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Whiteboard Implementation in the Emergency Department

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Whiteboard Implementation in the Emergency Department

BY

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Whiteboard Implementation in the Emergency Department

This Doctor of Nursing Practice (DNP) Project is approved as a credible and independent investigation by a candidate for the DNP degree and is acceptable for meeting the project requirements for this degree. Acceptance of this DNP Project does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

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WHITEBOARD IMPLEMENTATION IN THE EMERGENCY DEPARTMENT

Abstract

Due to an increase in consumer focus and reimbursement rates based on patient

satisfaction scores, interventions are being sought to improve satisfaction scores. This

DNP project sought improvement in emergency department satisfaction scores by

utilizing templated patient whiteboards. Pre- and post-intervention surveys were given to

patients to determine if there was a difference in perceived communication and

satisfaction ratings prior to and after the implementation of templated whiteboards.

Results indicated that the use of templated whiteboards did show a statistically significant

increase in satisfaction scores. With these positive results, the setting for this project

chose to create a policy to utilize the templated whiteboards with each patient.

Keywords: *ED communication, patient whiteboards, ED patient satisfaction*

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WHITEBOARD IMPLEMENTATION IN THE EMERGENCY DEPARTMENT

List of Abbreviations

ED	Emergency Department
TJC	The Joint Commission
RCT	Randomized Control Trial
TPC	Theory of Planned Change
RCT	Randomized Control Trial
JHNEBP	Johns Hopkins Nursing Evidence-Based Practice Model
TIR	Theory of Interpersonal Relationships
CINAHL	Cumulative Index of Nursing and Allied Health Literature
IRB	Institutional Review Board
EBQI	Evidence Based Quality Improvement
CAHPS	Consumer Assessment of Healthcare Providers Survey
ANOVA	Analysis of Variance

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Chapter 1

Introduction

Expectations of medical service consumers have increased over the years. Due to advancing technology, individuals can now compare quality of service at different hospitals and make selections based upon this data. Because of this trend, medical facilities consider patient satisfaction as an important measurement of service quality and is a significant factor is patient loyalty (Son & Yom, 2017).

The emergency department (ED) is a common entry point for individuals into medical service, which places high importance on the role of the patient experience in this department (Son & Yom, 2017). As a result, hospitals are focusing attention on improving patient experiences and satisfaction scores specifically in the ED. In a department that can experience long patient waiting times, high patient volumes, and stressful situations for patients and families, improving patient experiences in the ED may be a difficult task for hospital administrators.

Communication between staff and patients is one component recognized as affecting patient satisfaction in the ED setting (Pun, Matthiessen, Murray & Slade, 2015). The Institute of Medicine recognized meeting a patient's communication needs as an essential component of quality care. However, communication between providers and patients is poor and even declining in busy hospital settings. Because of this, various strategies and approaches have been developed to focus on improving communication (Singh et al., 2011).

One way to address improving patient satisfaction scores is to incorporate templated whiteboards in patient rooms. Templated whiteboards are being utilized to

keep patients informed and updated on important information. By displaying information such as the primary and bedside nurse names, family contact information, and patient questions, these templated whiteboards help close the gap in patient understanding resulting from ineffective communication from the healthcare team (Tan, Evans, Braddock, Sheih, 2013).

Whiteboards not only help with ineffective communication, but also have the potential to significantly improve patient satisfaction overall. This may be a result of improved patient awareness of their care team and plans throughout their ED stay. To achieve these improvements, the templated whiteboards must be integrated into the daily work flow of the health care team and remain updated with correct information (Tan et al., 2013).

Significance of the Problem

Frequent causes of adverse effects, such as delays in treatment, can be related to communication failures. Such failures contributed to the 73 sentinel events reported by The Joint Commission (TJC) in 2014. Because of these sentinel events, TJC issued a *Quick Safety,* which is a newsletter addressing safety concerns, in 2015 to prevent the identified causative factors including communication errors (TJC, 2016). The number of adverse effects led to need for identification of strategies to improve communication among healthcare workers and between healthcare workers and patients.

Providers have typically focused on diagnosis and treatments to provide best care for patients. However, patients are often left with gaps in understanding of their medical care as a result of ineffective communication. Therefore, provider roles have shifted from

focusing on medical issues to focusing on improving communication among staff and patients (Tan et al., 2013).

One increasingly common strategy to improve communication is the placement of templated whiteboards in patient rooms (Sehgal, Green, Vidyarthi, Blegen, & Wachter, 2010). Improving communication with these templated whiteboards may increase patient satisfaction scores. With the Centers for Medicare and Medicaid Services now including patient experience in calculating a hospitals reimbursement rate, patient satisfaction scores are becoming increasingly important to healthcare facilities (Mazurenko, Zemke, & Lefforge, 2016).

Through patient satisfaction surveys, hospitals can either gain or lose up to 2% of their Medicare payments by 2017 based on results. A 2% loss places an average risk of $500,000 to $850,000 on any one hospital annually. However, this risk can also be turned to profit with good survey results. Press Ganey reports by improving satisfaction and gaining this reimbursement, the average hospital could earn up to $2.2 million to $5.4 million in additional annual revenue. This financial impact places a high importance on patient satisfaction scores and is typically one of the top three priorities of healthcare organizations (API Healthcare, 2015).

Not only do patient satisfaction scores affect reimbursement rates, but they can affect a patient's selection of hospital. Surveys, from independent companies such as Press Ganey, are sent to ED patients after they are discharged, and the results are posted online for public viewing. Each hospital's scores are compared to other local hospitals. These patient surveys are increasingly used as quality care markers. If patient satisfaction

scores are low, it may decrease the likelihood of patients returning to the hospital or acquiring new patients (Cowan, 2013).

In addition to cost being affected by communication, a patient's care and compliance with their plan of care can also be affected. Striving to promote patient centered care by focusing on improving communication, patients may have increased knowledge, barriers may be reduced for medication adherence, and transitions of care may be improved (Tan et al, 2013).

Population of Interest

The population of interest included in this project are adults seen in the ED who are 18 years of age and older. In 2016, there were 130.4 million ED visits in the United States. In 2014, 14.3% of adults with private insurance had visited the ED, while 35.2% with Medicaid, and 16.6% of uninsured had visited in the ED in the last year. Adults who live in nonmetropolitan areas are more likely than those living in metropolitan areas to visit the ED. Greater than 25% of non-Hispanic blacks report visiting an ED in the last year compared to 17.5% of non-Hispanic white adults, and Hispanic adults were even less likely to visit an ED than non-Hispanic white adults. Additionally, when considering age, younger adults 18-29 years of age where more likely to visit an ED than those 45-64 years of age (Gindi, Black & Cohen, 2016).

Another population of interest that is not included in the sample population is the nurses working the ED. These 62 nurses are included in the population because they're directly affected by the implementation of this project. They must make changes to their routine including updating the templated whiteboards and educating patients on their use. Their communication before and after templated whiteboard implementation is also being

surveyed by the patients and will possibly undergo a change with utilization of the templated whiteboards.

Clinical Question

Evidence-based practice clinical questions are asked in a PICOT format to help yield strong and relevant evidence. This format is comprised of the patient population, intervention of interest, comparison group, outcome, and time frame (Melynk & Fineout-Overholt, 2015). The PICOT question guiding this project is: In adult emergency department patients (P), does the use of templated whiteboards in addition to verbal communication (I) compared to verbal communication alone (C) affect patients' perceived communication between themselves and emergency department staff and satisfaction as evidenced by patient survey results (O) over a three-month period (T)?

Purpose of the Project

The purpose of this project is to identify an intervention to increase patient satisfaction scores related to communication for adult ED patients. If this intervention is found to have a positive impact, it could be implemented in EDs regionally. An aim of this project is to determine if improving patient communication will also lead to an improvement in patient satisfaction scores. Evidence shows a possible correlation exists between the implementation of templated whiteboards in patient rooms and the increase in patient satisfaction (Sehgal et al, 2010).

Therefore, the goal of this project is that nurses will utilize templated whiteboards in the ED setting and that by improving communication between patients and healthcare workers will in turn have a positive impact on patient satisfaction scores and lead to improved patient-centered care. It is also hopeful that the templated whiteboards will

improve patient's awareness of their care team and plans for admission or discharge (Tan et al., 2013).

Definitions

Sentinel Event: A patient safety event that is not related to the patient's illness that happens to a patient and results in death, permanent harm, or severe temporary harm (TJC, 2016).

The Joint Commission: A not-for-profit organization that accredits and certifies health care organizations in the United States (TJC, 2017).

Level II trauma center: A facility that can initiate definitive care for all injured patients by providing 24-hour coverage by general and specialty surgeons, trauma continuing education for staff, and incorporating a quality assessment program (American Trauma Society, N.D.).

Whiteboard: Regular, plain, dry erase board.

Templated whiteboard: Dry erase board with set design on it to be filled out for each patient including the nurse's name, provider's name, diet, ambulation ability, plan of care, and area for comments.

AGREE II: The Appraisal of Guidelines for Research and Evaluation (AGREE) II is an updated instrument used to evaluate the quality of reporting and the process of practice guideline development. The tool is comprised of 23 items, organized within 6 quality domains (Brouwers, 2010).

Summary

With Medicare and Medicaid reimbursement rates being affected by patient satisfaction scores, hospital administrators are interested in improving these scores to

maximize reimbursement (Mazurenko et al., 2016). With the ED being the entry point to

the hospital for patients, it becomes an important department to consider the patient

experience and patient satisfaction scores.

The utilization of templated whiteboards in patient rooms have been shown to

improve patient satisfaction scores as well as improve communication (Tan et al., 2013).

If these templated whiteboards can be implemented in the ED setting, positive results

may be seen in the department as shown in inpatient settings (Singh et al., 2011).

Chapter 2

To determine best practice for templated whiteboard utilization, a literature review was performed. A variety of databases were searched to gather evidence supporting the use of templated whiteboards and specifically looking for their association with increased communication and patient satisfaction. This chapter will discuss the details of the literature review as well as the evidence findings.

Literature Review

A literature review was conducted using the following databases PubMed, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Ovid, Sage Journals, and Cochrane Library. A variety of search terms were utilized to gather evidence to support the utilization of whiteboards in patient rooms and their influence on patient satisfaction. Search terms included *patient whiteboards, patient satisfaction in the ED,* and *communication in the ED.*

Limitations were applied to these search terms including only full text, published between the years of 2012-2017, and written in English. Prior to applying date limits in the initial searches, three articles found out of the limitation dates. These articles aligned very well with the aims of the DNP project so they were included in the literature review. A total of 2,605 results were obtained, which were narrowed down to 10 for review and evidence grading because these articles met all the inclusion criteria. Many studies focused on electronic boards in EDs that showed all the patients in the department as opposed to individual patient information and these were discarded for further review as they are a different type of board that doesn't focus on communication. Many articles focused on different forms of communication such as bedside report and were also

excluded. Only studies that focused on patient satisfaction and enhanced communication related to the whiteboards were included, the rest were excluded.

The Johns Hopkins Nursing Evidence-Based Practice Model (JHNEBP) was used for evaluation of the studies and The Appraisal of Guidelines for Research and Evaluation (AGREE) II was used for clinical practice guideline appraisal. The JHNEBP model is utilized to help differentiate evidence by providing a process to evaluate the strength and quality of the research. The three major components utilized for rating the strength of evidence include; the study design, quality, and directness (Dearholt & Dang, 2012).

The JHNEBP model evaluates strength of research evidence on a rating scale of level 1 through V. Level 1 evidence includes experimental studies, randomized controlled trials (RCT), and systematic reviews of RCTs, either including or not including meta-analysis. Level II evidence consists of quasi-experimental studies, systematic reviews of a combination of RCTs and quasi-experimental, or quasi-experimental studies only, with or without meta-analysis. Level III evidence is comprised of non-experimental studies including systematic reviews of combination RCTs, quasi-experimental and non-experimental studies, or non-experimental studies only, with or without meta-analysis. Also included are qualitative studies or systematic reviews with or without meta-analysis. Level IV evidence includes opinions of expected authorities and/or nationally recognized expert committees/consensus panels based on scientific evidence. Finally, Level V evidence consists of experiential and non-research evidence (Dearholt & Dang, 2012).

In addition to the level, evidence is given a quality rating based on a three-tier rating system of A representing High, B signifying good, and C indicating Low or major

flaw. These quality ratings are given based on consistency of results, sufficient sample size, control, reaching definitive conclusions, reference of scientific evidence in the literature review, and consistency of the recommendations (Dearholt & Dang, 2012).

A rating of A indicates studies that have consistent results, a sufficient sample size, adequate control, and definitive conclusions. A rating of B is given to studies that have reasonably consistent results, some controls, a sufficient sample size, and fairly definitive results. Finally, a rating of C is given to studies with little evidence that have inconsistent results, conclusions that can't be drawn, and an insufficient sample size. (Dearholt & Dang, 2012).

The AGREE II appraisal tool was used to evaluate one clinical practice guideline for this project. The AGREE II tool is utilized to assess the quality of the guidelines. The tool is comprised of six domains including scope and purpose, stakeholder involvement, rigor of development, clarity of development, applicability, and editorial independence (Brouwers, 2010). The guideline that was evaluated was *Best evidence statement (BESt). Increasing patient satisfaction by moving nursing shift report to the bedside*. This article was given an overall quality score of 6/7, indicating that it was close to being the highest possible quality.

Evidence Findings

There is a significant amount of research that indicates utilizing templated whiteboards in patient rooms improves several aspects of patient care including patient satisfaction scores (Sehgal et al, 2010; Singh et al, 2011, Tan et al., 2013). Specifically, areas of nurse communication, provider communication, and involvement in making decisions showed improvement in patient satisfaction scores (Singh et al., 2011).

Additionally, they were shown to improve patients' awareness of their care team and showed significant improvement in overall satisfaction with their care (Tan et al., 2013).

Furthermore, the templated whiteboards are being used as a way to improve communication between staff and patients (Sehgal et al., 2010; Johnston, 2014; Singh et al., 2011). When the templated whiteboards are placed near the patient's beds, providers and nurses can communication a wide range of information to the patients and since it's written out, and patients are able to look at the information if they forget their plan of care (Sehgal et al., 2010).

Research also concludes the use of templated whiteboards is recommend in each patient room (Tan et al., 2013). It is also recommended that the templated whiteboards be standardized and not left blank, as this can make the information messy and difficult to understand when it is not in a formatted fill-in pattern (Johnston, 2014). The evidence revealed that patients are most interested in having their provider, bedside nurse, tests planned, lab and test results, and plan for discharge displayed on the boards (Tan et al., 2013). This coincides with what Singh et al. (2011) found to be necessary to include on the templated whiteboards.

By displaying health care provider names, patients were better able to identify their health care team and those who could identify them were found to have higher satisfaction scores (Mercer, Hernandez-Boussard, Mahadevan, & Strehlow, 2014). Perceived wait times were also found to significantly impact satisfaction scores and by displaying expected wait times on templated whiteboards, patients can be informed on specific times which may lead to increased satisfaction (Son & Yom, 2017).

Research has also shown that by improving communication between patients and healthcare workers, patient satisfaction scores can be positively affected (Singh et al, 2011). Mollaoğlu & Çelik (2016) completed a study on important factors of patient satisfaction in the ED and found that communication is a significant factor in determining how satisfied patients are with their care. Additionally, they mention that obstacles hindering communication between staff and patients should be eliminated and steps towards improving communication should be taken (Mollaoğlu & Çelik, 2016).

Studies showed that at the core of patient satisfaction is feeling informed. Patients felt more satisfied with care in the ED setting when they were kept informed by nurses and had nurses with good communication abilities. The templated whiteboards help to keep patients informed by showing which tests are being completed and their expected time of completion (Mollaoğlu & Çelik, 2016). Additionally, by having a templated board, it aids communication in ensuring various details of the patient's plan of care are discussed with the patient.

One study shows a direct link between provider and patient communication and satisfaction with their experience in the ED. It is emphasized that communication and being informed are more important than actual wait time variables in determining patient satisfaction. Due to this, it is recommended that organizations focus on components of communication and keeping patients informed on their treatment to improve their patient satisfaction scores (Locke, Stefano, Koster, Taylor & Greenspan, 2011).

Information regarding the implementation and purpose of the templated whiteboards was best relayed via email to hospital providers (Singh et al., 2011). In regard to operational details, it was found that nurses were determined to be the ones

responsible for education and encouraging patients to use the templated whiteboard. Additionally, nurses were placed in charge of updating the information throughout the patient stay (Sehgal et al., 2010).

When considering barriers to whiteboard use, the research indicates that the largest barrier was the time it took to fill out the whiteboards and not having dry erase markers in the room when needed. To address these specific concerns, one study attached the markers directly to the whiteboards, so they would not be lost. To address the time constraints education was provided for expectations for what is to be filled out and to define whose role it is to fill them out (Tan et al., 2013).

Research also indicated many barriers to communication in the ED. These barriers included the rushed pace and many interruptions during conversations. Additionally, the pressure to complete tasks quickly and efficiently leads to a rushed pace while talking with patients, often leaving patient's questions adequately answered. Also, having other patients prevents nurses from updating patients as frequently as they may desire (Pun, Matthiessen, Murray & Slade, 2015).

Recommendations for Practice

Using templated whiteboards in patient rooms improves multiple aspects of patients' experiences with their care (Tan et al., 2013). Research shows that patient satisfaction scores regarding communication increased after placement of templated whiteboards in patient rooms that included provider names, scheduled testing, and an area for patient comments. Patient satisfaction scores rose in the areas of nurse communication, provider communication, and involvement in own care (Singh et al, 2011).

With patient satisfaction now being linked to reimbursement rates, hospitals are needing to focus on improving communication and patient awareness of their medical providers. TJC is also recommending displaying the names of patients' health care providers to improve patient satisfaction scores (Mercer et al, 2013). This research coincides with this DNP project and implementing communication templated whiteboards in each patient's room within the emergency department setting.

Gaps in the Evidence

Gaps in the evidence included having only a small number of RCTs, and much of the evidence was non-experimental or qualitative research. Much of the research revolved around incorporating the whiteboards in an inpatient setting rather than the ED. Additionally, the use of whiteboards in the ED setting is a relatively newer trend and therefore the volume of pertinent evidence was not quite as large as anticipated (Tan et al., 2013).

With the new trend in utilizing technology in patient care, there was mention of electronic whiteboards being utilized in patient rooms (Hertzum & Simonsen, 2016). There was a lack of research regarding the difference in manual dry erase whiteboards versus electronic boards and their effect on patient satisfaction scores. Additionally, among the articles, there was no tool consistently being utilized for evaluation of patient satisfaction with the use of whiteboards.

Evidence-Based Practice Model

The Iowa Model of Evidence Based Practice (see Figure 1) guided this project. This model guides research by providing a systematic process to guide health care professionals to use to improve patient care. Triggers act as a catalyst for nurses to seek

scientific knowledge and are what initiate the use of the model. Identifying a trigger to improve practice based on research is the first step in the model (Titler, 2001).

Following trigger identification, the next step involves determining the priority of the topic. How the topic fits into department and organizational priorities helps to gather support of nurse leaders and administrators so it's important to identify where the topic fits into the priority list. The next step in the model is to form a team that can aid in development, implementation, and evaluation of the project. Assembling research and related literature to determine evidence-based guidelines on the topic is then completed (Titler, 2001).

The critique process is started after gathering research to determine the use of each study in guiding the project. From there it is decided whether there is sufficient evidence or not to guide the practice change. The change in practice is often piloted before adoption to determine feasibility and effectiveness of suing the guidelines in various settings and situations. If the pilot is successful, adoption into practice is initiated. Monitoring of patient and staff outcomes is continued long-term after the implementation of the evidence-based practice change (Titler, 2001).

The Iowa Model starts by determining if the trigger to improve practice is problem focused or knowledge focused (Titler, 2001). This project is classified as a problem-focused trigger, since it was initiated by the need to improve patient and staff communication as well as patient satisfaction scores in the ED. After the trigger was recognized, it was set as a priority for the ED and this project was initiated.

Relevant research was then gathered and reviewed on this topic, as the model suggests. After the completion of the literate review, it was determined that there was a

sufficient research base and the project could move to the next step of the model. By

comparing patient survey results on whiteboard use before and after the implementation,

it will help determine if the whiteboard use is appropriate for permanent adoption into

practice (Titler, 2001).

      If the patient satisfaction scores and perceived communication show an increase

after implementation from the pre-survey results, nurses will be expected, by the ED

director, to utilize the templated whiteboards with each patient seen in the ED. If deemed

appropriate for adoption into practice, the model will continue to guide the project by

monitoring the outcomes over an extended period (Titler, 2001). Long term monitoring of

templated whiteboard use will be done by the ED Education Coordinator through

monthly compliance checks that already occur for other unit policies and procedures.
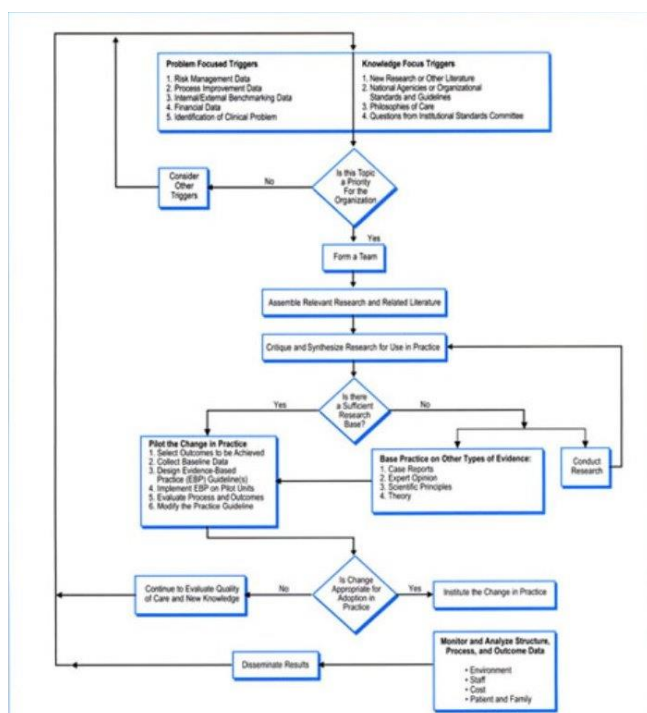
Figure 1. The Iowa Model of Evidence Based Practice. This figure illustrates the steps of

the Iowa Model of Evidence Based Practice (Titler et al., 2001).

Theoretical Approach

Hildegard Peplau's Theory of Interpersonal Relations (TIR) (see Figure 2) will serve as the theoretical foundation for this DNP project. This theory was developed to aid nurses in understanding what occurs during nurse-patient relationships as well as assists nurses in aiding patients to understand their health experiences. The TIR supports the aims of this project by supporting the need for improved communication between patients and health care providers to improve relationships and patient understanding of their experiences while in the ED (Peplau, 1997).

Peplau's TIR is comprised of three phases, the first is the orientation phase. During this phase, the nurse seeks essential information from the patient, but additionally aims to convey professional interest to the patient. This coincides with the goals of this project because templated whiteboards provide enhanced availability to patients by displaying the nurse's name so they are ensured to remember the name when needing assistance to ensure continuity of care. Figure 2 illustrates how both the nurse's and patient's previous experiences, expectations, and preconceived ideas influence the nurse-patient relationship during this phase (Peplau, 1997).

The working phase is the second phase in the TIR. This phase focuses on the development of the nurse-patient relationship. This is when the nurse should provide teaching and convey facts pertinent to the patient's health needs. Nurses must articulate these needs in a way that leads to increased patient self-understanding (Peplau, 1997).

The templated whiteboards provide assistance to nurses through this phase by initiating conversations about tests that will be done, expected waiting times, as well as

their ambulatory assistance needs. This allows patients to ask questions regarding their

plan of care and to better comprehend their health care needs.

The third phase is the termination phase which focuses on summarizing the work

of the nurse-patient relationship. In preparation for this, nurses should prepare patients

with discharge plans as well as ways to prevent readmission (Peplau, 1997). Again, the

templated whiteboards fit with this phase by providing an area to write discharge or

admission plans from the ED so patients are prepared for termination.
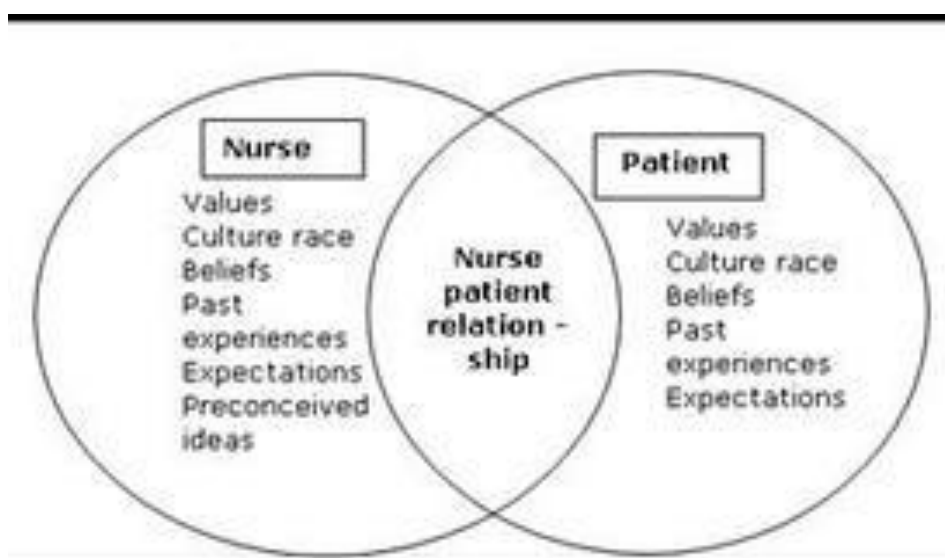
Figure 2. Peplau's Theory of Interpersonal Relations. This figure illustrates the

orientation phase of the Theory of Interpersonal Relations (Nursing Theories, 2012).

Change Theory

Kurt Lewin's Theory of Planned Change (TPC) (see Figure 3) will be utilized for

this DNP project by guiding implementation of the evidence-based practice change. This

theory can be applicable to clinical nursing practice by helping to avoid the common

drawbacks that hinder the success of implementing a change. Lewin's TPC provides a

detailed plan of how to design and apply a change by using three steps. This model

typically begins when an idea has merged into a plan for change (Shirey, 2013; Lewin,

1947).

The first stage is to initiate the change process by unfreezing and preparing staff

for the change. For this DNP project, a gap was recognized between the communication

between staff and patients. Recognizing this gap created a sense of urgency to initiate a

plan to change the current practice. A plan was then devised and barriers to success were

identified (Shirey, 2013). Lewis (1947), warns that opposing forces may arise if there is a

lack of readiness before moving to the second phase. To avoid this, multiple emails were

sent to staff beginning in June of 2017, preparing ED staff for the implantation of

templated whiteboards. There was also discussion of the templated whiteboards at three

monthly unit meetings.

Transitioning is the second phase of the TPC. Success in this phase relies on

coaching staff through fears and concerns and making sure they aren't losing sight of the

final goal. Not every ED staff member may be open to changing a process initially.

While the templated whiteboards are being ordered, staff were educated on details of how

to use the templated whiteboards and to answer any questions. Education was provided to

staff because according to Shirey (2013), taking the time to discuss the change with staff

may make the success of accomplishing change much more likely.

Finally, once the transitioning phase is complete, the final phase is to refreeze and

incorporate the change into practice and policy (Shirley, 2013). To get to this final phase,

nurses must recognize and understand the effects of using the templated whiteboards. At

the conclusion of this project, data was statistically analyzed and a change was

recognized. This evidence of change gave nurses the motivation to create a policy and practice change.

Putting the change into policy increases the chance of long-term sustainability. The department director created a policy at the completion of this project to enforce the chance. To ensure this change remains permanent, the ED staff workflow and practice includes using the templated whiteboards with every patient (Shirey, 2013; Lewin, 1947).

Figure 3. Lewin's Theory of Planned Change. This figure illustrates the stages of Lewin's change theory (Essien, 2015).

Summary

In summary, there is evidence indicating that implementing and utilizing templated whiteboards in patient rooms can increase patient satisfaction scores by improving communication between patients and staff. The Iowa Model of Evidence Based Practice guides this project on how to systematically incorporate an evidence-based change into practice. Additionally, Hildegard Peplau's TIR served as the theoretical foundation and emphasizes the importance of the nurse-patient relationship through open communication.

The TPC was utilized to guide the change. Focusing on the importance of each step is more likely to result in staff that will want to use the templated whiteboards and utilization of the templated whiteboards will become permanent practice for staff. Each of these theories and models influences this DNP project and will help guide it through each step of implementation.

Chapter 3

Method and Procedures

The aim for this DNP Project was to seek a correlation between the implementation of templated whiteboards in patient rooms and improved patient satisfaction scores in the ED setting. This chapter discusses various topics of the methods and procedures that were utilized for the project. It will mention the design, setting, and sample utilized for this project. Additionally, the intervention tool, procedure details, ethical considerations and stakeholders will be addressed. Finally, both the barriers and project impact will be discussed.

Design/Approach

This project follows an evidence-based quality improvement (EBQI) design. EBQI projects are used to improve patient outcomes by bringing about a change in practice, which is done by investigating a hypothesis about how a process might be improved. EBQI designs are comprised of processes designed to align with best current practice. They are often used in clinic practice to foster a culture to continually work towards providing the highest quality of care (Melynk & Fineout-Overholt, 2015).

This project fits this design as research was gathered within the last five to seven years to gather the evidence that whiteboards can improve patient and staff communication, which ultimately improves satisfaction of care provided by the ED staff. Evidence from more than five years ago was included because the articles aligned with the project goals. Also, the project focused on an aspect that is part of the nurses daily clinical routine, such as communication with patients and is working to improve the process (Melynk & Fineout-Overholt, 2015).

Setting

The setting for the DNP project was an urban, Midwestern ED located in a city of approximately 171,000 citizens. The population is primarily Caucasian at 86.2%, followed by 4.5% African American, and 2.8% American Indian (United States Census Bureau, 2016). This city is also home to many refugees from Bhutan, Somalia, Democratic Republic of Congo, Burma, Eritrea, and Ethiopia (Towncharts, 2017). There were 2,567 refugees resettled in the community in the last five years alone (Luteran Social Services, 2016). This ED accepts patients with private insurance, Medicare, Medicaid, as well as those who are uninsured.

The ED used for the setting of this project is a 32-bed unit and is part of a 545-bed hospital. It is considered a teaching hospital due to its affiliation with the state's medical school. This ED is a level II adult and pediatric trauma center. There are approximately 16 physicians, six nurse practitioners, three physician assistants, 62 registered nurses and 22 patient care assistants that are employed in the department. Services offered by the department include cat scan, ultrasound, magnetic resonance imaging, and xray. The top diagnoses seen include chest pain and abdominal pain (R. Miller, personal communication, October 22, 2017).

Sample

The sample for this project included adult ED patients, who were 18 years of age and older, and were able to speak and read English. Those excluded from the sample were those under the influence of illegal drugs or alcohol as well as those who weren't oriented to person, place, time, and situation, and those who didn't read or speak English. Additionally, those suffering from an emergent diagnosis such as a myocardial infarction

or stroke were excluded since their typical length of stay in the unit is very brief. The

sample included all genders and those of all nationalities who were English speaking. The

sample size was not known prior to data collection.

Development of Intervention/Tools

The assessment tool utilized for this project was a pre-and post-survey created by

the project manager (see Appendix E). The survey questions were developed based on the

literature review, project aims, and the key stakeholder's goals. Each of the questions for

this survey were developed based on evidence-based literature and expert opinion. For

example, Mercer (2014) identifies the ability of patients to identify their health care staff

as a factor for improved patient satisfaction and therefore, the survey asks if the health

care staff was identified.

The questions were answered with a 5-point Likert scale, indicating if they

strongly agree or disagree with the provided questions. There was also demographic

information collected including: gender, age, and level of education. These demographic

questions were also asked in the survey tools utilized in the research articles (Mollaoğlu

& Çelik, 2016; Tan et al., 2013; Son & Yom, 2017; Sehgal et al., 2010).

To ensure a patient didn't fill either the pre- or post-intervention survey twice, one

question on the survey addresses if they have filled out this survey before and if the

answer is yes, the project director clarified if the survey was done during the same survey

period. The survey was discarded if it is from the same survey collection time, however,

if the previous survey was done during the pre-intervention period and the survey is now

during the post-intervention period, the current survey was included in the project data.

This ensured that all the surveys collected during a given intervention time period were from different individuals.

This survey was an original tool and has never been used before, therefore there were no indicators of reliability or validity. To ensure face validity, the survey tool was presented to 10 ED experts including the department director and managers (see Appendix G). Feedback was given regarding wording of the questions as well as other concerns with the tool. Changes were made, and the final survey tool was created to reflect all suggested comments.

The intervention tool was based on evidence-based practice. Singh et al. (2011) shows a correlation between whiteboard use and increase patient satisfaction scores with whiteboards that have prewritten prompts that included provider names, testing, and areas for comments. In another study, having a templated whiteboard was highlighted as being necessary to standardize information given to patients and to improve ease of use for staff. They also recommended the names of the bedside nurse, provider, anticipated discharge date, and a section for questions (Sehgal et al, 2010). As a result of these studies, a templated whiteboard incorporating this information was developed for the intervention tool.

Project Procedure

The idea for a project to improve patient satisfaction originated from the ED's patient experience group. This group was formed to brainstorm ideas on ways to improve the patient's experience while in the ED. This group consisted of the ED director, who is the key stakeholder for this project, one of the department directors, the director of patient experience, and three ED nurses, one being the project manager. The idea to

utilized templated whiteboards to improve satisfaction scores originated from the Press Ganey solution starter for the ED. Since there was research to support whiteboard use and increasing satisfaction scores, the project was agreed upon (Singh et al., 2011).

Although the ED originally had plain whiteboards in patient rooms, they weren't being utilized and nearly always remained blank. The newly proposed templated whiteboards were different in that they have a set template for nurses to fill out to individualize information to each patient (see Figure 4). This standardized and ensured specific information was relayed to each patient.

The Wong-Baker FACES scale in addition to a 0-10 numeric pain rating scale were added to the board to meet the requirements of the organization's marketing committee. Since these boards will also be utilized for pediatric patients in the ED after this project is completed, it was necessary to have a validated pediatric pain scale on the templated whiteboard (Aziato, Dedey, Marfo, Avoka Asamani & Clegg-Lamptey, 2015). Additionally, Press Ganey (2014) recommends using comfort scales such as the Wong-Baker FACES scale in the ED to manage pain for adult patients who are unable to use a numeric pain rating system.

In addition to the adding the Wong-Baker FACES scale, the committee agreed that the clinical care leader's phone number should be placed on each board. The clinical care leader is the nurse in charge of the ED each shift and if there is a problem, patients will have access to their work phone number so that they may discuss any concerns if needed.

As previously discussed, the templated whiteboards consisted of names of the bedside nurse, provider, anticipated discharge date, and a section for questions (Sehgal et

al, 2010) in addition to the Wong-Baker FACES scale and clinical care leader's phone number. It was the nurses' responsibility to inform the patient on the templated whiteboard's use and its purpose. This was a vital component to the templated whiteboards success as the patient needed to understand how to use the board to understand their plan of care.

The boards were filled out by the nurses after completing the initial patient navigator in the computer. After the provider evaluated the patient, the nurses then updated the boards when they receive initial orders regarding blood test and imaging studies ordered. Nurses were also aware when results come back, and they can update the boards with that information as well.

Approval for the templated whiteboard design was sought from the organization's marketing committee, which was needed prior to hanging anything in patient rooms. After approval, the templated whiteboards were ordered. Funding for ordering the templated whiteboards was provided by the key stakeholder from the ED's budget.

During the time it took to order the signs, ED nurses were given instruction on templated whiteboard use and the project goals via written communication in an email format. This email was sent to all ED staff by the project manager (see Appendix H). The templated whiteboards were hung during a three-month period in the winter. Winter months were chosen as there were no expected visits from any accrediting organizations, which would take focus away from the project.

Surveys were collected from the sample population prior to the templated whiteboards to gather pre-intervention data for a total of six weeks. Surveys were collected at the time of discharge or admission from all consenting patients that meet

inclusion criteria of the sample population. Throughout the six weeks, the project

manager was in the ED collecting survey results from patients during a variety of times

during the day and days of the week (see Appendix F). In order to cover all hours of the

day, the 24 hours were divided equally among the 7 days. The ED director was able to

provide ED census statistics and the survey collection times were then selected by the

project manager to correlate with higher census times to obtain a highest sample number

possible.

After the pre-intervention data collection, the templated whiteboards were hung

in each room throughout the department. Following the implementation of the templated

whiteboards, the project manager collected post-intervention survey results for six weeks.

The same schedule was followed as the pre-implementation survey collection to ensure

data collection from the same time frames. This helped ensure a more accurate data

comparison of pre- and post-intervention data results.

Figure 4. Project whiteboard. This figure illustrates the templated whiteboard utilized in

patient rooms for this project.

Ethical Considerations

To ensure ethical considerations were met, this project underwent review and approval from the project manager's university's Human Subjects Research and Institutional Review Board (IRB). Additionally, approval was obtained from the hospital's IRB prior to conducting research at their facility. Data collection was non-invasive and there was no risk to subjects greater than that encountered in daily life (Polit & Beck, 2004). This project was considered exempt from both IRBs because the project involved the use of survey procedures and results were recorded in a way that human subjects couldn't be identified. The project also received approval from the institutions nursing research council that oversees and approves of all research being completed at the hospital.

To conceal identities, names were not associated with the patient surveys. The data for this project was only collected by the project manager. Additionally, the surveys were kept in a locker in the female locker room in the ED. This locker was padlocked and only the project manager had the combination.

There were no foreseeable risks or potential harm to patients completing the questionnaire. However, to ensure patients recognized this, there was an informed consent obtained from each participant. There were also no rewards or incentives offered to ensure coercion of subjects didn't occur.

Anticipated Analysis

The statistical test anticipated for this project was a *t*-test for independent samples. The surveys were collected prior to implementation of the templated whiteboards for six weeks. The templated whiteboards were then implemented, at which

time post-intervention surveys were collected for another six weeks. The *t*-test for

independent samples compares the means of two independent groups. This test helps

determine if the two different means, the pre and post survey scores, are significantly

different as a result of the templated whiteboard use (Kent State University, 2017).

Demographic information including patient age, education level, and gender were also be

collected. A one-way Analysis of Variance (ANOVA) was also anticipated to be used as

the statistical test to determine if specific demographic information has any statistical

significance related to the survey results.

Actual Analysis

The statistical test actually utilized for data analysis was the Wilcoxon rank-sum

test. This test is a non-parametric version of the two-sample *t*-test used to test for equality

of means in two independent samples. The Wilcoxon rank-sum test was utilized instead

of the anticipated t-test for independent samples due to needing a nonparametric test

because of the size of each of the independent samples. This test was completed for each

of the 10 survey questions to indicate if there was a difference in means for the pre and

post-intervention survey groups (University of Virginia Library, 2018).

Additionally, an adjustment of each the oringial *p*-values was calculated using the

Bonferroni correction to account for lack of true independence of each variable. It was

decided that an ANOVA test wouldn't completed on the demographic data collected due

to small sizes of the pre and post-intervention survey groups. The demographic data

would instead be presented in graphs for a visual display of the sample population (G.

Djira, personal communication, May 3, 2018).

Environmental and Organizational Context

The vision of the organization is to improve the human condition through exceptional care, innovation, and discovery. This project aligned with this mission by striving to improve patient and staff communication to provide the best care possible. Additionally, this project utilized an innovation for the ED by implanting the use of templated whiteboards. Through this project, discovery was made on possible ways to improve communication in a busy and stressful department (Prweb, 2010).

Press Ganey was created to help improve the quality of healthcare. They collect Consumer Assessment of Healthcare Providers Surveys (CAHPS) and gather data on patient satisfaction scores. Their mission is to support health care providers in understanding and improving the entire patient experience. This project also aligned with the mission of patient satisfaction improvement organizations such as Press Ganey. This project focused around the patients' experience while in the ED. It is hopeful that the quality of health care provided will see a positive impact from the improved communication and awareness patients will experience (Press Ganey, 2017).

Stakeholders/Facilitators

The primary stakeholders for this project included the numerous providers and nurses in the ED. Additionally, the chief nursing officer of the facility was a stakeholder and gave approval for the project. Interest for being a stakeholder came from wanting to improve patient experience as well to facilitate more effective communication among staff and patients.

The main contact for this project was the unit director. The facilitators for this project were the unit director and managers who were interested in seeking improvement

in communication and patient satisfaction scores in the ED. As previously discussed,

financial reimbursement is linked to patient satisfaction and the ED director oversees that

the ED can achieve good patient satisfaction scores. They also facilitated this project by

providing any financial assistance needed to complete the project. Additional

stakeholders included the patients of the selected ED, as they received care from the

nurses and were affected by the change in communication.

Anticipated Barriers

Anticipated barriers to implementing the use of communication whiteboards in

each patient room included financial barriers. Although the key stakeholder had agreed to

finance the cost of the project by providing the templated whiteboards, dry erase markers,

board cleaner, and erasers. If something had changed, alternative funding would have

been needed to be found. This also meant the key stakeholder needed to stay interested in

the project and its outcomes, in order to maintain this interest, the stakeholder was

updated frequently on the project's progress.

A large barrier that could have been encountered is the length of time and energy

required for nurses. In order to fully see the impact of utilizing the templated whiteboards

for improved communication, each nurse had to take the time to fill-out the information

on the templated whiteboard and keep it updated. Because of this, the nurses may have

had a negative attitude towards the templated whiteboards during initial implementation.

If this was encountered, a meeting would have been held with the key stakeholder to find

incentives for the nurses to utilize the templated whiteboards.

Finally, another possible barrier was that the information on the templated

whiteboards wasn't updated often, displayed incorrect information, or there was a lack of

oral communication to the patient regarding what was on the templated whiteboard. This

was initially covered in an email sent to all ED staff and then was reinforced at the

monthly unit meeting and biannual department validations required for all nurses. It was

vital that nurses explained to the patients how to use the templated whiteboard and what

the information meant to each of them. If the patient didn't understand it's use, then the

maximum benefit from the templated whiteboards couldn't have been reached. To ensure

nurses were updating the boards, the project manager completed random audits while in

the department collecting data.

  To determine if any of these barriers affected utilization of the templated

whiteboards a brief survey was given to staff asking their thoughts regarding predicted

barriers during the implementation process (Appendix L). The department director and

project manager utilized this information to determine if a change in process was needed

to ensure long term use of the templated whiteboards by staff.

Anticipated Impact

  The anticipated impact of this DNP project was to improve ineffective

communication utilized in the ED setting along with promoting patient-centered care. It

was hopeful that the implementation of the templated whiteboard in each patient room

would keep patients informed on important information and overall improve the patient's

satisfaction with their ED visit. It was anticipated that patient satisfaction scores would

increase as a result of this improved communication between patients and health care

staff (Tan et al., 2013).

  Organization. This project helped the organization meet requirements set in

place by the centers for Medicaid and Medicare. The organization must place a focus on

patient satisfaction to receive reimbursement for patient care. Additionally, TJC has created standards and recommendations for guide hospitals in focusing on the patient experience. Furthermore, Press Ganey scores are monitored by potential patients and this project may help recruit and secure new patients, which will help the organization to continue to expand. This project helped meet the organization's goals set in place by these agencies by focusing on an area for improvement.

Finances. The cost of this project mainly came from the need to purchase the templated whiteboards for each patient room. Smaller purchases required for the templated whiteboards included dry erase markers and erasers. The ED director agreed to purchase these templated whiteboards to see an increase in patient satisfaction scores. Although there are 32 beds in the department, it was decided that only 29 rooms would receive boards. This is due to three rooms not being utilized often and are for fast track type patients who are typically discharged quickly.

The anticipated cost for each board was around $150, which puts the total for the project approximately around $4,350. Dry erase markers were purchased for each room as well, adding a cost of about $50. Markers will be continued to be purchased monthly after completion of the project. A one-time purchase of erasers totaled around $150. Cleaner for the boards was also required and it is anticipated that it will be a monthly cost of around $50 a month. The education for staff was completed during one of the monthly unit meetings and via email, so nurses did not need to be paid extra to receive the education. The project is not lead to an increase in pay for staff related to overtime as the boards should be updated throughout the patient stay, during their normal scheduled hours.

Despite expenses for this project, the potential revenue far exceeds anticipated costs. As a result of Medicare and Medicaid reimbursement rates depending on patient satisfaction scores, interventions to improve patient satisfaction scores could lead to increase reimbursement (Mazurenko, Zemke, & Lefforge, 2016). With the numerous Medicare and Medicaid patients seen by this ED, this could lead to thousands of dollars in revenue. Although the specific number of Medicaid and Medicare patients seen at the project site is unknown, in 2012 the average of 21% of ED visits were Medicaid patients. With an average of 43,800 patients seen yearly in the ED where the project is being completed, it can be estimated that 9,198 will be Medicare patients based on the 2012 percentage (CDC, 2016).

Policy decisions. This project lead to the creation of a policy regarding nursing communication procedures. Verbal communication was previously utilized to relay information to patients regarding tests being completed, expected wait times, necessary ambulation assistance, and giving provider and nurses names. However, since the whiteboards were determined to be helpful to both staff and patients, a policy was created to incorporate their use into staff workflow.

Quality of health care. This project aimed to improve the quality of care received in the ED setting. In the ED setting there are extended periods of wait times, overcrowding, and multiple staff "hand-offs" (Mercer et al., 2014). This makes communication between staff and patients difficult and information may sometimes even be omitted unintentionally. By utilizing templated whiteboards, any staff member that enters the patient's room will knew the patient's status and important information such as

if they require assistance with ambulating or if they are to not have anything by mouth due to testing.

This project also focused on improving the patient's experience. Improved communication and a better understanding of what is being done during the patient's visit can increase patient satisfaction. Identification of health care staff has also been correlated with improved satisfaction and can lead to a higher quality of care because of a better perceived relationship with staff (Mercer et al., 2014).

Rural or underserved populations. Although this project was not conducted in a rural setting, the project had the potential to impact underserved populations. The community where the project was implemented is home to numerous American Indians, African Americans, and Hispanics (United States Census Bureau, 2016). These patients are seen in this ED and will be able to benefit from the templated whiteboard as well. In addition to the patient benefiting, these boards also aided their family members in being more informed on the patient's status.

With an increasing number of refugees moving to the area, this ED also serves these populations. This underserved population will likely not have had previous access to the health care system in the United States, so this will be a good opportunity to educate them on typical tests, wait times, and staff name recognition with the help of the templated whiteboard in their room.

Summary

The goal of this DNP project is to improve patient satisfaction scores with the use of patient templated whiteboards and through improved communication between staff and patients in the ED. Patient pre-and post-intervention survey results were used for

data collection. Statistical analysis was used to determine if the survey results were

different between the pre and post-intervention time periods. Although this project had

some financial requirements, there were only minimal additional barriers and there were

virtually no risks to project participants.

Chapter 4

Findings

After data collection, all the surveys were compiled to determine the project results. Project findings including demographic data, results, statistical significance, and clinical significance will be discussed in this chapter. Data was organized into a variety of graphs and tables for better visualization.

Demographics

Demographic data including gender, age, and education level were collected from the entire sample population as part of the surveys. There were 30 survey participants. Of these participants, 21were females (70.0%) and nine were males (30.0%) (see Figure 5). Additionally, seven (23.3%) participants were in the 18-33 age group, six (20.0%) were in both the 34-49 and 60-64 age groups and there were 11 (36.7%) in the 65 and older age category (see Figure 6). Breaking down the sample population into levels of education, zero were in the less than high school group, 11 (36.7%) were in both the high school degree/ GED and some college, no degree categories. The associate degree group had four (13.3%) participants, the bachelor's degree group had one (3.3%) participant and finally there were three (10.0%) individuals in the graduate/professional category (see Figure 7).
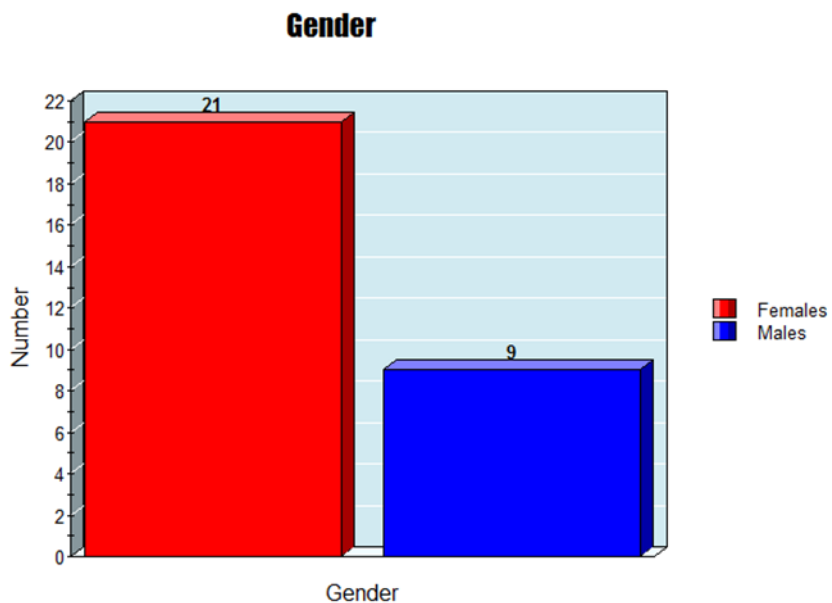
Figure 5. Gender of survey participants. This figure illustrates the number of each gender

surveyed.
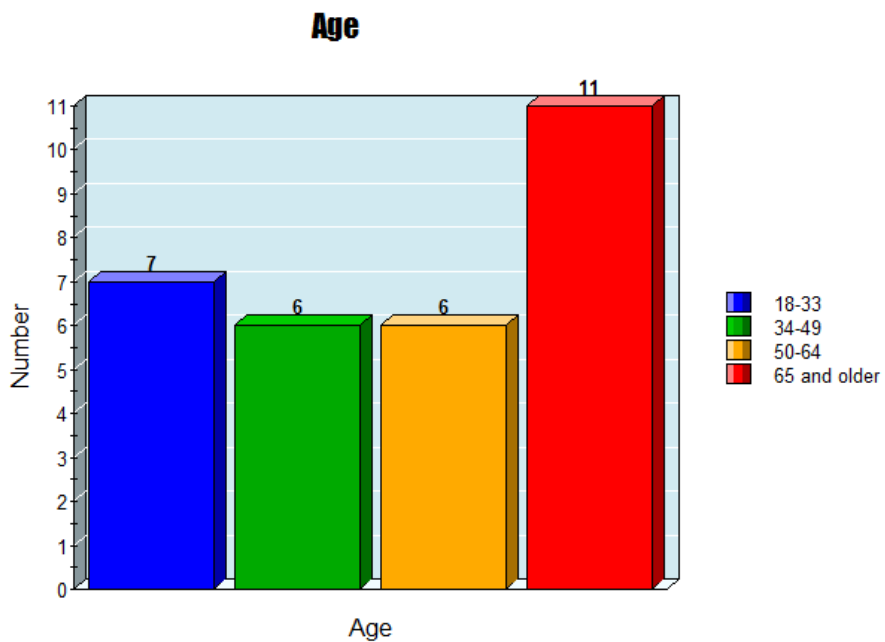
Figure 6. Age of survey participants. This figure illustrates the number of each age

group surveyed.
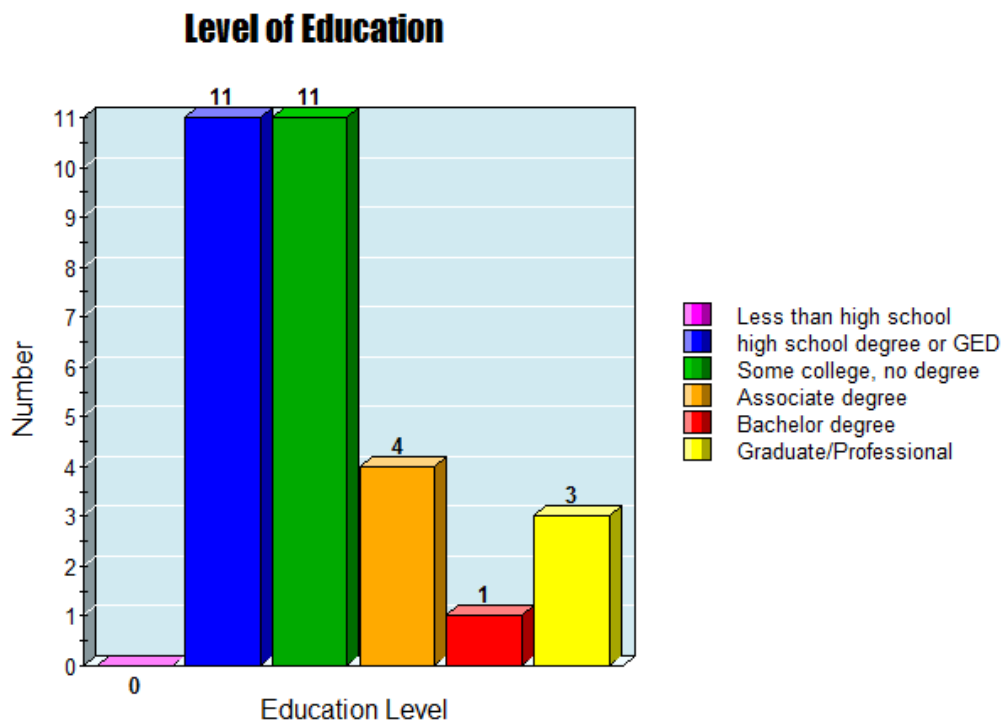
Figure 7. Level of education of survey participants. This figure illustrates the number of survey participants in each level of education category.

Results

The sample size of this project was 30. Seventeen patients were from the pre-intervention group and 13 were from the post-intervention groups. The results for each question from each of the 30 surveys were organized in a chart (see Appendix N) for data analysis. In order to conserve space on the data graph, abbreviations were used for each of columns, which represent each of the 10 questions asked in the survey.

To help interpret the data table the following are a list of the abbreviations with the questions they represent. WBU stands for the whiteboard in my room was used during my visit. WBUPD stands for the whiteboard in my room was updated with results

and changes in my plan of care throughout my stay. ROI is results of imaging and labs were completed and told to me within the stated time period. WBH stands for the use of the whiteboard helped me to better understand my plan of care. WBS is the abbreviation for the use of the whiteboard affected my satisfaction with the care I received today.

The next questions on the survey dealt with what was filled out on the whiteboards. Abbreviations were also used for these as well with RN representing if the nurse's name was filled out, PV for provider's name, POC standing for plan of care, DT abbreviates diet and finally, AMB indicating ambulation status. Demographic information is also presented in the data table. Gender and age required no abbreviation due to work length, however, ED was used as a replacement for education level.

The results of this project include both statistical and clinical significance. The statistics are important as they will indicate if there is a difference between the pre and post-intervention groups. However, it's also important to note what the staff thought of the new, templated whiteboards, as they affect their workflow as well as the patients that will visit the ED in the future.

Statistical significance. Data analysis was completed using the Wilcoxon rank-sum test. This test was completed for each of the 10 survey questions to indicate if there was a difference in means for the pre and post-intervention survey groups. To determine a difference in means, a p-value for each of the 10 questions was calculated. The p-value for statistical significance was set at $p <0.05$. The originally calculated p-value for each question is considering the unadjusted p-value (G.Djira, personal communication, May 3, 2018).

After statistical consultation it was determined appropriate to calculate an adjusted *p*-value for each question. Since all 10 questions were correlated, a positive change in one question could result in an expected positive change in all questions. Therefore, it can be determined that each of the variables are not truly independent. The unadjusted *p*-value is the result if each variable was truly independent, whereas the adjusted *p*-value accounts for lack of total independence of each variable. To calculate the adjusted *p*-value the Bonferroni correction was utilized. This calculation involves taking the unadjusted *p*-value and multiplying it by the number of correlated variables, or questions. Since there were 10 questions on the survey that were correlated, the unadjusted *p*-values were multiplied by 10 to calculate the adjusted *p*-value. This results in a new *p*-value that accounts for all possible correlation in the variables (G. Djira, personal communication, May 3, 2018).

The adjusted *p*-value level of significance was still set to be $p < 0.05$. For both the adjusted and unadjusted *p*-values, if $p < 0.05$ then the null is rejected, if the $p > 0.05$ then the null is accepted. When considering results for the surveys, the adjusted *p*-value will determine final statistical significance, as it indicates statistical significance with very high certainty (G. Djira, personal communication, May 3, 2018).

The first question on the survey is if the whiteboard in the room was used during the visit. The unadjusted *p*-value for this question was 0.0019 and the adjusted *p*-value was 0.019, which were both statistically significant and the null was rejected for both *p*-values. The second survey question was the whiteboard in the room was updated throughout the stay. The unadjusted *p*-value for this question was 0.0046 and the adjusted *p*-value was 0.046, which were both statistically significant and again, the null was

rejected for both *p*-values. The third question on the survey was that the results of imaging and labs were completed and told within the stated time period. The unadjusted *p*-value for this question was 0.043 and the adjusted *p*-value was 0.403. The unadjusted *p*-value was considered statistically significant and the null was rejected; however, the adjusted *p*-value did not meet statistical significance, therefore the null couldn't be rejected.

The fourth survey question was that the whiteboard helped to better understand the plan of care. The unadjusted *p*-value for this question was 0.0081 and the adjusted *p*-value was 0.081. The unadjusted *p*-value was considered statistically significant and the null was rejected; however, the adjusted *p*-value did not meet statistical significance and the null couldn't be rejected. The fifth survey question was that the whiteboard affected satisfaction with the care received. The unadjusted *p*-value for this question was 0.000423 and the adjusted *p*-value was 0.00463 which were both statistically significant and the null was rejected for both *p*-values.

The next questions were regarding what information was filled out on the whiteboard. For nurse's name the unadjusted *p*-value for this question was 0.0016 and the adjusted *p*-value was 0.016, which were both statistically significant and the null was rejected for both *p*-values. For provider's name the unadjusted *p*-value for this question was 0.0091 and the adjusted *p*-value was 0.091, The unadjusted *p*-value was considered statistically significant and the null was rejected; however, the adjusted *p*-value was not statistically significant, so the null couldn't be rejected. For listing the plan of care the unadjusted *p*-value for this question was 0.0148 and the adjusted *p*-value was 0.148, The unadjusted *p*-value was considered statistically significant and the null was rejected;

however, the adjusted *p*-value was not statistically significant, and the null couldn't be

rejected. For listing the diet, the unadjusted *p*-value for this question was 0.0148 and the

adjusted *p*-value was 0.0148, The unadjusted *p*-value was considered statistically

significant and therefore the null was rejected; however, the adjusted *p*-value did not

meet statistical significance and therefore the null couldn't be rejected. Finally, for

ambulation status the unadjusted *p*-value for this question was 0.004 and the adjusted *p*-

value was 0.04, which were both statistically significant and the null was rejected for

both *p*-values.

In summary, all of the questions had unadjusted *p*-values that were statistically

significant. After adjustment, 5 out of the 10 questions were still statistically significant.

These results are displayed in table 2. Figure 8 shows a graphic depiction of the survey

responses for each question from both the pre- and post-intervention groups.
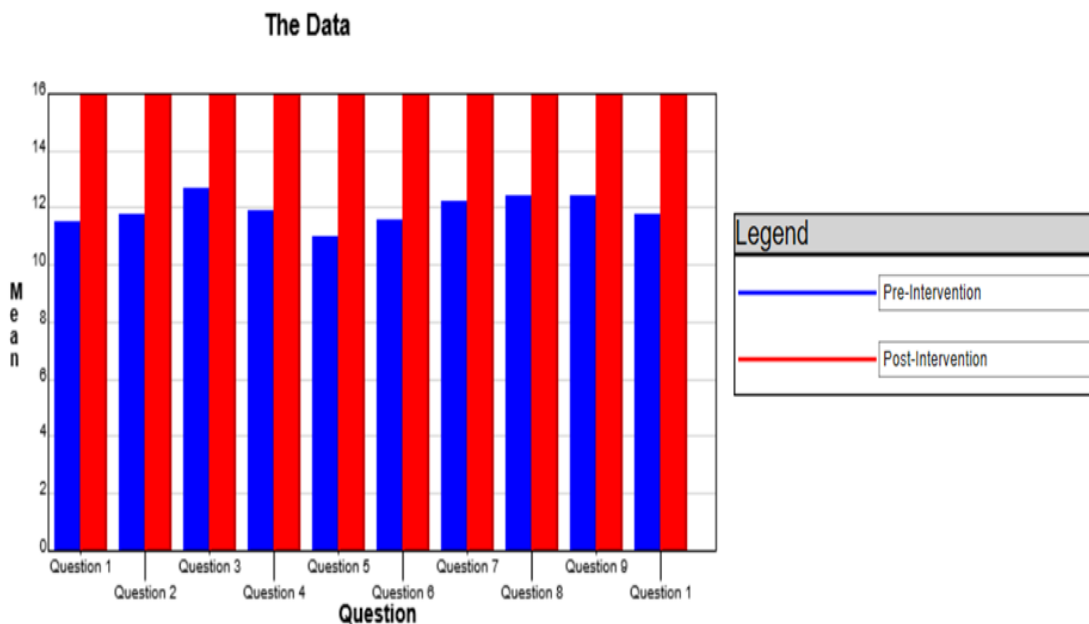
Figure 8. Responses to each question from the pre-intervention and post-intervention

surveys.

Table 1

Survey Abbreviations

Question Number	Abbreviation	Question
1	WBU	The whiteboard in my room was used during my visit
2	WBUPD	The whiteboard in my room was updated with results and changes in my plan of care throughout my stay
3	ROI	Results of imaging and labs were completed and told to me within the state time period
4	WBH	The use of the whiteboard helped me to better understand my plan of care
5	WBS	The use of the whiteboard affected my satisfaction with the care I received today
6	RN	My nurse's name
7	PV	My provider's name
8	POC	My plan of care
9	DT	My diet
10	AMB	My ambulation status

Table 2

Unadjusted and Adjusted p-values

Question	Unadjusted p-value	Accept or reject the null	Adjusted p-value	Accept or reject the null
WBU	0.0019	Reject	0.019	Reject
WBUPD	0.0046	Reject	0.046	Reject
ROI	0.043	Reject	0.403	Accept
WBH	0.0081	Reject	0.081	Accept
WBS	4.23E-04	Reject	0.00463	Reject
RN	0.0016	Reject	0.016	Reject
PV	0.0091	Reject	0.091	Accept
POC	0.0148	Reject	0.148	Accept
DT	0.0148	Reject	0.148	Accept
AMB	0.004	Reject	0.04	Reject

Clinical significance. In order to help determine clinical significance, a survey was sent to the ED staff asking for feedback regarding the templated whiteboards (Appendix M). This survey was comprised of six questions and had a section at the end of any additional comments. A total of 30 nurses, five patient care assistances, and one physician answered the survey. This was out of a total of 16 physicians, six nurse practitioner, three physican assistants, and 62 registered nurses, indicating that the response rate was 33%. A summary of the responses and the percentage rate are presented in Figure 9. The total number of participants used for the percentage was 35, due to one of the participants only completing the comment section.

The first question asked if the staff thought the templated whiteboards improved communication with patients. 45.7% of the responses said they agreed with that statement and 17.1% said they strongly agreed with the statement. This indicates that the staff perceived the whiteboards as being helpful with communicaiton. One provider commented that he liked "to draw pictures in the open spaces to describe certain medication conditions for patients".

 The next question was that the staff always included the nurse and provider names on the board. Again, 51.4% of the responses said that they agreed with this statement. This is an important question as having the nurse and provider names are linked to increasing satisfaction scores (Mercer, Hernandez-Boussard, Mahadevan, & Strehlow, 2014). This also allows the patient to ask for their nurse by name when they need assistance, which enhances the patient experience.

The third question asked if the whiteboards allowed other staff to know details of the patient's care. Results of the survey indicated that 37.1% of respondents agreed with

this question. This question has high importance as it correlates with safety factors of

ambulation and diet status which are important for all staff to know about each individual

patient.

The next question asked if they remembered to update the whiteboards, which

42.9% of respondents said they were neutral with this question. This indicates that staff

may need audits to give staff an incentive to continue to update the boards and a reminder

of the potential value of updating the boards regularly. The fifth question asked if they

felt the whiteboards were beneficial, which 40% of the respondents answered that they

agreed the question and 25.7% answered that they strongly agreed with the question. This

is important to note because it indicates that staff find a purpose in using the whiteboards,

which is an incentive to use them.

Finally, the last question was that the whiteboards are easy to use. The responses

to this question were that 45.7% agreed with the question and 28.6% strongly agreed with

the question. There were 5.7% of responses that strongly disagreed with this an 20% that

were neutral. In reading the comments section of the survey (Appendix M), this was

probably related to the height at which they templated whiteboards were originally hung

as well as the difficulty in erasing the original templated whiteboards. After this survey, a

new whiteboard material that was easier to erase was ordered and they were hung lower

for shorter staff members. This response to the comments will hopefully lead to a positive

improvement in these responses.

Survey Questions: Please mark the most appropriate box that represents your feelings of satisfaction.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
The templated whiteboards improve communication with patients	1 (2.9%)	1 (2.9%)	11 (31.4%)	16 (45.7%)	6 (17.1%)
I always included the nurse and provider names on the board	2 (5.7%)	4 (11.4%)	9 (25.7%)	18 (51.4%)	2 (5.7%)
The whiteboards allow other staff members to know details of the patient's care	2 (5.7%)	5 (14.3%)	10 (28.6%)	13 (37.1%)	5 (14.3%)
I remembered to update the whiteboard throughout the patient stay	3 (8.6%)	10 (28.6%)	15 (42.9%)	7 (20.0%)	0 (0.0%)
I feel the whiteboards are beneficial	2 (5.7%)	1 (2.9%)	9 (25.7%)	14 (40.0%)	9 (25.7%)
The whiteboards are easy to use	2 (5.7%)	0 (0.0%)	7 (20.0%)	16 (45.7%)	10 (28.6%)

Figure 9. Nursing survey responses.

Summary

In summary, there were both female and male survey participants that represented each of the age groups and nearly all levels of education. Each of the survey questions were initially found to be statistically significant, however, after adjusting the *p*-values for possible inflation due to the survey having multiple correlated variables, only half of the questions still have a statistically significant *p*-value. In addition to statistical significance, there was clinical significance to this project as a high percentage of ED staff agreed that they perceived the whiteboards as improving communication with patients, that their use is beneficial, and that the whiteboards are easy to use.

Chapter 5

Conclusions

In the previous chapter, the results of the data were presented. In this chapter data interpretation and its relation to clinical problem will be discussed. This chapter includes topics such as clinical implications, barriers, limitations, sustainability, impact, new evidence generated, and finally recommendations for future projects.

Discussion of Outcomes

The PICOT question for this paper was related to determining if the templated whiteboards compared to verbal communication alone lead to an increase in perceived communication and patient satisfaction scores. When looking at the unadjusted p-values, each of the questions indicated a statistically significant change in the pre and post-intervention survey results. This indicates that the templated whiteboards did have an impact on patient satisfaction scores as well as an improvement in patient's understanding of their plan of care. This also shows that the templated whiteboards were updated frequently and filled out to include factors such as provider and nurse names that have been correlated to increasing patient satisfaction scores as well.

Once the p-values were adjusted to account for correlation between the 10 variables, the p-value for the templated whiteboards affecting satisfaction was still found to be statistically significant. This indicates that this change was significant between the pre and post- intervention groups, further strengthening the evidence that the project achieved the goal of impacting patient satisfaction scores. The adjusted p-values for whiteboard use and updating the whiteboards were also still found to be significant. This

indicates that the templated whiteboards were being utilized and being updated with certainty.

The *p*-value was also determined for which items on the boards were filled out. The unadjusted *p*-values were statistically significant for having the nurse's name, provider's names, plan of care, diet and ambulation status filled out. On evaluation of the adjusted *p*-values, the nurse's name and ambulation status remained statistically significant in the different between pre and post-intervention survey results. There could be many reasons for this including that nurses would start to fill out the boards by writing their name and then forget to fill out the rest once the provider saw the patient.

Staff survey results of the project indicate that the staff feel the templated whiteboards were easy to use, which is important when considering sustainability of the project. The templated whiteboards affect the staff's workflow so it's important that the boards are easy to use when working with patients. The survey also indicates that the staff feel the templated whiteboards are beneficial to the patients. This is important to consider because staff are more likely to continue to have positive feelings towards the boards if they understand and agree with their purpose.

When reflecting on the PICOT question of this project of whether or not the templated whiteboards influence perceived communicaiton between patients and staff, the results of the staff survey on perceived communicaiton is a vital component of the project outcomes. As previously mentioned, 45.7% of surveyed staff agreed that they felt the templated whiteboards improved communication with staff. It's this perceived improved communication that is important as it relates to improved patient satisfaction scores (Locke et al., 2011).

It's also important to note the demographic results of the pre- and post-intervention surveys. A large majority of the patients were female, in the age group of 65 and older, and education levels of high school degrees/GED or some college, but no degree. Since there is a clear majority category for each demographic question, this gives a good indication of what the sample population was like and that most patients that were surveyed were similar to each other in terms of gender, education level, and age.

Clinical Implications

The main clinical implication of this project is enhanced communication. After reviewing staff surveys, it is evident the templated whiteboards were helpful in improving communication by visually displaying information for visitors, patients, and staff to see in addition to verbal communication alone. The templated whiteboards standardized information that nurses and providers told patients so that all patients would be informed of details related to their ED stay that can often be forgotten to be told to patients, such as average wait time for tests and diet status.

In addition, the templated whiteboards increased both staff and patient's awareness regarding certain patient safety topics. Prior to the templated whiteboards, patients were not always told their diet or ambulation status right away. By having to fill out the templated whiteboards, it required staff to education patients on these topics. Furthermore, other staff answering call lights or helping the patient were able to see these details without having to ask the primary nurse or look in the patient's chart.

Identified Barriers and How Barriers Were Overcome

There were a few potential barriers identified prior to implementing the project. One of the barriers included financial cost of the project, which as planned was financed

by the key stakeholder. There were no complications or further barriers related to cost of the project as it was all covered.

Another major anticipated barrier revolved around the time required of nurses as well as keeping the templated whiteboards updated frequently. It was discussed prior to implementing the project that attitude towards the new boards may have an impact on the project success in regard to keeping the boards updated and educating patients on their use. However, the time required to updated did not seem to be a barrier while caring for the majority of patients.

In order for staff to have an avenue to voice their opinions and to gain insight on the use of the new, templated whiteboards, staff were asked to fill out a survey regarding the positives and negatives of the whiteboard use. Despite an overall positive attitude towards the boards, there were some barriers to overcome that were brought up by the staff. These barriers included difficulty erasing the boards, remembering to fill out the boards while caring for critically ill patients, and the boards being too tall to fill out for short individuals.

 To overcome these barriers, a new whiteboard material was ordered that was easier to erase and when these boards came in they were hung lower for shorter staff members to be able to reach all areas. The boards were replaced by the manufacturer for no additional cost so there were no financial implications to this change. Another suggestion was regarding a team approach to filling out the whiteboards. In order to help with this barrier, it was decided that the service representative who walks patients to the room would aid nurses in filling out patient and nurse names on the boards. This change in process was agreed upon by the staff and remained in the final workflow.

Limitations

Limitations for this study included a smaller sample size than desired due to lower than expected ED census levels during data collection times. Additionally, it was desired to gather data from a variety of days and times, despite knowing some of the hours wouldn't yield a high increase in sample size. A larger sample size would have yielded more data for statistical analysis and could have made more answers statistically significant after adjustment. Additionally, the pre and post-intervention groups where comprised of different age groups and education levels, which may have potentially impacted data results.

Length of time was also a limitation in this study. With needing to complete the project by a certain deadline, data collection took place over 12 weeks. If time would have been extended, there would have better data on if the nurses continued to utilize the templated whiteboards and to increase the size of the sample population.

Limitations were also only including English speaking patients in the sample population because the templated whiteboards were only printed in English. For those who don't speak English, official medical translators were still used for verbal communicaiton during their ED stay. Additionally, demographic data regarding race was unable to be asked as the nursing research board was concerned about race being an identifier. This limited data regarding if race influenced survey responses and opinions of the templated whiteboards use.

Furthermore, surveys to patients could not directly ask if they had improved patient satisfaction, therefore the question on the patient's surveys were worded as if

patient's felt the templated whiteboards impacted their satisfaction. This means it is unknown whether the impact was a negative or positive impact on satisfaction.

Finally, on the staff survey, the first question asked if the templated whiteboards improve communication with patients. However, there is no way to measure if communicaiton was actually improved and it would be more appropriate if the wording of the question was related to if staff perceived the whiteboards to improve communication with patients.

Sustainability

After completion of the project, sustainability is an important consideration. Statistical and clinical results of the project were shared with the key stakeholder and since the results aligned with the goals of the key stakeholder, the project will be continued. The key stakeholder decided to permanently incorporate the use of the templated whiteboards into the staff workflow by creating a policy. This expectation was shared to staff during a monthly unit meeting. To ensure that staff are using the templated whiteboards as directed, the ED's performance improvement nurse will be assigned the task of secretly completing audits on the use of the whiteboards in the department at any given time.

Actual Impact

The impact of this project is notable in that it was able to achieve the goal in that the templated whiteboards had an improvement on patient satisfaction during the project. The goal of the department was to accomplish an increase in these scores by focusing on improved communication. The templated whiteboards opened a different avenue of

communication between nurses and patients by visually displaying pertinent information to their plan of care and not relying on verbal communication alone.

Organization. This project had an impact on the organization by helping to improve patient satisfaction scores within the DNP survey period. Certain reimbursement rates are affected by satisfaction scores, so this project may help the organization get the maximum reimbursement rates from Medicaid and Medicare possible. The organization can also attest to the focus on patient satisfaction and experience when TJC visits for surveys. Additionally, surveys sent to the patient from the hospital, such as Press Ganey, can hopefully also indicate a rise in satisfaction similar to the rise in project survey results. If these scores also rise as a result of the project as expected, there may be an increase in patient recruitment and retention which will increase organizational income.

Finally, this project meets the departments needs for a quality improvement project set in forth by the organization. The results of this project will be displayed via poster at the organization's annual performance improvement poster session to promote the concept as a possible way to improve patient satisfaction. The results of this project have been shared and the templated whiteboards have been ordered for other large EDs within the organization. It is hoped that the organization will then see an increase in ED patient satisfaction scores across the system as the templated whiteboards are implemented.

Finances. The key stakeholder financed this entire project from the ED's budget. The whiteboards were ordered through the organization's marketing department and cost $200 each and were ordered for 29 rooms, which totals $5,800. Despite the change in whiteboard material, there was no additional cost associated with this change. In addition

to the boards, whiteboard markers and board cleaner was purchased totaling $75. As anticipated, an email was sent to staff regarding the project so there was no additional cost related to training or educating nurses on the whiteboard use. This puts the total cost of the project at $5,875. There will be ongoing monthly costs due to needing dry erase markers and cleaner when they run out of the stock bought at the initiation of the project.

Policy decisions. Since the results of the surveys indicated that the whiteboards helped improve communication and patient satisfaction with ED visits, utilizing the templated whiteboards was made into a policy. This policy, in summary, states that the use of the templated whiteboards will be integrated in the staff workflow. It is expected that nurses fill out the whiteboard on patient arrival with provider and nurse name and continue to update the templated whiteboards throughout the patient's ED stay. The service representative is included in the policy so that during busy times they are able to fill out the nurse's name on the whiteboard when walking patients back to the room, however, the it's ultimately the nurses' responsibility that the templated whiteboards display their name and are filled out entirely.

Quality of health care. The quality of health care provided to patients in the ED was positively affected by this project. As evidenced by survey results, patients felt better informed on their plan of care during their visit. The boards also allowed patients and family members to ask for the nurse by name, which can possibly allow for a comfortable experience and enhanced patient/nurse relationship. Finally, the boards also affect the quality of care as they display important information such as ambulation status and diet to promote a safer ED visit for the patient.

Rural or underserved populations. Both rural and underserved populations were affected by this project. As previously mentioned, although the ED that served as the setting for this project is not located in a rural area, there are many patients from rural surrounding communities treated in this ED. Additionally, the town were the project took place is home to a racial and ethnically diverse population, homeless individuals, and serves those with a wide variety of insurance plans. Since the templated whiteboards were utilized in all rooms, rural and underserved populations were exposed to the templated whiteboards. Even if they were not involved in the project, the templated whiteboards still had an opportunity to impact their satisfaction and communication with staff while in the ED.

New Evidence Generated for Practice

After conclusion of this project, it's necessary to reflect upon what new evidence was generated for practice as a result of this project. Templated whiteboards are more commonly found on inpatient floors, however, these templated boards worked really well for the ED setting. The ED that was the setting for this project has becoming increasingly busy each year and therefore staff can't always get to each of their patient's rooms frequently. These boards acted as a way to relay information and keep patients informed on their plan of care, especially with result wait times and tests being completed.

The impact this project had on practice includes improving communication between patients and staff members. In a busy department, effective communication can be difficult, and these whiteboards help bridge the gap left from just using verbal communication. Additionally, the templated whiteboards allow providers to write their

plan of care of each patient, which allows not only patients, but family members and other staff members to see the plan of care as well.

Discoveries of this project included realizing that location and height that the boards were hung made an impact on the nurses' opinions and use of the boards. Additionally, it was discovered from verbal communication during data collection, that family members appreciate the templated whiteboards especially so they know the nurse and provider names.

Recommendations for Future Projects

After completion of this project, there are multiple recommendations for future projects related to this topic. These recommendations include considering the viewpoint of the family members and their satisfaction and perception of communication with the use of the templated whiteboards. During data collection, many family members of ED patients voiced their opinion and it would be helpful to consider their thoughts as family members' opinions can affect patient satisfaction scores as well.

Additionally, it would be helpful if race and other languages could be incorporated to gather their specific viewpoints, as the location of this project is home to many refugees from numerous countries. Another possible for area of research would be to consider the possible correlation between the templated whiteboard use and decreased fall rates with the listing of ambulation status. By listing the ambulation status on the board, this would alert all staff that the patient should not be getting out of bed or requires the assistance or more than one staff member while ambulating.

Finally, this project looked at results of surveys completing while the patients were still in the ED. A recommendation would be to look at longer term survey results

such as those from Press Ganey to look for an increase in scores and watch for trends related to when the new, templated whiteboards were implemented.

Summary

In summary, this project's goal was to determine if templated whiteboards in the ED setting had an impact on communication between staff and patients leading to increased satisfaction scores. After statistical analysis, the questions regarding if the whiteboard was used and updated as well as if it affected the patient's satisfaction were statistically significant in the difference between the pre and post-intervention groups. Clinically, this indicates that since the templated whiteboards were being used and updated, that communicaiton was enhanced between the ED staff and patients. Additionally, filling out the templated whiteboards also standardized the information being explained to patients specially safety topics of ambulation and nutrition status. Nursing survey results further indicated the positive impact the staff felt the templated whiteboards had on communication between themselves and the patients.

With these positive results, this project is considered successful in finding a means to increase patient satisfaction scores. This lead to a need for sustainability and integrating into the staff workflow through creation of a policy. The results of this project extend further than the setting of this project as results will be shared within the entire organization and will hopefully impact the quality of care of patients in EDs throughout the entire system.

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Appendix A

University IRB Approval

South Dakota State University
SDSU

Office of Research Assurance
and Sponsored Programs

Box 2201, SAD 200
SDSU
Brookings, SD 57007-1998
Phone: 605-688-5051
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Dianne.Nagy@sdstate.edu

To: Gabrielle Price, College of Nursing

Date: December 12, 2017

Project Title: Whiteboard Implementation in the Emergency Department

Approval #:   IRB-1712007-EXM

Thank you for bringing your project to the Human Subjects Committee. Your project is approved as exempt from the Common Rule because it fits the following category (from 45 CFR 46.101 (b)):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

If there are any unanticipated problems involving risks to subjects or others or changes in procedures during the study, please contact the SDSU Research Compliance Coordinator. Please inform the committee when your project is complete.

If I can be of any assistance, don't hesitate to let me know.

Sincerely,

Dianne Nagy
Acting IRB Coordinator

Appendix B

Organizational Approval

Letterhead

Date 11/17/2017

Re: Letter of Agreement for Onsite Research/EBP - Sanford Sioux Falls:

This is to confirm that we agree to collaborate with South Dakota State University on a research/EBPproject entitled Whiteboard Implementation in the Emergency Department, conducted by South Dakota State University graduate student Gabrielle Price.

We are aware that the procedures used in this project have been reviewed by Sanford Human Research Protections (IRB) and deemed not human subject research. Procedures for this study include a survey given to patients with original whiteboards and to those with new, templated whiteboards. If minimum of information is necessary to the research/EBP project and is to be collected from medical records, data access must be approved by the Sanford Privacy Office. Precautions are in place so that information will not be identifiable.

We understand that any protected health information, such as names, addresses, social security numbers, medical record numbers, account numbers, birthdates, admission and discharge dates, that is abstracted from medical records for research purposes will be de-identified by recoding by the principal investigator and then deleted from the working database. Original identifiers will be secured on a separate file in a separate computer in a locked area, accessible only to the principal investigator. There will be no data transfer. Analysis will be done on inaccessible, password protected computers, and original identifiers will be deleted by the PI within 6 months after completion of the study.

Aggregate Sanford Health clinical data will remain confidential and will not be shared outside of the organization without specific authorization.

This letter confirms that we are aware of the conduct of this project in the emergency department and agree to collaborate with the researcher and the project entitled Whiteboard Implementation in the Emergency Department.

Sincerely,

Robin Huether RN

Robin Huether
Emergency Department Director

_11-24-17_
Date

Andrew Munce
Chief Nurse Executive

_11/27/17_
Date

WHITEBOARD IMPLEMENTATION IN THE EMERGENCY DEPARTMENT

Appendix C

Evidence Table

Citation	Level of Evidence	Sample/Setting	Participants (n)	Study Design/ Purpose	Intervention	Results	Comments: Strengths and Limitations
Johnston, E., Fenicle, R. N., & Jacqueline, D. (2014).	IIIA	Patients from 13 units and 4 emergency departments	125 completed surveys	Audit of whiteboard use after implementation	Implementation of structured whiteboards	Press ganey scores increase	They audited how much the whiteboards were being utilized
Locke, R., Stefano, M., Koster, A., Taylor, B., & Greenspan, J. (2011)	IIIB	Parents of pediatric patients seen in the ED who completed a press ganey survey	456 caregivers	Retrospective study of those who completed press ganey surveys	Non-experimental study	Satisfaction scores are dependent on interpersonal communication and interaction of ED activities	Data collected from only those who filled out the survey
Mercer, M. P., Hernandez-Boussard, T., Mahadevan, S. V., & Strehlow,	IA	ED of a large, suburban, academic teaching hospital with an ED residency program. Patients	219 in the preintervention, 267 in postintervention	Survey-based study of ED patients. Patients were surveyed prior to and after deployment of multimedia physician	Multimedia intervention in the waiting room	Patient satisfaction scores were higher in those who could identify their physician	Enrollment was limited to 12 hours a day, the survey was voluntary. May not have included all

M. C. (2014)		presenting to the ER between 11am and 11pm		identification tool in the waiting room			possible factors contributing to physician identification
Mollaoğlu, M., & Çelik, P. (2016)	IIB	Emergency department setting	84 ER patients between the hours of 0800-1800	Descriptive study	Patient information and satisfaction level forms were filled out by patients	For overall patient satisfaction from nursing care, 66 were satisfied, 17 were unsure and 1 was dissatisfied	Only gathered patents from 0800-1800
Newgard, C. D., Fu, R., Heilman, J., Tanski, M., Ma, O. J., Lines, A., & French, L. K. (2017).	IA	Urban academic ED	25 emergency medicine faculty providers	Piolet randomized controlled trial	20 minute meeting to introduce the funnel plot feedback tool	No statistical significance for the intervention group for increased overall doctor ratings	This was a piolet trial, the effect on resident care is hard to estimate, not possible to blind providers in the education group
Tan, M., Hooper Evans, K., Braddock	1B	Stanford University Medical Center, patient	104 patients total; 56 patients with whiteboards	Randomized control trial to investigate effectiveness	The placement of whiteboards in patient rooms	Patient with whiteboards were more likely to know	Does not help those who do not speak

3rd, C. H., & Shieh, L. (2013).		between age 18-91 on a general medical floors with a minimum stay of 3 days	and 48 patients without whiteboards	of whiteboards in patients' rooms on improving patient understanding and satisfaction with their care		their physician's name, understand goals for admission and were more satisfied with treatment	English or those who have altered mental status
Sehgal, N. L., Green, A., Vidyarthi, A. R., Blegen, M. A., & Wachter, R. M. (2010).	IIIB	Bedside nurses, internal medicine housestaff and faculty from the Division of Hospital Medicine at the University of California	104 nurses, 118 internal medicine housestaff and 31 hospitalists	Non-experimental study involving surveys to investigate participants' experiences of whiteboard interventions	No direct intervention. Multiple choice question survey was given to bedside nurses regarding whiteboard use	All respondents believed that teamwork, communication, and patient care could be improved by whiteboards.	Limitation was they didn't ask patient their perceptions of the whiteboards, just the staff
Sharieff, G. Q., Burnell, L., Cantonis, M., Norton, V., Tovar, J., Roberts, K., & Russe, J. (2013)	IIA	ED with an annual census of 41,048 patients.	232 ED patients	Pre and post intervention ED redesign study	Implementing a quick triage system to see effect on patient satisfaction	The press ganey scores increased, however, weren't statistically significant	Single-site study, need to fully assess staff impact
Singh, S., Fletcher, K.,	IIA	430 bed urban academic	Surveys were sent to 37% of	Quasi-Experimental	Whiteboards were placed in	Patient satisfaction	Actual use of the

Pandl, G., Schapira, M., Nattinger, A., Biblo, L., & Whittle, J. (2011).		medical center in the Midwestern United States. Placement of whiteboards on 4 general medical wards compared to patients on 7 surgical wards.	discharges from each ward, unknown specific number	study. Simple t tests were used to compare patient satisfaction scores before and after the placement of whiteboards in patient rooms	patient rooms to help improve communication with families and patients	scores with communication improved significantly after placement of whiteboards, while the control group scores remained the same.	whiteboards was not monitored, low response rate (28%)
Son, H., & Yom, Y. (2017).	IIIA	National data file from the Korea Health Panel Survey	923 patients and 882 companions	Non-experimental study. Cross-sectional design investigating determinants that influence satisfaction with medical services at the emergency department	NA	Being older, female, and employed contributed to greater patient satisfaction with service	The Likert scale used to measure satisfaction level may not reflect the complicated concept of satisfaction.

WHITEBOARD IMPLEMENTATION IN THE EMERGENCY DEPARTMENT

Appendix D

Literature Search Results

Database	Search terms	# Results	# Retained
CINAHL	Patient whiteboards	22	1
CINAHL	Patient satisfaction in the ED	575	2
CINAHL	Communication in the ED	763	0
PubMed	Patient whiteboards	16	2
PubMed	ED communication	1,123	3
Cochrane Library	patient satisfaction in the ED	6	0
Cochrane Library	Patient whiteboards	3	0
Sage Journals	Patient whiteboards	54	1
Ovid	Patient whiteboards	2	0
Ovid	Communication in the ED	20	0
Ovid	Patient satisfaction in the ED	21	1

WHITEBOARD IMPLEMENTATION IN THE EMERGENCY DEPARTMENT

Appendix E

Emergency Department Satisfaction Survey

Gender:

▯ *Male*
▯ *Female*
▯ *Transgender*

Age:

▯ *18-33*
▯ *34-49*
▯ *50-64*
▯ *65 and Older*

Is this your first time completing this survey:

▯ Yes
▯ No

Education:

▯ *Less than high school degree*
▯ *High school degree or GED*
▯ *Some college but no degree*
▯ *Associate degree*
▯ *Bachelor degree*
▯ *Graduate/Professional degree*

Survey Questions: Please mark the most appropriate box that represents your feelings of satisfaction.	**1** Strongly Disagree	**2** Disagree	**3** Neutral	**4** Agree	**5** Strongly Agree
The whiteboard in my room was used during my visit					
The whiteboard in my room was updated with results and changes in my plan of care throughout my stay					
Results of imaging and labs were completed and told to me within the stated time period					
The use of the whiteboard helped me to better understand my plan of care					
The use of the whiteboard affected my satisfaction with the care I received today					

Did the whiteboard display the following information?

My nurse's name					
My provider's name					
My plan of care					
My diet					
My ambulation status					

WHITEBOARD IMPLEMENTATION IN THE EMERGENCY DEPARTMENT

Appendix F

Survey Collection Times

Week	Day	Time
1	Monday	04:00-07:00
2	Tuesday	07:00-10:30
3	Wednesday	10:30-14:00
4	Thursday	21:00-00:30
5	Friday	00:30-04:00
6	Saturday	14:00-17:30
6	Sunday	17:30-21:00

Appendix G

Survey Tool Validation

Title	Comments
Emergency department director	No need for collecting demographic information related to insurance, decrease the number of questions, make them more related to the whiteboard, use the term "provider"
Emergency department manager	Add professional degree
Emergency department manager	Similar wording on questions
Emergency department RN	wording of last question is too similar to the first
Emergency department RN	two of the questions are too similar, consider deleting one to shorten survey
Emergency department RN	one question was a yes or no question and would not apply to a Likert scale response
Emergency department RN	Change age ranges to be more even
Emergency department RN	Two of the questions are similar, if possible delete one
Director of patient experience	Shortening length of survey, no question on pain scale as they will all have a pain scale, focusing on questions related to the specific whiteboard use
Emergency department RN	Change "informed" to "told" on first question
Organizational Nursing Research Board	Remove race from demographic questions as it may possibly be a patient identifier, consider wording so it matches wording on the whiteboard

Appendix H

Email to ED Staff

Dear Emergency Department Staff,

      We will soon be implementing patient whiteboards in rooms R1-R29. Prior to hanging these boards up, I will be collecting surveys from patients to gather data on satisfaction and perceived communication with staff for my Doctorate of Nursing Practice project. These surveys will be collected over the course of 6 weeks on varies days of the week and times of the day. After the 6 weeks, we will be hanging up the whiteboards. Once they are up, it will be an expectation to incorporate these boards into our practice with each patient. I will then again collect surveys asking the same questions as before, looking to see if whiteboard use has an impact on satisfaction and perceived communication. Again, I will be collecting these surveys over the course of 6 weeks. After the total of 12 weeks I will collect the data and run a statistical analysis. I will be presenting the results, in the future, at one of our monthly meetings. If you have any questions or concerns please feel free to contact me or one of the patient experience committee members.

      Thank you,

         Gabrielle Price

Appendix I

DNP Project Stakeholder Agreement

DNP Project Stakeholder Agreement

I agree to serve as the DNP Project Stakeholder to the DNP student named in this agreement.

Name of Stakeholder:

Robin Huether

_Robin Huether_____

Signature of Stakeholder:

X _Robin Huether_____

Name of DNP student:

Gabrielle Price

_Gabrielle Price_____

Signature of DNP student:

_Gabrielle Price_____

Date:

_____10/26/17_____

WHITEBOARD IMPLEMENTATION IN THE EMERGENCY DEPARTMENT

Appendix J

DNP Project Site Agreement

DNP Project Site Agreement

Date: 10/26/17

This letter is in support of Gabrielle Price's DNP Project, Whiteboard Implementation in the Emergency Department at Sanford USD Medical Center's emergency department. This project will give our department insight on the effect of whiteboard use on patient satisfaction and perceived communication with staff. Through the use of pre- and post-intervention surveys, we hope to see a positive correlation between the whiteboard use and patient satisfaction scores.

We look forward to the results of the project.

Robin Huether RN

Robin Huether RN
Director of Emergency Department,
Trauma Services and Clinical AirMed
Sioux Falls
Sanford USD Medical Center

WHITEBOARD IMPLEMENTATION IN THE EMERGENCY DEPARTMENT

Appendix K

Organizational IRB

SANFORD HEALTH

NOT HUMAN RESEARCH

November 16, 2017

Dear Gabrielle Price:

On 11/16/2017, the IRB reviewed the following submission:

Type of Review:	Initial Study via Non-Committee Review
Title of Study:	Whiteboard Implementation in the Emergency Department
Investigator:	Gabrielle Price
IRB ID:	STUDY00001149
Finalized Documents this review:	• Project survey, Category: Survey; • Template Protocol, Category: IRB Protocol;

The IRB determined that the proposed activity is not human research. Sanford IRB review and approval is not required.

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are being considered and there are questions about whether IRB review is needed, please submit a study modification to the IRB for a determination. You can create a modification by clicking **Create Modification / CR** within the study.

For questions please contact the IRB Office: eIRB@sanfordhealth.org.

Appendix L

Staff Satisfaction Survey

Credentials: ☐ **RN** ☐ **MD** ☐ **NP/PA** ☐ **PCA**

Survey Questions: Please mark the most appropriate box that represents your feelings of satisfaction.	**1** Strongly Disagree	**2** Disagree	**3** Neutral	**4** Agree	**5** Strongly Agree
The templated whiteboards improve communication with patients					
I always included the nurse and provider names on the board					
The whiteboards allow other staff members to know details of the patient's care					
I remembered to update the whiteboard throughout the patient stay					
I feel the whiteboards are beneficial					
The whiteboards are easy to use					

Additional Comments/Suggestions: _____

_____

_____

_____

_____

_____

Appendix M

Staff Satisfaction Survey Results

Credentials: 30 RNs, 5 PCTs, 1 MD

- The numbers indicate how many responses for each

Survey Questions: Please mark the most appropriate box that represents your feelings of satisfaction.	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
The templated whiteboards improve communication with patients	1	1	11	16	6
I always included the nurse and provider names on the board	2	4	9	18	2
The whiteboards allow other staff members to know details of the patient's care	2	5	10	13	5
I remembered to update the whiteboard throughout the patient stay	3	10	15	7	0
I feel the whiteboards are beneficial	2	1	9	14	9
The whiteboards are easy to use	2	0	7	16	10

Comments:

- I like that the old boards had room for us to draw pictures for patients (from a provider)
- Sometimes it's hard to find markers to use
- Very hard to erase
- The boards should be low enough for shorter people to fill out
- Providers and nurses need to work together on filling them out
- It would be extremely beneficial is the provider would update information as well. There are a few docs that will update the patient's oral status, labs, and diagnostic tests that are to be ordered. This eliminates the RN having to track down the provider to ask them.
- When I use them and explain what they for patient's stay updated and I have less call lights to answer on my people. They aren't always questioning what they are waiting for.
- They are more complex than needed. They are never updated to reflect even the RN that is caring for the patient let alone any care associated with the current patient.
- The concept is great. They aren't the most practical things to use. Most of the time, the board is placed right where visitors sit in the room. If it's super busy, I don't necessarily have the time to take and fill it out. I also find that most of the time, the previous patient's information is not erased from the whiteboard during room cleaning between patients. They are also difficult to clean.
- They do not erase well. Hard to remember to use them with patients when you're focused on getting done crucial tasks first.

WHITEBOARD IMPLEMENTATION IN THE EMERGENCY DEPARTMENT
Appendix N

Project Data

Group	WBU	WBUPD	ROI	WBH	WBS	RN	PV	POC	DT	AMB	Gender	Age	ED		
Pre	1	1	1	4	1	1	1	1	1	1	F	2	3		
Post	5	4	4	5	4	5	5	5	5	5	F	4	4	**Key:**	
Pre	1	1	4	1	1	1	1	1	1	1	M	3	3		
Pre	2	2	3	3	3	3	3	3	3	3	M	1	3	**Age**	
Pre	2	2	3	2	2	2	2	2	2	2	M	3	2	18-33	1
Pre	1	1	4	1	1	1	1	1	1	1	F	4	3	34-49	2
Pre	2	2	3	2	2	2	2	2	2	2	F	1	3	50-64	3
Pre	1	1	1	1	1	1	1	1	1	1	M	4	3	65 and >	4
Pre	1	1	1	1	1	1	1	1	1	1	F	3	3		
Pre	1	1	4	1	1	1	1	1	1	1	M	2	3	**Education**	
Post	4	2	4	3	3	4	4	2	2	2	M	1	2	Less than high school	1
Post	5	5	5	4	4	5	5	5	5	5	F	4	6	High school or GED	2
Post	5	5	5	5	5	5	5	5	5	5	F	4	2	Some college	3
Post	5	5	5	5	5	5	5	5	5	5	F	4	3	Associate degree	4
Post	5	5	5	5	5	5	1	1	1	5	M	2	2	Bachelor degree	5
Post	1	1	1	1	1	1	1	1	1	1	F	4	2	Gradute degree	6
Post	3	3	5	2	4	5	5	5	5	5	F	4	4		
Post	2	2	2	2	2	1	1	1	1	1	F	1	3	**Gender**	
Post	5	4	4	4	4	5	5	5	5	5	F	2	2	Female	F
Post	1	1	4	3	3	1	1	1	1	1	M	4	6	Male	M
Pre	3	3	5	3	3	3	3	3	3	3	F	2	5		
Post	1	1	3	1	1	1	1	1	1	1	F	4	3	**Likert Scale**	
Pre	1	1	5	3	1	1	1	1	1	1	F	1	2	Strongly Disagree	1
Pre	1	1	1	1	1	1	1	1	1	1	F	4	2	Disagree	2
Pre	1	1	1	1	1	1	1	1	1	1	F	1	2	Neutral	3
Pre	1	1	1	1	1	1	1	1	1	1	F	3	4	Agree	4
Pre	2	2	2	2	2	2	2	2	2	2	F	1	2	Strongly Agree	5
Pre	3	3	3	3	3	1	1	1	1	1	F	3	4		
Pre	3	3	5	3	3	1	1	1	1	1	M	2	2		
Post	4	4	4	4	5	5	5	5	5	5	F	3	6		