	23	4.9	28	6.3
21-25	20	4.3	18	4.0
26-30	4	0.9	2	0.4
>30	6	1.3	5	1.1

	Baseline		6 months	
	N	%	N	%
If you are a registered nurse, years of nursing experience				
<1year	49	12.1	62	17.0
1-2 years	53	13.1	45	12.3
3-5 years	82	20.2	81	22.2
6-10 years	60	14.8	49	13.4
11-15 years	55	13.6	42	11.5
16-20 years	46	11.4	40	11.0
21-25 years	30	7.4	27	7.4
>25 years	30	7.4	19	5.2
Highest Education achieved?				
High school degree	50	10.7	62	13.9
Associate Degree	20	4.3	15	3.4
Associate Degree in Nursing	25	5.4	19	4.3
Bachelor's Degree	52	11.1	54	12.1
Bachelor's Degree in Nursing	288	61.7	267	60.0
Master's Degree	7	1.5	8	1.8
Master's Degree in Nursing	20	4.3	18	4.0
Master's Degree in Business	4	0.9	1	0.2
Professional Certification achieved?				
Other	22	4.1	25	5.6
Yes	255	53.3	243	54.6
No	255	42.6	177	39.8
If you are a registered nurse, have you served in a leadership role				
Other	8	2	5	1.4
Yes	132	33.0	115	32.0
No	263	65.0	239	66.6

Summary statistics such as means, standard deviations, and ranges were calculated for the mean TPQ scoring. A Wilcoxon-rank sum test was used to determine the statistical significance between the survey conducted before and six months after TeamSTEPPS training to evaluate two cohorts collectively followed by an analysis of each unit individually. Note: survey results were skewed to the left, as illustrated in Figure one, which clearly displays the data creating a curve stretched very far on the left hand side of the figure. When this occurs, the Wilcoxon rank sum test is used as this is

the non-parametric form of a t-test. It does not require that the data be normally
distributed. Since there were no identifiers linking subject's responses by each time point,
each time was treated as an independent cohort. This was treated as an exploratory
analysis so statistical significance was defined at the alpha = 0.05 level.
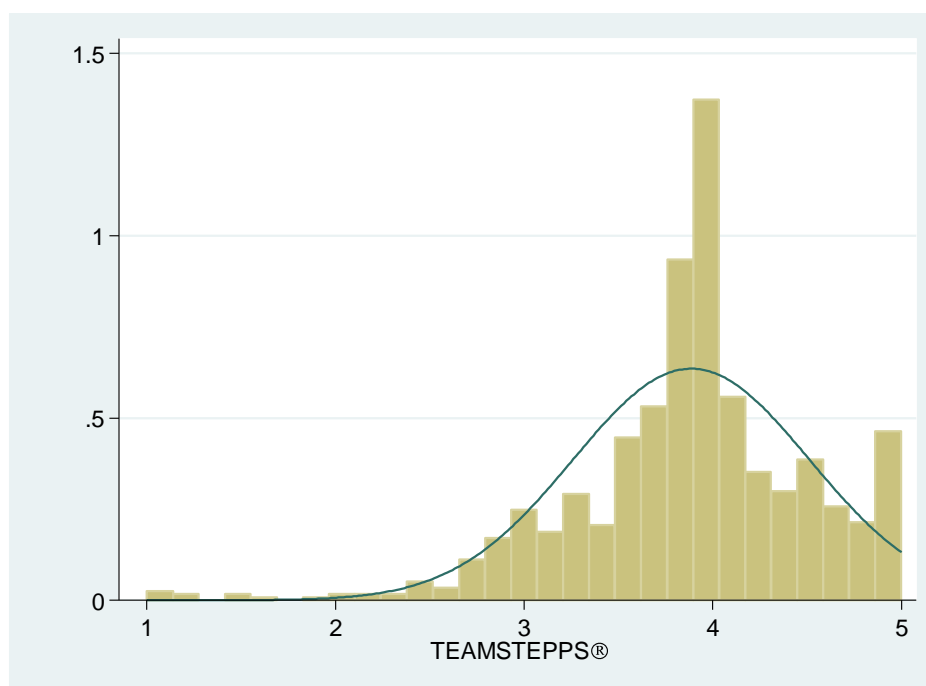
Figure 1. TeamSTEPPS TPQ Distribution of Results

Results for Research Question One

Research question one stated: "What was the effect of incorporating the
TeamSTEPPS Model and Essentials Curriculum as the training framework for nursing
staff as measured by the Teamwork Perceptions questionnaire?" The effect of
incorporating the TeamSTEPPS Model and Essentials Curriculum as the training
framework for nursing staff as measured by the Teamwork Perceptions questionnaire was
collectively statistically significant for the sample surveyed. Table three includes the
summary statistics for each component of the TPQ by time. Scores were higher at month

six compared to baseline for all components and except for Team Structure and Team Leadership, were statistically significant as well. Significant differences are bolded in red. Overall, the p-value is 0.004.

Results for Research Question Two

Research question two stated: "Which TeamSTEPPS core components (team structure, leadership, situation monitoring, mutual support, or communication) demonstrated the greatest change as perceived by the nursing staff?" The TeamSTEPPS core component that demonstrated the greatest change as perceived by the clinical staff is also denoted in Table three. Situation monitoring appears to have had the greatest change with an increase in 0.13 on average (3.93-3.80) and a p-value <0.001.

Table 3.

Mean TPQ scores by time

Core Component	Time point	N	Mean	SD	Med	Min	Max	p-value
Team Structure	Baseline	451	3.83	0.68	3.86	1.00	5.00	0.241
	6 months	425	3.85	0.77	4.00	1.00	5.00	
Leadership	Baseline	444	3.65	0.91	3.86	1.00	5.00	0.081
	6 months	419	3.74	0.97	4.00	1.00	5.00	
Situation Monitoring	Baseline	438	3.80	0.66	3.86	1.00	5.00	<0.001
	6 months	417	3.93	0.74	4.00	1.00	5.00	
Mutual Support	Baseline	435	3.87	0.63	4.00	1.00	5.00	0.001
	6 months	415	3.97	0.75	4.00	1.00	5.00	
Communication	Baseline	432	4.05	0.57	4.00	1.29	5.00	0.002
	6 months	413	4.14	0.65	4.00	1.00	5.00	
TPQ-Overall	**Baseline**	**432**	**3.84**	**0.58**	**3.89**	**1.26**	**5.00**	**0.004**
	6 months	**413**	**3.93**	**0.67**	**3.97**	**1.00**	**5.00**	

Table four includes the summary statistics for each component by time with scores being compared within each unit by time. Significant differences are bolded in red in the table. Analysis revealed the following inpatient units that demonstrated significant

statistical differences with a TPQ overall score identifying units B, F and G having the most statistically significant results. Unit B demonstrated statistical significance for all TeamSTEPPS components.

- Team Structure - Units **B**, F and G

- Leadership - Units **B** and F

- Situation Monitoring – Units **B**, D and G

- Mutual Support - Units **B**, D and G

- Communication - Units **B** and D

Although Unit D is statistically significant for situation monitoring, mutual support and communication, this is not the case for the TTPQ overall score. The reason this occurred was that the scores for structure and leadership were non-significant. Since these elements are parts of the overall score, the overall score difference was non-significant, i.e. 3.79 is not different enough from 3.93 to be deemed significantly different. Unit D could not be deemed statistically significant since the p-value was > 0.05.

Table 4

Mean TPQ scores by unit and time

Component	Unit	Timepoint	N	Mean	SD	Med	Min	Max	p-value
	A	Baseline	45	3.71	0.81	3.71	1.29	5.00	0.816
		6-months	47	3.77	0.68	4.00	2.14	5.00	
	B	Baseline	46	3.72	0.64	3.79	2.14	5.00	**0.019**
		6-months	48	4.07	0.54	4.00	3.00	5.00	
	C	Baseline	45	3.61	0.75	3.71	1.43	5.00	0.126
		6-months	46	3.23	1.02	3.43	1.00	5.00	
Team	D	Baseline	95	3.79	0.62	3.86	2.43	5.00	0.290
Structure		6 months	88	3.80	0.86	4.00	1.00	5.00	
	E	Baseline	71	3.93	0.61	4.00	2.00	5.00	0.699
		6 months	59	3.89	0.63	4.00	1.86	5.00	
	F	Baseline	48	4.15	0.47	4.00	3.00	5.00	**0.016**
		6 months	41	3.91	0.43	4.00	2.86	5.00	
	G	Baseline	101	3.86	0.76	3.86	1.00	5.00	**0.020**
		6 months	96	4.09	0.71	4.00	1.43	5.00	

Component	Unit	Timepoint	N	Mean	SD	Med	Min	Max	p-value
Leadership	A	Baseline	43	3.41	0.95	3.71	1.00	5.00	0.261
		6 months	47	3.64	0.82	3.86	1.57	5.00	
	B	Baseline	44	2.99	0.90	3.00	1.00	5.00	**<0.001**
		6 months	47	3.91	0.74	4.00	2.43	5.00	
	C	Baseline	44	3.23	1.09	3.36	1.00	5.00	0.439
		6 months	44	3.03	1.25	3.00	1.00	5.00	
	D	Baseline	94	3.66	0.88	3.86	1.00	5.00	0.598
		6 months	87	3.67	1.09	3.86	1.00	5.00	
	E	Baseline	71	4.05	0.70	4.00	1.00	5.00	0.325
		6 months	59	4.19	0.67	4.00	2.29	5.00	
	F	Baseline	48	4.14	0.51	4.00	3.00	5.00	**<0.001**
		6 months	40	3.61	0.71	3.86	2.00	5.00	
	G	Baseline	100	3.72	0.87	3.79	1.00	5.00	0.053
		6 months	95	3.88	0.94	4.00	1.00	5.00	
Situation Monitoring	A	Baseline	43	3.51	0.94	3.71	1.00	5.00	0.151
		6 months	47	3.79	0.64	3.86	1.86	5.00	
	B	Baseline	44	3.69	0.63	3.79	2.14	5.00	**0.002**
		6 months	47	4.16	0.55	4.00	2.86	5.00	
	C	Baseline	43	3.83	0.62	4.00	2.00	5.00	0.144
		6 months	44	3.39	1.05	3.86	1.00	5.00	
	D	Baseline	92	3.78	0.62	3.86	1.57	5.00	**0.007**
		6 months	86	4.02	0.71	4.00	1.00	5.00	
	E	Baseline	70	3.81	0.56	4.00	2.14	5.00	0.075
		6 months	58	3.96	0.65	4.00	2.00	5.00	
	F	Baseline	48	4.02	0.61	4.00	2.43	5.00	0.314
		6 months	40	3.96	0.42	4.00	3.29	5.00	
	G	Baseline	98	3.85	0.61	3.86	1.57	5.00	**0.023**
		6 months	95	4.01	0.76	4.00	1.00	5.00	
Mutual Support	A	Baseline	43	3.64	0.81	3.86	1.00	5.00	0.668
		6 months	47	3.77	0.63	3.86	2.29	5.00	
	B	Baseline	44	3.80	0.54	3.86	2.86	5.00	**0.007**
		6 months	46	4.14	0.56	4.00	3.00	5.00	
	C	Baseline	42	3.93	0.57	4.00	2.43	5.00	0.118
		6 months	44	3.47	1.11	4.00	1.00	5.00	
	D	Baseline	90	3.80	0.62	3.86	1.86	5.00	**0.026**
		6 months	86	3.98	0.78	4.00	1.00	5.00	
	E	Baseline	70	3.85	0.59	4.00	2.00	5.00	0.077
		6 months	57	4.04	0.61	4.00	2.14	5.00	
	F	Baseline	48	4.11	0.59	4.00	2.71	5.00	0.794
		6 months	40	4.14	0.47	4.00	3.29	5.00	
	G	Baseline	98	3.96	0.63	4.00	1.29	5.00	**0.028**
		6 months	95	4.10	0.71	4.00	1.00	5.00	
Communication	A	Baseline	43	3.95	0.67	4.00	1.86	5.00	0.476
		6 months	46	3.99	0.72	4.00	1.29	5.00	
	B	Baseline	43	4.01	0.52	4.00	3.00	**5.00**	**0.005**
		6 months	46	4.32	0.55	4.07	3.00	5.00	
	C	Baseline	41	4.01	0.44	4.00	3.14	5.00	0.352
		6 months	43	3.76	0.82	4.00	1.00	5.00	
	D	Baseline	89	3.95	0.60	4.00	1.71	5.00	**0.004**
		6 months	86	4.19	0.60	4.00	1.00	5.00	
	E	Baseline	70	4.14	0.51	4.00	3.00	5.00	0.931
		6 months	57	4.14	0.51	4.00	3.00	5.00	

Component	Unit	Timepoint	N	Mean	SD	Med	Min	Max	p-value
Communication	F	Baseline	48	4.23	0.49	4.07	3.00	5.00	0.966
		6 months	40	4.22	0.37	4.00	3.57	5.00	
	G	Baseline	98	4.08	0.62	4.00	1.29	5.00	0.054
		6 months	95	4.22	0.71	4.00	1.00	5.00	
TPQ Overall	A	Baseline	43	3.64	0.73	3.77	1.26	4.97	0.368
		6 months	46	3.78	0.62	3.89	2.17	5.00	
	B	Baseline	43	3.64	0.50	3.60	2.66	5.00	**<0.001**
		6 months	46	4.13	0.48	4.01	3.00	5.00	
	C	Baseline	41	3.72	0.58	3.86	2.57	5.00	0.320
		6 months	43	3.41	0.94	3.60	1.00	4.94	
	D	Baseline	89	3.79	0.57	3.86	2.17	4.97	0.088
		6 months	86	3.93	0.70	3.94	1.43	5.00	
	E	Baseline	70	3.96	0.48	3.99	2.71	5.00	0.368
		6 months	57	4.04	0.51	4.03	2.60	5.00	
	F	Baseline	48	4.13	0.43	4.04	2.97	5.00	**0.036**
		6 months	40	3.97	0.33	3.91	3.31	4.77	
	G	Baseline	98	3.90	0.62	3.91	1.26	5.00	**0.020**
		6 months	95	4.06	0.68	4.03	1.09	5.00	

Summary of Research Results

The change in TPQ survey responses of nursing staff before TeamSTEPPS training and after transitioning to a PTN patient delivery model were statistically significant collectively for perception of teamwork (p=0.004). One of the TeamSTEPPS core components, situation monitoring, collectively demonstrated the greatest change as perceived by the nursing staff (p=<0.001). When analyzed individually, statistical significance for each component varied; however Units B, F and G demonstrated statistical significance overall with Unit B showing statistical significance for all five components. Utility or application of these results will be processed in Chapter five.

Chapter V

Discussion and Conclusion

Healthcare systems recognize a need to develop effective teams for patient safety. This research studied efforts that an NCI-designated comprehensive cancer center made to implement Primary Team Nursing, a change from the prior case staffing model. The TeamSTEPPS fundamentals curriculum was selected as the training framework to help transition nursing staff to the new patient care delivery model. TeamSTEPPS is described as an "evidence-based teamwork system aimed at optimizing patient outcomes by improving communication and teamwork skills among health care professionals" (AHRQ, n.d., p. 1).

The TeamSTEPPS Teamwork Perception Questionnaire (T-TPQ), a measurement tool that helps to determine how an individual perceives the current state of collective teamwork within an organization, including the strength or weakness for each of the five components of the TeamSTEPPS model (AHRQ, 2010), was administered to all clinical staff before and after TeamSTEPPS training and PTN implementation. For the purpose of this study, only registered nurse data were analyzed due to the small sample size of nursing assistant and patient service coordinator responses. Specifically, this research examined perceptions of teamwork and the effect of the training as evidenced by the scores for the TeamSTEPPS components.

Discussion of Research Results

The demographics of the nurse sample indicate that most respondents have fewer than five years of experience and do not have leadership experience; however, most have a Bachelor of Science degree and hold a certification. The relevance of this demographic

is unclear; however, the literature review did reveal that working on teams appeals to new nurses who find value in an ability to work closely with others to gain information in the work setting as a coping strategy (Wu, Fox, Stokes & Adam (2011). The statistical significance could be related to the comfort of this model for this sample.

AHRQ describes the skills needed for effective teams as team structure, leadership, situation monitoring, mutual support, and communication. Collectively, the effect of incorporating the TeamSTEPPS Model and Essentials Curriculum as the training framework for clinical staff as measured by the T-TPQ was higher at month 6 compared to baseline for all components and with the exception of Team Structure and Team Leadership were statistically significant as well. Overall, the p-value is 0.004. The importance of this finding is that it supports the value for sustaining education to promote these skills.

The findings for the individual units that demonstrated statistical significance in the following components were worthy of note.

- Team Structure - Units **B**, F and G

- Leadership - Units **B** and F

- Situation Monitoring – Units **B**, D and G

- Mutual Support - Units **B**, D and G

- Communication - Units **B** and D

The individual analysis did identify that Units B and F demonstrated statistical significance for Team Structure and Leadership. In their study results, Castner et al., 2012, p. 470 identified "leadership as a needed improvement to achieve effective teamwork" and a "necessary catalyst for success". According to AHRQ, team leadership

involves collaborative decision-making, conflict resolution, resource management and establishing clear goals. One could speculate that the responses to the PTN survey questions posed for Leadership resonated with the nursing staff on inpatient units who demonstrate these attributes and/or worked to prepare them for the transition to the PTN patient delivery model. Oddly, only Unit B demonstrated a statistically significance change for all five components; whereas, Unit F did not. In fact, Unit F only demonstrated a statistically significance change for Team Structure and Leadership. A conclusion that can be derived from this finding is that although leadership is needed to achieve effective teamwork, skills acquired for team structure and leadership alone may not prepare nursing staff for other desired team skills desired such as situation monitoring, mutual support and communication. In this case, it could be supposed that individual unit findings have potential for helping to identify learning gaps for educational remediation.

The TeamSTEPPS core component that demonstrated the greatest change as perceived by the nursing staff collectively was situation monitoring with a p-value <0.001. Three of the seven units analyzed, B, D, and G, were statistically significant for this component. Situation monitoring calls for team members to monitor behaviors and actions of one another and to maintain general awareness of the environment. Additionally, shared mental models where team members understand one another and work to communicate, is emphasized (AHRQ, n.d.). Given the complexity of patient care delivery in the acute care setting, the component and essential skills of situation monitoring hold great potential for creating effective teams making this finding

extremely important. Identifying educational strategies to enhance this skill may prove helpful for units that did not demonstrate statistical significance.

Units B, D and G demonstrated statistical significant improvements for Mutual Support. Mutual support advocates for the patient and calls for team members to work together in ways that help resolve conflict and offers a constructive approach for managing patients and the workload (AHRQ, n.d.). In addition, units B and D were statistically significant for Communication. The Communication component emphasizes exchange strategies with tools for safe patient hand-offs. Although this research sought to identify units collectively, results did reveal a comparative analysis of individual units noting statistical significance for what AHRQ describes as skills needed for effective teams. Opportunities for additional education and training were also identified.

Limitations of the Study

This was not a controlled study. Whereas initially, the intent was to study three cohorts or 13 inpatient units, archival data was only available for seven inpatient units thus limiting the sample. Further, only registered nurse data were analyzed due to low sample sizes for nurse assistants and patient service coordinators who are other members of the clinical team. There are many variables that could affect outcomes, including but not limited to patient population, length of service, and staff and patient demographics. Additionally, teamwork perceptions could be affected by clinical staff transferring in and out of the unit and the organization. Finally, this study reflected the patient care delivery of one institution, including the role of the CNL and, therefore, may not be generalizable. Participation was anonymous, which prevented a comparison over time of individuals' responses. Instead, by measuring the units as distinct cohorts at two time points likely

resulted in different individuals participating at different time points, which may have affected the data.

Implications for Future Research

This study revealed that although there was an increase in perceived teamwork before and after TeamSTEPPS training, collectively, Team Structure and Team Leadership were not statistically significant overall. That being said, there were two inpatient units, when analyzed individually, that demonstrated statistical significance for both components. Oddly, only one of these units demonstrated statistical significance for all components identified as skills needed for effective teams. Identifying the leadership differences might reveal the attributes that contributed to this finding. Identifying attributes that promote collaborative decision-making, conflict resolution, resource management and establishing clear goals may help with leadership orientation, training initiatives and evaluation of performance, especially if the outcome is an effective team.

This study also revealed that the TeamSTEPPS core component that demonstrated the greatest change as perceived by the clinical staff was situation monitoring; however, when analyzed individually, only three units demonstrated statistical significance for this component. Future studies to find meaning in this result may be of value to see if the TPQ scores and clinical care outcomes correlate. Further, studying each unit individually to identify the extent of how each component or skill links to patient safety may help identify educational strategies to enhance each skill across the institution.

Finally, this study revealed the results for registered nurses only. Although the nurse perspective does capture their overall view regarding how the entire team functions, it would be advantageous to analyze it from all perspectives. Analyzing the

entire clinical team, e.g. nurses, nurse assistants and patient service coordinators, will help analyze the full impact of TeamSTEPPS curriculum training on PTN.

Conclusions

This study analyzed one institutions' decision to choose TeamSTEPPS Fundamentals Curriculum training as a framework for transitioning to a new patient delivery model as an intervention for change. Evaluating the impact of educational strategies to support their usefulness helps with decisions to discard or to sustain efforts by creating enhancements where needed to promote a culture of quality and patient safety. Ultimately, identifying ways to promote patient safety and strategies to prevent harm in the acute care setting is the goal. This study revealed that TeamSTEPPS training did positively impact nursing staff on seven inpatient units collectively which for now is reassuring. Given the heightened awareness to the connection between effective communication and patient safety that is motivating health-care leaders in all levels of care, moving forward, there exists a need to identify learning, skills and practice gaps for individual units rather than collectively.

Recommendations

This was a retrospective study that analyzed archival data. It is advisable that this study be replicated in an institution as a controlled study with TPQ data analyzed at the end of each year for each individual unit as a way to identify learning, skills and practice gaps for the purpose of intervening accordingly. Concurrently, collection of safety reports for the research sample in order to study safety practices may help identify impact of the intervention. TeamSTEPPS appears to be successful as an educational framework to help provide clinical staff with skills needed to function in the acute care setting on a PTN

unit. More research is needed to analyze its educational value and sustainability in the healthcare setting.

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Appendix A

Consent for Use of Archival Data

THE UNIVERSITY OF TEXAS

MD Anderson
~~Cancer~~ Center

Making Cancer History®

Division of Nursing
1400 Hermann Pressler Drive
Houston, Texas 77030-4008

July 25th, 2014

Sara McNeil, Ed.D.
Associate Professor and Program Area Coordinator
Learning, Design & Technology Graduate Program
Department of Curriculum and Instruction
Room 315C – Farish Hall
University of Houston - College of Education
Houston, TX 77204-5027
smcneil@uh.edu

Dear Dr. McNeil,

This letter is to verify that Christella Whitcher, a student in your Doctor of Education Program at The University of Houston, has permission from Debra Adornetto-Garcia, Executive Director of Nursing Professional Practice and owner of the requested data set, to utilize data obtained from the TeamSTEPPS Teamwork Perception Questionnaire for the purpose of analysis for her doctoral dissertation. This data was and continues to be collected with permission of The University of Texas MD Anderson Cancer Center Quality Improvement Assessment Board as quality improvement data. We will continue to provide mentoring and support to Chris as she completes her doctoral work. If I can be of any further assistance, please let me know.

Sincerely,

Kelly J Brassil

Kelly J Brassil, PhD, RN, AOCNS, ACNS-BC
Director, Nursing Research and Innovation
The Division of Nursing
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Appendix B

University of Houston Human Subjects Research Approval Document

UNIVERSITY of **HOUSTON**

DIVISION OF RESEARCH

March 4, 2015

Christella Whitcher
c/o Dr. Sara McNeil
Dean, Education

Dear Christella Whitcher,

Based upon your request for exempt status, an administrative review of your research proposal entitled "Primary Team Nursing (PTN) and TeamSTEPPS as an intervention for Change" was conducted on January 14, 2015.

At that time, your request for exemption under **Category 4** was approved pending modification of your proposed procedures/documents.

The changes you have made adequately respond to the identified contingencies. As long as you continue using procedures described in this project, you do not have to reapply for review. * Any modification of this approved protocol will require review and further approval. Please contact me to ascertain the appropriate mechanism.

If you have any questions, please contact Nettie Martinez at 713-743-9211.

Sincerely yours,

Kirstin Rochford, MPH, CIP, CPIA
Director, Research Compliance

*Approvals for exempt protocols will be valid for 5 years beyond the approval date. Approval for this project will expire **March 03, 2020**. If the project is completed prior to this date, a final report should be filed to close the protocol. If the project will continue after this date, you will need to reapply for approval if you wish to avoid an interruption of your data collection.

Protocol Number: 15238-EX

316 E. Cullen Building   Houston, TX 77204-2015   (713) 743-9204   Fax: (713) 743-9577

COMMITTEES FOR THE PROTECTION OF HUMAN SUBJECTS.

Appendix C

TeamSTEPPS Teamwork Perceptions Questionnaire

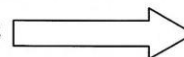*TeamSTEPPS*®

Teamwork Perceptions Questionnaire

Instructions: Please complete the following questionnaire by placing a check mark [√] in the box that corresponds to your level of agreement from *Strongly Agree* to *Strongly Disagree*. Please answer every question, and select only one response for each question. The questionnaire is **anonymous**, so please do not put your name or any other identifying information on the questionnaire.

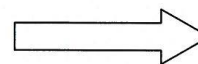|		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Team Structure						
1.	The skills of staff overlap sufficiently so that work can be shared when necessary.					
2.	Staff are held accountable for their actions.					
3.	Staff within my unit share information that enables timely decisionmaking by the direct patient care team.					
4.	My unit makes efficient use of resources (e.g., staff supplies, equipment, information).					
5.	Staff understand their roles and responsibilities.					
6.	My unit has clearly articulated goals.					
7.	My unit operates at a high level of efficiency.					
Leadership						
8.	My supervisor/manager considers staff input when making decisions about patient care.					
9.	My supervisor/manager provides opportunities to discuss the unit's performance after an event.					
10.	My supervisor/manager takes time to meet with staff to develop a plan for patient care.					
11.	My supervisor/manager ensures that adequate resources (e.g., staff, supplies, equipment, information) are available.					
12.	My supervisor/manager resolves conflicts successfully.					
13.	My supervisor/manager models appropriate team behavior.					
14.	My supervisor/manager ensures that staff are aware of any situations or changes that may affect patient care.					

PLEASE CONTINUE TO THE NEXT PAGE ⟹

TeamSTEPPS®

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Situation Monitoring						
15.	Staff effectively anticipate each other's needs.					
16.	Staff monitor each other's performance.					
17.	Staff exchange relevant information as it becomes available.					
18.	Staff continuously scan the environment for important information.					
19.	Staff share information regarding potential complications (e.g., patient changes, bed availability).					
20.	Staff meets to reevaluate patient care goals when aspects of the situation have changed.					
21.	Staff correct each other's mistakes to ensure that procedures are followed properly.					
Mutual Support						
22.	Staff assist fellow staff during high workload.					
23.	Staff request assistance from fellow staff when they feel overwhelmed.					
24.	Staff caution each other about potentially dangerous situations.					
25.	Feedback between staff is delivered in a way that promotes positive interactions and future change.					
26.	Staff advocate for patients even when their opinion conflicts with that of a senior member of the unit.					
27.	When staff have a concern about patient safety, they challenge others until they are sure the concern has been heard.					
28.	Staff resolve their conflicts, even when the conflicts have become personal.					

PLEASE CONTINUE TO THE NEXT PAGE ⟹

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Communication						
29.	Information regarding patient care is explained to patients and their families in lay terms.					
30.	Staff relay relevant information in a timely manner.					
31.	When communicating with patients, staff allow enough time for questions.					
32.	Staff use common terminology when communicating with each other.					
33.	Staff verbally verify information that they receive from one another.					
34.	Staff follow a standardized method of sharing information when handing off patients.					
35.	Staff seek information from all available sources.					