The Implementation of SBAR among Mental Health Nurses to Reduce Medication Errors

Sandra V. McFarlane

Touro University Nevada

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DNP Project Team: Dr. Jessica Grimm

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Dedication

I would like to thank Yahweh for bringing me through this challenging, yet rewarding and fulfilling journey. I would like to dedicate this project to my daughter Amaris Aklassou, who stayed up late with me, cheering me on, and giving me her little vitamin C chewables to help me stay awake, and they worked! I would also like to dedicate this project to my husband Frank Aklassou, and my sister Lorna McFarlane who supported me on this journey. Thank you all for your support.

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Abstract

Ineffective handoff communication can precipitate adverse events that can result in poor outcomes for patients. Recognizing that there is no standardized format of staff handoff communication between shifts at the project site prompted the need for implementation of a standardized communication tool, Agency for Healthcare Research and Quality's (AHRQ)Team STEPPS 2.0 SBAR.

Background: This project was implemented in response to a gap identified at the project site related to staff' handoff communication level, affecting medication accuracy. Lewin's change model provided the theoretical foundations for the project. This quality improvement project was guided by the question of: "To what degree does implementation of an SBAR communication tool reduce medication errors among mental health staff nurses in a clinical setting as compared to current practice?"

Methods: A paired t test was conducted to compare the means between two similar samples involving pre-posttest results of the SBAR intervention with assumption of paired t test. Data was analyzed using SPSS version 28. Descriptive statistics method was used to analyze the impact of SBAR intervention on medication error rates.

Intervention: A pre- and post-test survey was conducted at the beginning of the 4-week period to assess and evaluate the nurses' knowledge, attitude, and confidence toward using SBAR instrument. Examination of charts were conducted for pre-test and post-test errors with medication error rates compared to see if there were significance in overall error reductions. Descriptive analysis describing the dependent variables was used to determine the impact of SBAR intervention on medication error rates.

Results: The results indicate there is indeed a difference in average mean of total errors between pre and post audits, indicating that the post-audit errors were much less than the pre-audit ones. Pre-audit errors were average mean of 1.2 while those of post-audit were 0.4, representing 67% reduction. The statistics $t(31.2) = 2.25$, $p = .03$ were statistically significant.

Conclusion: It is conclusive that the findings suggest the implementation of the AHRQ's Team STEPPS 2.0 SBAR may improve medication errors, however further data analysis is necessary for sustainability. Recommendations include sustaining the project and analyzing data over an extensive period, and afterwards disseminating the results for continued practice.

Keywords: medication errors, Team STEPPS 2.0 SBAR, adverse events, Lewin's change model, communication, psychiatric mental health nursing

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The Implementation of SBAR among Mental Health Nurses to Reduce Medication Errors

Handoff communication among nursing staff is an important measure, that impacts the health and well-being of patients throughout our healthcare system (The Joint Commission, 2017). Ineffective handoff communication can precipitate adverse events that can result in poor outcomes for patients. For effective, high-quality healthcare delivery, patient safety is important (Muller, et al., 2018).

The World Alliance for Patient Safety describes ineffective communication as detrimental to the patient experience; thus, reducing the quality of patient care, overall wellness, and recovery (Muller, et al., 2018). The World Health Organization [WHO] cites a decreased risk of patient harm, when a high-quality and high-communicative wellness structure is the culture norm among health and critical care professionals (Muller, et al., 2018).

In clinical routine, one of the leading sources of adverse events is communication breakdown, particularly in handoff communications (Muller, et al., 2018). The SBAR (Situation, Background, Assessment, and Recommendation) communication instrument, which is a handoff communication tool, was developed to improve the quality of handoff communication, and broadly embraced to increase patient safety (Muller, et al., 2018).

When patient care responsibility is transferred and accepted through effective communication, one caregiver passes on patient-specific information to another caregiver, or from one team of caregivers to another in a real-time process, which is defined as a handoff (The joint Commission, Sentinel Alert, 2017). This ensures the progression and safety of the patient's care (The joint Commission, Sentinel Alert, 2017).

Ineffective communication between health care team members have led to hospital deaths annually (Martin & Ciurzynski, 2015). The quality of communication has been improved by

utilizing standardized tool and strategies such as communication methods that structured with inclusion of implementing huddles and utilizing the situation, background, assessment, and recommendation (SBAR) communication method (Martin & Ciurzynski, 2015).

Patient safety definitions vary. (AHRQ, n.d.). The Agency for Healthcare Research and Quality (AHRQ) alludes to patient safety as keeping patients safe from harm from the care that is intended to help them (AHRQ, n.d.). Considering the role of communication in patient safety, quality communication enhancement during patient handoffs is regarded as a nursing priority (The Joint Commission, 2017). The National Coordinating Council for Medication Reporting and Prevention has observed that medication errors are preventable (Lane, et al., 2014). Healthcare providers such as the prescriber, pharmacists, or administering staff, is in control of safe medication administration (Lane, et al., 2014). A medication errors review completed by Keers et al. (2018), reported up to 48% of missed medication doses were due to poor handoff communication in the mental health setting.

Problem Identification

Nursing communication handoff is considered a basic nursing task; however, Joint Commission regard it to be an effective safe handoff of care that is complex (The Joint Commission, Sentinel Alert, 2017). Failed communication handoffs among healthcare providers have been a prolonged problem in providing safe, efficient, quality healthcare (The joint Commission, Sentinel Alert, 2017).

This project was initiated in response to an internal audit conducted by the site Director and coordinator. It was discovered there were increased medication errors by 20% within six months. Further investigation revealed a potential correlational between medication errors and nursing handoff communication at the project site. The gap identified at the project site was

related to staff handoff communication level, affecting medication accuracy. Recognizing that there is no standardized format of staff handoff communication at this project site, the nursing administration realized the significance of initiating a standardized communication tool.

The potential for patient harm often begins with inadequate information being provided (The joint Commission, Sentinel Alert, 2017). Factors contributing to a breakdown in hand-off communications include insufficient or misleading information, the absence of safety culture, communication methods that are ineffective, time limitation, inconvenient time between the sender and the receiver, distractions or interruptions, standardized procedures that are lacking, and staffing shortage (The joint Commission, Sentinel Alert, 2017). Recommendations for handoff communication be a provision of standard care was commissioned by the Joint Commission in 2010 (The Joint Commission, 2017). As a component of performance, it is necessary for healthcare organizations to have policies and procedures in place for the function. Implementing the Agency of Healthcare Research and Quality's TeamSTEPPS 2.0 SBAR is important in reducing medication errors.

Project Question

The project question should be distinctly formulated and supported with clear connection to the project topic (Touro University Nevada, 2022). This quality improvement project was guided by the question of: “To what degree does implementation of an SBAR communication tool reduce medication errors among mental health staff nurses in a clinical setting as compared to current practice?” The Team STEPPS 2.0 SBAR is the independent variable, and the dependent variable is medication errors. Utilizing the SBAR allows members of the healthcare team a standardized framework for communicating about a patient’s condition (AHRQ, n.d.).

Search Methods

There has been an abundance of research directed towards SBAR communication. Search terms such as “SBAR”, “SBAR Communication”, “SBAR Tools”, SBAR handover”, “Medication Error”, and “Patient Safety” were entered into databases such as Cochrane Library, Medline, PubMed, and CINAHL Plus via Touro University Nevada’s Jay Sexter Library, seeking scholarly and peer-reviewed articles examining SBAR communication and its appraisal. The direction of the search was aimed towards articles published analyzing the effectiveness of SBAR communication its correlation between healthcare providers and patient safety. Utilization of search filters refined search results producing generated results of various articles pertaining to SBAR communication. There were articles presented that were relevant to the topic of interest while others were irrelevant in content. Articles excluded from literature review included ones which overextended in content between other databases utilized in the search, and those that lacked empirical evidence, and rigor. The search was conducted using databases accessed through the Touro University Nevada’s library to find the best evidence that would produce repetitive findings in support of the clinical question. Utilizing the clinical question as a guide, the search introduced was: “To what degree does implementation of an SBAR communication tool reduce medication errors among mental health staff nurses in a clinical setting?” The search was limited to English language publications, utilizing filters such “original article”, “journal article”, “peer reviewed”, “scholarly”, “open access” and limiting the publication dates between 5 to 10 years. A total of 15 articles pertaining to SBAR communication, medication errors and patient safety, were reserved for this project after utilizing exclusion criteria.

Review Synthesis

In reviewing literature sources, a comprehensive examination and synthesis of research

was conducted that focused on the SBAR and its effectiveness between handoff communication and patient safety. The Joint Commission cites serious consequences of communication errors among healthcare providers led to adverse events impacting patient safety (TJC, 2015). The Sentinel Event Data Report (2015) reports communication errors, being among the highest reported sentinel events each year. Keers et al., (2018) cite medication errors as significant risk to patient care setting.

Literature Theme Development

It is recognized that quality handoff communication can improve patient outcomes, and poor handoff communication increases patients' risk for adverse outcomes (The Joint Commission, Sentinel Alert Event, 2017). A standardized tool can enhance handoff communication by providing the framework of the information that needs to be conveyed and is clinically appropriate. The Joint Commission, Agency for Healthcare Research and Quality (AHRQ), Institute for Healthcare Improvement (IHI) as well as the World Health Organization (WHO) have recognized the use of SBAR in healthcare provider handoff communication as a valid and reliable tool to reduce adverse events for patients in the hospital setting (Shahid, & Thomas, 2018). Of the articles retrieved, three essential themes derived from the literature concerning SBAR communication, patient safety, and medication error. The generated articles were then utilized in designing three essential themes pertaining to SBAR utilization in improving communication, reducing medication errors, and improving patient safety.

SBAR utilization enhances patient safety

Ineffective communication presents a notable safety issue for patients, and standardization of healthcare communication is acknowledged as a positive step to improve communication among healthcare providers and increase patient safety (Bonds, 2018; Park,

2020; Usher et al., 2018). Effective communication is important in health care because it affects patient safety and outcomes, patient care experience and satisfaction. In improving communication handoff among staff, the use of SBAR has been reported to be a valuable tool (Beigmoradi et al., 2019).

In a study conducted of an electronic handover (e-handover) system formulated to enhance staff communication and to improve patient safety, results showed that e-handover is an effective, user-friendly method that improves quality, accountability, and patient safety (Osanlou, et al., 2018). The aim of this study was to enhance communication of staff handoff reports via an electronic system created that tracked all audio handoffs between staff, thereby improving patient safety (Osanlou, et al., 2018). A participant observational method was utilized with stakeholder engagement involving an e-handover software linked with other databases used in documentation, admission, referrals, and discharges (Osanlou, et al., 2018).

Tasks to be completed was put in by clinicians through SBAR system into e-handover (Osanlou, et al., 2018). Delegation and triage of handover were presented to the proper clinicians who had remore access e-handover (Osanlou, et al., 2018). Following a successful pilot initiation, it has rolled out to all 48 level one wards with over 1,000 trained staff members (Osanlou, et al., 2018). There has been expansion to include communication with pharmacists (Osanlou, et al., 2018). In comparison to the previous system of handover, there has been significant improvement with the quality of SBAR style handover by over 60% supporting the theme of patient safety in SBAR utilization (Osanlou, et al., 2018)

The aim of the study is to evaluate the impact of handoff at the bedside using the SBAR technique (Abbaszade, et al., 2021). Abbaszade, et al., (2021) note that effective communication that is effective with complete transfer of information that is accurate, and averting

misrepresenting and misinterpreting data of patients during handoff, can improve the standard of safe patient care.

The study was conducted using a quasi-experimental method to assess how nursing care standards between 2018 and 2019 was impacted by handoff SBAR technique (Abbaszade, et al., 2021). The study concludes that results suggests that the quality of nursing care increased by SBAR handoff technique in dimensions of all QUALPACS, citing that increased quality of nursing care enhance patient outcomes and safety (Abbaszade, et al., 2021). This appraisal of evidence aligns with patient safety and SBAR utilization (Abbaszade, et al., 2021). Therefore, nursing care quality in the communication dimension handoff significantly improved based on the SBAR technique (Abbaszade, et al., 2021).

SBAR utilization increases effective communication is among healthcare staff

Communication between healthcare providers is an essential step to maintaining patient safety and continuity of care. In patient settings where three thirds of communication breakdowns occur, there's high-severity injury and patient mortality (Burgener, 2017). Research from the University of California, San Francisco discovered that 25 percent of readmissions from hospitals were attributed to ineffective communication among members of health care teams (Institute for Healthcare Excellence, 2018).

In a systematic review study, examination was conducted regarding SBAR application measures and its possible effect on adherence to SBAR, communication transparency, and other quality-related plans (Lo, et al., 2021). Only studies detailing effects on patient outcomes were included in the review to examine the length to which users accomplish SBAR as planned and the length to which SBAR improves communication transparency (Lo, et al., 2021). Safety culture and teamwork showed positive improvement with SBAR education (Lo, et al., 2021).

Promotion of high-fidelity uptake is beneficial with education of healthcare provider on SBAR (Lo, et al., 2021). SBAR application studies report substantial upgrade in adherence were also reported from studies of SBAR initiation (Lo, et al., 2021). This study utilized a systematic review method analyzing literature for SBAR used as a strategy for enhancing communication, patient safety, to examine the length to which users use SBAR as planned, and the extent to which communication transparency is enhanced with the SBAR (Lo, et al., 2021). The study includes simple before–after studies design of a controlled trial series (Lo, et al., 2021). This evidence shows that SBAR utilization can increase effective communication among healthcare workers.

SBAR utilization decreases medication errors

Medication errors in the healthcare impact the safety of patients and can delay therapeutic response or produce severe negative response. Ensuring safe medication administration is vital in all areas of care including mental health treatment. In the transition of care, medication errors are made which result from either incomplete or inaccurate communication (Redmond, et al., 2020). Some leading causes of medication errors found include communication errors and interruptions during medication administration (Tsegaye, et al., 2020).

Medication errors can begin at many steps in the medication process. A reoccurring problem noted in medication error is ineffective communication (The joint Commission, Sentinel Alert, 2017) Improving healthcare team communication is indicated as an effective intervention to reduce medication errors (The joint Commission, Sentinel Alert, 2017)

The evaluation of SBAR use has found it effective in reducing clinical errors, improving safety, and enhanced nursing satisfaction in the handoff process (Usher et al., 2018). A great deal of clinical research has evaluated SBAR and concluded this to be an effective tool in reducing

clinical errors (Park, 2020). Ferrara et al. (2017) noted in a study that although handoff communication is a function that is completed often, advancement in this area is vital to improving patient safety, including reducing medication errors. Utilizing a standardized tool as the SBAR for handoff communication has been acknowledged as being effective in improving patient safety in the hospital setting and decreasing medication errors (Sassoli & Day, 2017).

The world health organization (WHO) wrote "Nine Patient Safety Solutions" in 2007 addressing look-alike-sound-alike (LASA) drugs which is one of the nine topics included in their publication (Jongprasithporn, et al., 2018). This publication presented directions regarding the avoidance of LASA issues in assuring patients' safety (Jongprasithporn, et al., 2018). In surveying 25 hospitals, the discovery of the first line problem of LASA drug was due to medication labels and bottles from matching company (Jongprasithporn, et al., 2018). Secondly, another problem was drugs that looked alike with similar name to other medications (Jongprasithporn, et al., 2018). Indication that ineligible handwriting, uncertainty between drugs with similar names, substandard packaging design, and metric or dosing unit confusion was due to miscommunication of drug orders as cited by an FDA journal (Jongprasithporn, et al., 2018). Incorrect medication and medication dose could be harmful to patients who receive them. Techniques to avoid LASA medication errors had been significant for the hospitals. Therefore, the focus of the study was the SBAR and HOSxP software for LASA improvement (Jongprasithporn, et al., 2018). The SBAR tool is used for prescription recheck and for handoff report among nursing students. In its abbreviated form, the Situation (S) requires the healthcare worker to describe the current situation clearly and briefly (Jongprasithporn, et al., 2018). The Background (B), provide clear, relevant background information about the patient (Jongprasithporn, et al., 2018). The Assessment (A) requires critical thinking regarding the

reason for the patient's condition (Jongprasithporn, et al., 2018). The Recommendation (R) requires the healthcare worker to inform the person they are communicating with what they would like to happen in a clear and relevant way (Jongprasithporn, et al., 2018).

For three months, from January to March 2018, during the pre-dispensing procedure, the SBAR along with HOSxp software was applied to resolve transcribing errors (Jongprasithporn, et al., 2018). Communication between pharmacists and doctors could be enhanced with help of the SBAR to ensure correct medication list before being sent to the pre-dispensing process (Jongprasithporn, et al., 2018). A technique used to achieve the expected value for a performance appraisal is Key Performance Indicator (KPI) (Jongprasithporn, et al., 2018). A comparison was made between data before and after applying SBAR solution with HOSxP software and the average KPI of the transcribing errors were compared (Jongprasithporn, et al., 2018). The study gave evident to the fact that the average error occurred in 2018 was less than that of the error occurred in 2017 (Jongprasithporn, et al., 2018). The results revealed that utilization of the SBAR solution could improve process of pre-dispension and reduce the medical errors from LASA drugs (Jongprasithporn, et al., 2018). It is evident that the solution proposed can present the solution to issues of miscommunication, human errors, and untrained pharmacist (Jongprasithporn, et al., 2018).

Observation of improving process of pre-dispensing procedure was the main method in this study (Jongprasithporn, et al., 2018). Three main issues that were identified were communication issue, untrained pharmacists lacking skills of pre-dispensing process, and software issue (Jongprasithporn, et al., 2018).

Project Rationale: Aims of the study

The purpose of this quality improvement project is to find out if or to what extent will

application of the Agency for Healthcare Research and Quality's (AHRQ)Team STEPPS 2.0 SBAR reduce medication inaccuracy among mental health staff nurses in a clinical setting over a four-weeks period. The independent variable is the Agency of Health Research and Quality's (AHRQ) Team STEPPS 2.0 SBAR tool while the dependent variable is medication errors. The project would be accomplished over a four-week period where the use of the SBAR instrument would be initiated and would be measurable pre- and post-implementation. This quality improvement project was guided by the question of: "To what degree does implementation of the AHRQ's Team STEPPS 2.0 SBAR communication tool reduce medication errors among mental health staff nurses in a clinical setting as compared to current practice?"

The project's aim is to advance population health outcomes regarding communication and its impact on medication error rates. It adds to the contributing literature regarding the importance of effective communication to reduce medication inaccuracy (Muller et al., 2018; Keers et al., 2018; The Joint Commission, Sentinel Alert Event, 2017). Research shows that one of the leading elements of medication inaccuracy is unsuccessful communication among healthcare professionals (Shitu et al., 2018). A standardized communication tool using effective communication skills among nurses have tremendous effects on patient health outcomes and satisfaction (Shitu et al., 2018). Furthermore, it provides a dialogue strategy to identify problems with the medications, such as treatment, side effects, and interactions (Shitu et al., 2018).

Project Objectives

In the 4-week timeframe of the DNP Project, the following objectives will be achieved:

1. Implement (AHRQ)Team STEPPS 2.0 SBAR tool for hand-off among mental health staff nurses at the project site. Initiating staff education using a standardized form with

instructions on SBAR procedure and how to complete an SBAR communication handoff reporting tool will be instituted. SBAR communication tool will be used during staff handoff reporting.

2. Reduce medication error rates by 50%. Utilizing a standard SBAR communication tool to reduce adverse event and increase patient safety. Initiation of survey to evaluate SBAR communication tool's effectiveness.
3. Educate appropriate mental health staff regarding use of SBAR tool for hand-off. Initiating in-service staff meetings and demonstrating appropriate use of SBAR communication tool for handoff reporting to increase staff knowledge and address any challenges regarding SBAR communication tool utilization.

Project's Framework

Early 20th century social psychologist, Kurt Lewin, was a pioneer in study of organizational development and group dynamics (Shirey, 2013). A framework was developed by Lewin for identifying and examining the factors or forces influencing a situation known as force field analysis (FFA). Forces are identified as either driving (assisting forces) or restraining (impeding forces) movement toward a target via an FFA (Shirey, 2013). This approach by Lewin suggests that conduct is a task of the group environment (Shirey, 2013). The FFA framework is vital and shapes the foundation of Lewin's 3-stage TPC frequently cited in the phases of unfreezing, moving (or transitioning), and refreezing (Shirey, 2013).

Lewin's Change Management Theory (Lewin, 1951) is a common change theory that nurses use for various quality improvement projects across specialty areas to transform care at the bedside (Wojciechowski, et al., 2016). Lewin's change model was chosen for this quality improvement project because the project reinforces the need for change in medication

management and proper handoff communication to ensure higher quality care and patient safety. It suggests that individuals are impacted by restraining forces (barriers) aimed to maintain the existing condition, driving influence, or positive forces for change (Lewin & Dorwinc, 1951). There are three constructs in the change model: unfreezing, changing, and refreezing (Lewin & Dorwinc, 1951).

Unfreezing

The first phase of Lewin's change model requires preparation for change and a nurse leader who is a change agent that can recognize the problem and acknowledge the need for change, deploying others to see the necessity for change (Shirey, 2013). Nurse leaders can conduct gap analysis at the beginning of the unfreezing stage to display any inconsistencies between the desired and present state (Shirey, 2013). Part of the unfreezing is to generate a sense of urgency for change and choosing a solution, followed by preparation to migrate from a current existence or stability (Shirey, 2013). Lewin refers to this stage as the FFA, which demands recognizing the elements for or opposed to change (Shirey, 2013). Change that is successful involves weakening the restraining instruments and strengthening the driving instruments (Shirey, 2013).

Moving or transitioning

The second stage of Lewin's theory involves perceiving change as a process instead of an occurrence (Shirey, 2013). In the transitioning period, individuals make internal movement in response to change that demand unfreezing or shifting to an updated method (Shirey, 2013). Therefore, this stage requires designing a comprehensive strategy and engaging people to test the recommended change (Shirey, 2013). This stage can be complex due to fear and uncertainty related to change and necessitates coaching to repress fears with clear communication so that the

desired target will be in focus with a new, improved phenomenon (Shirey, 2013).

Refreezing

The third stage of Lewin's change theory requires a stabilization of the change to gain root into existing systems such as policies, practices and culture (Shirey, 2013). Nurse leaders consider the FFA to spotlight the driving elements promoting change and preventing the restraining elements impeding change (Shirey, 2013). Refreezing the new change produces a new balance, recognized as a higher level of performance expectation or the new norm (Shirey, 2013). Securing and institutionalizing change are vital in the third stage for its sustainability over time (Shirey, 2013).

Application of Major Tenets of Theory/Framework to DNP Project

Unfreezing is generating an awareness of the problem, facilitating ways for people to let go of old habits/patterns and disengaging the present stability or balance (Wojciechowski, et al., 2016). Some examples of unfreezing are educating, challenging existing condition, revealing issues or problems (Wojciechowski, et al., 2016). For this project, the primary investigator and site director identified the problem that indicated a lack of a standardized communication tool which impacted medication errors. In the unfreezing phase of the project, the change agent's role as a primary investigator is to provide education, mentorship, and support to guide and facilitate the change using the Agency for Healthcare Research and Quality's Team STEPPS 2.0 SBAR (Cupp & Curley, 2019).

Changing/moving is seeking substitute, displaying benefits of change, and reducing drives that influence change negatively (Wojciechowski, et al., 2016). Examples of these are brainstorming, exemplifying new methods, coaching, or training Wojciechowski, et al., 2016). The moving phase of the project will be the staff's acceptance of the need for change and their

steady utilization the standard communication tool (Lewin, 1947a).

Refreezing is combining and stabilizing a new balance into the system, making it routine to withstand additional change (Wojciechowski, et al., 2016). Tracking Key Performance Indicators [KPIs] as well as re-training and honoring success are examples of refreezing (Wojciechowski, et al., 2016). The refreezing phase of the project involves the primary investigator re-evaluation of the project's sustainability. It will also involve the staff's consistent use of the SBAR communication tool as the standardized method.

Project's Setting

The location for the project's implementation will be within an inpatient mental health unit of a psychiatric hospital in the state of Maryland. This 397-bed facility provides psychiatric services to patients with mental health issues and is a public facility is funded by the government.

Population of Interest

The direct population chosen for this project is the inpatient mental health nursing staff of a psychiatric hospital in the state of Maryland. The mental health staff at this facility is directly involved in handoff reports and medication administration and will be influenced by utilization of the SBAR communication tool. Therefore, the hospital's psychiatric unit staff nurses will be included in the DNP project's initiative, including staff RNs and LPNs, charge nurse, nurse manager. There will be educational opportunities provided to familiarize staff with the DNP project's initiative.

An indirect population of interest is the inpatient mental health patients who are customers that will be influenced by the change in routine handoff reports. The inclusion criteria will be all voluntary nursing staff on the psychiatric unit who are directly involved in handoff

reports and medication administration who will be utilizing the SBAR communication tool routinely. The exclusion criteria will adhere to staff members who are not be directly involved in SBAR protocol utilization.

Stakeholders

The stakeholders who will be involved in this project have high interest in the project and will progress involvement throughout the course of its implementation. These key stakeholders are the project mentor and Chief Compliance Officer (CCO), the charge nurse and staff nurses (RNs and LPNs), the nurse manager of the unit, and the Director of Learning Resources (DLR) who will be supporting the DNP project's implementation within their role.

This charge nurse who expressed interest in participating in its initiation was chosen as she works on the unit where the project will be implemented and possess the skills and expertise needed to assist in the project's initiation. The Director of Learning resources will be instrumental in the teaching aspect of the project's utilization and guidance. The DLR is responsible for staff education, teaching, and providing resources for corrective plan of actions and compliance. The nurse manager/supervisor for the team plays an important role in this project implementation as a team leader with skills and expertise to assist with the project deployment.

The identified stakeholders are influential to this project. Choosing influential stakeholders makes way for successful deployment, outcome, and sustainability of the project. Learning different approaches through stakeholder guidance is crucial throughout the implementation process. When stakeholders are involved, it enhances the transparency of the process, increasing the relevance and usability of the project lead's work to stakeholders (Scott, et al., 2018).

This project will be an opportunity to provide a solution to an existing issue or problem, therefore, having a team of experts to for assistance and guidance will strengthen the project's implementation. Developing research with stakeholders' engagement can increase relevance, impact, and trustworthiness of the project's outcome thereby leading the way for advanced care (Leland, et al., 2021). Decision-makers in the project consistently look for suitable resources to expand the probability of success by capturing, producing, and increasing values to the project (Bahadorestani, et al., 2020).

Nursing leadership has permitted access to complete the project at the site with no affiliation agreement required.

Interventions

The SBAR interventions will be conducted over a 4-week period and will include participants who are licensed practical nurses (LPNs) and registered nurses (RNs) on an inpatient psychiatric unit in Maryland. During the first week of the intervention process, nurses will be notified of the planned SBAR implementation through SBAR flyers which will be posted in various places on the unit such as the staff lounge and conference rooms areas which will contain information regarding training sessions and times. Staff nurses on the unit will then be educated and trained at two separate 30 minutes sessions with options from 8:00 am – 8:30 am or 4:00 pm – 4:30 pm followed by 20 mins question-and-answer session in each time periods. There will be pretest and posttest questions to assess nurses' knowledge of the SBAR tool and to evaluate if learning needs were met using the Knowledge and Attitudes Toward SBAR Instrument (KA-SBAR) (Cooper, et al., 2020).

The SBAR communication tool will then be deployed at the beginning of each shift

during nurses' handoff reporting in a 4-week period. Medication error report before and after will be collected for data analysis during the first and last week of the SBAR implementation.

Planning Project Team

With implementation of the SBAR, the planning team will include the nurse manager, Chief Compliance Officer (CCO), Direct Learning Resource team (DLR) who are nurse educators, the charge nurse, and unit staff nurses such as RNs, and LPNs. The nurse manager and charge nurse will be reinforcing compliance with the SBAR tool to ensure that the nurses are utilize the SBAR tool during handoff shift reporting. The chief compliance officer will assist with staff adherence to SBAR tool utilization and supporting the project's goals to be met. The Direct Learning Resource team of nurse educators will be supporting the educational needs of the nurses with SBAR education as well as reinforcing the SBAR training.

Resources

For implementation of the SBAR to be successful, resources are essential to allow a smooth process of the SBAR communication tool deployment. SBAR flyers will be utilized to spread awareness of the planned training sessions with available dates and times for SBAR training. A PowerPoint will be used for educational training of the nursing staff on the use of the SBAR communication tool. Nurse educators from the Direct Learning Resource (DLR) team will be assisting with SBAR training and reinforcing SBAR education as needed. A pre- and post-test survey will be administered to the nurses to evaluate the effectiveness of the SBAR educational training and nurses' knowledge of the SBAR tool using the KA-SBAR instrument (Cooper, et al., 2020). Nurse educators who are from the Direct Learning Resource (DLR) team will be assisting with SBAR training and reinforcing SBAR education as needed.

Timeline of The Project

The project will be conducted for 4 weeks where nurses will participate in SBAR education and training and will receive instructions on how to effectively use the SBAR for communication handoff reporting by the project lead. Week 1 will begin on November 7th – 11th, 2022, with live educational training session for staff LPNs and RNs. Question-and-answer periods will be included in the SBAR training sessions. A pre-posttest survey (KA-SBAR) will be administered to the nurses to evaluate the ease of use and effectiveness of the SBAR training and their knowledge of the SBAR tool (Cooper, et al., 2020).

Nurses will be provided with blank SBAR fill-in-the blank sheets to be use in their handoff shift reports, which will be printed out weekly and placed on a clipboard on the unit where they meet for morning huddles. The nurses will then place the SBAR sheets in a secured folder that will be maintained in a secured cabinet the unit manager's office, accessible to the charge nurses to secure project's data. An SBAR checklist sheet will also be used to track compliance on the unit with RNs and LPNs checking off yes or no on the SBAR check list for compliance. A medication error report will be collected at the beginning of week 1 to be utilized for data analysis.

In week 2, beginning November 14th – 18th, 2022, SBAR observation on the unit will be in effect by project lead and all SBAR sheet collected and placed in folder secured in unit manager's locked desk cabinet. Week 3 of SBAR implementation will begin on November 21st - 25th, 2022, with continued monitoring and observation of the SBAR use and gathering feedback of through group discussions.

In the 4th week of the SBAR implementation, beginning November 28th – December 2nd, 2022, medication error report will be generated by the nurse manager on the unit for data analysis to evaluate outcome of SBAR implementation. Results of the SBAR implementation

and its outcome will then be determined using statistical instrument that will analyze the data. A figure of the project's timeline is attached in Appendix H.

Tools

To reduce sentinel events, one suggestion is using an SBAR tool, to standardize communication. The Joint Commission suggests investment of leadership in improving handoff communication amongst healthcare providers and promotion of a culture of safety (The joint Commission, Sentinel Alert, 2017).

SBAR

The AHRQ's Team STEPPS 2.0 SBAR tool was selected as the standardized tool to use in nursing communication handoff report at the project site. It was acknowledged as a feasible and effective tool to improve communication among healthcare staff (Martin & Ciurzynski, 2015). It has also been recognized as an important tool and effective tool for shift-to-shift handoff communication in healthcare (AHRQ, 2019). The SBAR is a standardized communication tool that has been validated in clinical practice to enhance communication, thereby increasing safety. The U.S. navy created the SBAR tool which was later modified for health care by Kaiser Permanente. Full permission was granted from the Agency for Healthcare Research and Quality (AHRQ) to use the TeamSTEPPS 2.0 SBAR tool in this QI project to be implemented at the project site facility. In efforts to improve patient safety, nursing has supported this project to be implemented and used as a standardized communication tool for handoff reports by nurses.

This quality improvement project aims at improving handoff communication among nurses to decrease medication errors by introducing AHRQ's Team STEPPS 2.0 SBAR, that will improve the shift-to-shift handoff communication quality shared in nursing.

The TeamSTEPPS Pocket Guide

The TeamSTEPPS Pocket Guide will be utilized for training and for educating nursing staff on ways to utilize the SBAR handoff communication tool efficiently and is attached in Appendix C. Copies will be distributed among the nurses to use as a reference and guide.

Training PowerPoint

In addition to the TeamSTEPPS Pocket Guide, a training PowerPoint will be used for educating and training staff nurses on the unit on use of the SBAR tool. The nursing staff will be provided with training on how to use the SBAR tool for proper handoff communication via a PowerPoint created by project lead which will provide nurses with instructions and guidance on SBAR utilization and is attached in Appendix D.

Pre- and Post-Test

A pre-posttest survey will be conducted 4 weeks prior starting the week of November 7th, before and after the SBAR education, to assess and evaluate nurses' knowledge of the SBAR use and its effectiveness, using a Knowledge and Attitudes Toward SBAR Instrument (KA-SBAR) (Cooper, et al., 2020). A printed copy of the KA-SBAR survey will be distributed to the nurses before and after the SBAR education and results will be collected and analyzed at the end of week 4. This study was designed to assess health professional graduate students' confidence in interprofessional healthcare communication. It was conducted by Cooper, et al., (2020) through the University of Michigan-Flint Physical Therapy Department and School of Nursing and has been reviewed by the University of Michigan-Flint Institutional Review Board (Cooper, et al., 2020). The KA-SBAR survey consists of knowledge of the SBAR tool and attitudes towards using the SBAR tool (Cooper, et al., 2020). The survey will be in paper format and should take 5 minutes or less to complete and survey responses will be anonymous (Cooper, et al., 2020). Full

permission was granted for utilization of the Knowledge and Attitudes Toward SBAR Instrument (KA-SBAR) in this project and is attached in Appendix E. The KA-SBAR pre/posttest survey is attached in Appendix F.

Chart Audit Tool

A paired t test will be utilized to compare means between two similar samples to pair the same group of people's test results before and after an intervention such as pre-posttest. An audit tool will be used to investigate the effectiveness and nurses' knowledge of the SBAR tool on improving communication among themselves. A Descriptive Statistics with Confidence Intervals auditing tool will also be used to analyze the number of medication errors before and after intervention which will be displayed in a table or graph to show the outcome rates.

All data pertaining to the SBAR use will be collected and entered in the chart audit tools for data analysis and are attached in Appendix G.

SBAR Training Flyer

The SBAR training flyer was created by project lead with permission granted by leadership for flyer to be distributed and posted in designated areas on the unit to notify the unit staff nurses of the SBAR training sessions. The SBAR training flyer contained relevant information regarding the upcoming training including dates, times, and location where the training will be held. The SBAR flyer is attached in Appendix I.

Data Collection Plan

Objective 1: Implement a standardized SBAR tool

Results of the pre-posttest survey will also be collected the week of November 7th. All data results will be entered in a Microsoft Excel (2020) spreadsheet which will be utilized to input the raw data with assigned numerical codes. The data extracted will be imported to IBM

SPSS Statistics version 28. An analysis will then be conducted of all variables to determine data outcome.

Objective 2: Reduce medication error

At the project site, it was discovered there were increased medication errors by 20% within six months. Further investigation revealed a potential correlational between medication errors and nursing handoff communication at the project site. The identified gap was related to ineffective staff communication, affecting medication accuracy. Recognizing that there is no standardized format of staff handoff communication at this project site, the nursing administration realized the significance of initiating a standardized communication tool.

Numerical data collection of medication error will be collected by the nurse manager of the unit 4 weeks prior to implementation, starting week 1: November 7th - November 11th, and at the final week of implementation of the QI project starting week 4: November 28 – December 2nd, to address the clinical question: "To what degree does implementation of an SBAR communication tool reduce medication errors among mental health staff nurses in a clinical setting as compared to current practice?" A medication error report will be obtained by nurse manager who will run a report to find out medication error rate.

Objectives 3: Educate appropriate mental health staff on use of SBAR tool for handoff reports

Staff nurses on the unit will be educated and trained on November 7th of week 1 at two separate 30 minutes sessions with options from 8:00 am – 8:30 am or 4:00 pm – 4:30 pm followed by 20 mins question-and-answer session in each time periods. Attendance will be collected at the beginning of the sessions to measure the percentage of nurses attending the SBAR training sessions.

Ethics/Human Subjects Protection

Ethical considerations are necessary when conducting a quality improvement project to assist the individual to coordinate their activities and actions to establish public trust (Polit & Beck, 2018). These considerations are upheld by the project lead by adhering to the project's site and Touro University Nevada's guidelines. The facility supported this quality improvement project in efforts to improve patient safety using a standardized communication tool. An IRB process was not required by the facility nor by Touro University Nevada's IRB committee as this is a quality improvement project.

Data Analysis Plan

A paired t test will be conducted to compare means between two similar samples involving pre-posttest results of the SBAR intervention with assumptions of paired t test. Data will be analyzed using SPSS version 28.

Descriptive statistics are distinct methods used to compute, outline, and compile accumulated research information in a coherent, relevant, and structured way. They are outlined numerically via tables or figured graphs (Vetter, 2017). To address the clinical question, the medication error rate will be compared using descriptive statistics with confidence interval. It will be used to compare the medication error rate to see if there is a statistically significance in medication error reduction. The relationships between variables will be examined using Pearson's and Spearman's rank correlation coefficient. Data analysis will be conducted using SPSS version 28.

Results

The purpose of this quality improvement project is to find out if or to what extent will the application of the Agency for Healthcare Research and Quality's (AHRQ) Team STEPPS 2.0

SBAR reduce medication inaccuracy among mental health staff nurses in a clinical setting over a four-weeks period. The findings from the project will therefore attempt to answer the question: to what degree does implementation of an SBAR communication tool, reduce medication errors among mental health staff nurses in a clinical setting as compared to current practice. The results from this project will add to the contributing literature regarding the importance of effective communication to reduce medication inaccuracy.

This result section presents the results of the data analysis that involved two exercises: i) survey to gauge the knowledge and attitude of the nurses towards adoption of the SBAR tool and, ii) medication error chart audit. Descriptive analysis describing the dependent variables was presented prior to discussing the results of the statistical tests. Inferential analysis involving the dependent variables was used and specifically paired sample and Wilcoxon Signed Rank test where each health worker included in the project had a pair of measurements, pre- and post-test data in a repeated measure design.

Findings from Survey on Knowledge and Attitude of using SBAR tool

A pre- and post-test survey was conducted at the beginning of the 4-week period to assess and evaluate the nurses' knowledge, attitude, and confidence toward using SBAR instrument. There were pre-test and post-test questions, and Appendix J summarizes the questions and how they were constructed using sub-constructs of related questions. Three sub-construct scores and overall scores were computed as Appendix J shows.

Descriptive Statistics

The descriptive statistics of 17 survey questions, including the sub-constructs and overall scores are presented in Table 1 below showing both the pre- and post-test values. The individual questions had relatively low standard deviations except for questions six and twelve which had

deviation more than 1, implying the data were more spread from the mean. Several post survey questions had standard deviations of zero implying that they were no major differences in responses received from the participants. Skewness and kurtosis are both important measures of distribution's shape and if both values are closer to zero, then it implies that the data is from a normal distribution. The post survey questions had much larger skewness and kurtosis values suggesting that those data might not show normal distribution.

Assumption Analysis for paired t-test statistic

For inferential analysis involving the sub-constructs and overall score variables, a paired t-test was proposed where each health worker included in the project had a pair of responses, pre- and post-test data in a repeated measure design. A paired t-test was to determine whether the mean change for these pairs was significantly different from zero. However, for analysis to conclusively use the paired t-test to get valid results, there are always assumptions that the data must meet. T-tests are quite robust and should be evaluated for the degree of deviation from these assumptions to assess the quality of the results. In the paired t-test analysis, the observations were defined as the differences between the two means of the observed paired values, and each assumption refers to these differences, not the original data values. There were two main assumptions tested: i) the observations should be approximately normally distributed and, ii) the observations should not contain any outliers.

Table 1:

Descriptive Statistics for the Nurse Survey to gauge Knowledge and Attitude for using the SBAR Tool

	Pre Test					Post Test					All Test				
	N	**Mean**	**SD**	**Kurt.**	**Skew.**	**N**	**Mean**	**SD**	**Kurt.**	**Skew.**	**N**	**Mean**	**SD**	**Kurt.**	**Skew.**
Knowledge of the SBAR Tool	10	11.30	0.67	-0.28	-0.43	10	4.30	0.48	-1.22	1.04	20	7.80	3.64	-2.12	0.03
Question 1	10	2.70	0.48	-1.22	-1.04	10	1.10	0.32	10.00	3.16	20	1.90	0.91	-1.85	0.21
Question 2	10	2.80	0.42	1.41	-1.78	10	1.00	0.00			20	1.90	0.97	-2.04	0.22
Question 3	10	2.80	0.42	1.41	-1.78	10	1.10	0.32	10.00	3.16	20	1.95	0.94	-1.99	0.11
Question 4	10	3.00	0.00			10	1.10	0.32	10.00	3.16	20	2.05	1.00	-2.15	-0.11
Self-Perceived Attitude Towards using the SBAR Tool	10	22.00	1.25	0.17	0.43	10	8.30	0.48	-1.22	1.04	20	15.15	7.09	-2.14	0.04
Question 5	10	2.70	0.48	-1.22	-1.04	10	1.10	0.32	10.00	3.16	20	1.90	0.91	-1.85	0.21
Question 6	10	3.10	0.32	10.00	3.16	10	1.00	0.00			20	2.05	1.10	-1.86	0.16
Question 7	10	2.70	0.48	-1.22	-1.04	10	1.10	0.32	10.00	3.16	20	1.90	0.91	-1.85	0.21
Question 8	10	2.70	0.48	-1.22	-1.04	10	1.00	0.00			20	1.85	0.93	-1.88	0.32
Question 9	10	2.70	0.48	-1.22	-1.04	10	1.00	0.00			20	1.85	0.93	-1.88	0.32
Question 10	10	2.70	0.48	-1.22	-1.04	10	1.00	0.00			20	1.85	0.93	-1.88	0.32
Question 11	10	2.20	0.79	-1.07	-0.41	10	1.00	0.00			20	1.60	0.82	-0.83	0.91
Question 12	10	3.20	0.42	1.41	1.78	10	1.10	0.32	10.00	3.16	20	2.15	1.14	-1.66	0.15
Confidence in Inter-Professional Healthcare Communication	10	12.50	1.90	-1.47	-0.06	10	5.40	0.52	-2.28	0.48	20	8.95	3.89	-1.66	0.32
Question 13	10	2.50	0.53	-2.57	-0.00	10	1.10	0.32	10.00	3.16	20	1.80	0.83	-1.43	0.41
Question 14	10	2.70	0.48	-1.22	-1.04	10	1.10	0.32	10.00	3.16	20	1.90	0.91	-1.85	0.21
Question 15	10	2.20	0.79	-1.07	-0.41	10	1.00	0.00			20	1.60	0.82	-0.83	0.91
Question 16	10	2.40	0.52	-2.28	0.48	10	1.00	0.00			20	1.70	0.80	-1.11	0.63
Question 17	10	2.70	0.48	-1.22	-1.04	10	1.20	0.42	1.41	1.78	20	1.95	0.89	-1.79	0.10
Overall	***10***	***45.80***	***3.01***	***-0.52***	***-0.65***	***10***	***18.00***	***0.67***	***0.08***	***0.00***	***20***	***31.90***	***14.42***	***-2.13***	***0.06***

On the assumption of normality, a Shapiro-Wilk tests of normality was conducted (Table 2) for the overall score as well as for the three sub-constructs and the results indicate that all except the knowledge sub-construct suggest data having a normally distributed. The knowledge sub-construct had a p-value of .02 implying the null hypothesis was rejected and alternative hypothesis accepted; the data does not have normal distribution.

Table 2:

Shapiro-Wilk Tests of Normality for Knowledge and Attitude for using the SBAR Tool

Variables	Statistic	df	Sig.
Overall	0.92	10	0.3
Knowledge of the SBAR Tool	0.82	10	0.02
Self-Perceived Attitude Towards using the SBAR Tool	0.93	10	0.4
Confidence in Inter-Professional Healthcare Communication	0.88	10	0.1

The last assumption touching on outliers was assessed and results indicated that two sub-constructs (Knowledge and Attitude) had some outliers.

Based on the two assumptions tested, it was concluded that the overall score and two sub-constructs suggest normality of data distribution. The Knowledge sub-construct had failed two assumption tests and so imply the data does follow the normal distribution characteristics. Those dependent variables that show normal distribution used paired sample t-test while for the knowledge sub-construct, used a non-parametric test, the Wilcoxon Signed Rank Test.

Differences between Pre and Post Test Surveys

A pre-post data to assess and evaluate the nurses' knowledge, attitude, and confidence toward using SBAR instrument was analyzed and based on the inspection of the data, both the

paired sample and Wilcoxon Signed Rank tests respectively were used for normal and non-normal distributed data, to determine whether the mean change for these pairs were significantly different from zero and so either accepting or rejecting the null hypotheses. The output from the paired sample t-test analyses is presented in Table 3 below. The results for the overall score indicate that the statistics of $t(9) = 27.0$, $p<.001$ were significantly different. The sample means for the overall score, moved from 45.8 to 18.0 indicating a 27.8 (60.7%) point reduction and a reduction imply the tool was positively evaluated. The lower the scores, the more positive evaluation of the tool since the scores ranged from strongly agree (1) to strongly disagree (5). On the self-perceived attitude towards using the SBAR tool, the results were $t(9) = 32.4$, $p<.001$, showing a reduction of average mean of 13.7 points (62.3%) which was statistically significant. The same trend was noted for

Table 3:

Paired Samples Test for Knowledge and Attitude for using the SBAR Tool

Variables		N	Mean	SD[1]	SE[2] Mean	t[3]	df[4]	Sig. [5]
Self-Perceived Attitude Towards using the Tool	Pre-Survey	10	22.00	1.25	0.39	32.39	9	< 0.001
	Post-Survey	10	8.30	0.48	0.15			
Confidence in Inter-Professional Healthcare Communication	Pre-Survey	10	12.50	1.90	0.60	10.53	9	< 0.001
	Post-Survey	10	5.40	0.52	0.16			
Overall	Pre-Survey	10	45.80	3.01	0.95	26.97	9	< 0.001
	Post-Survey	10	18.00	0.67	0.21			

1 - Standard deviation
2 - Standard Error
3 - Paired Sample Test Statistic
4 - The degrees of freedom
5 - Statistical significance (2-tailed)

the confidence in inter-professional healthcare communication which saw a reduction in average scores by 56.8% that were statistically significant.

The sub-construct of knowledge of the SBAR tool was tested using the non-parametric technique of Wilcoxon Signed Rank test since the data did not show a normal distribution with a

lot of outliers. The results indicated a reduction in scores from 11.3 to 4.30 representing an average reduction 7 points (61.9%), was significantly different (p=.004).

Table 3:

Wilcoxon Signed Rank Test for Knowledge and Attitude for using the SBAR Tool

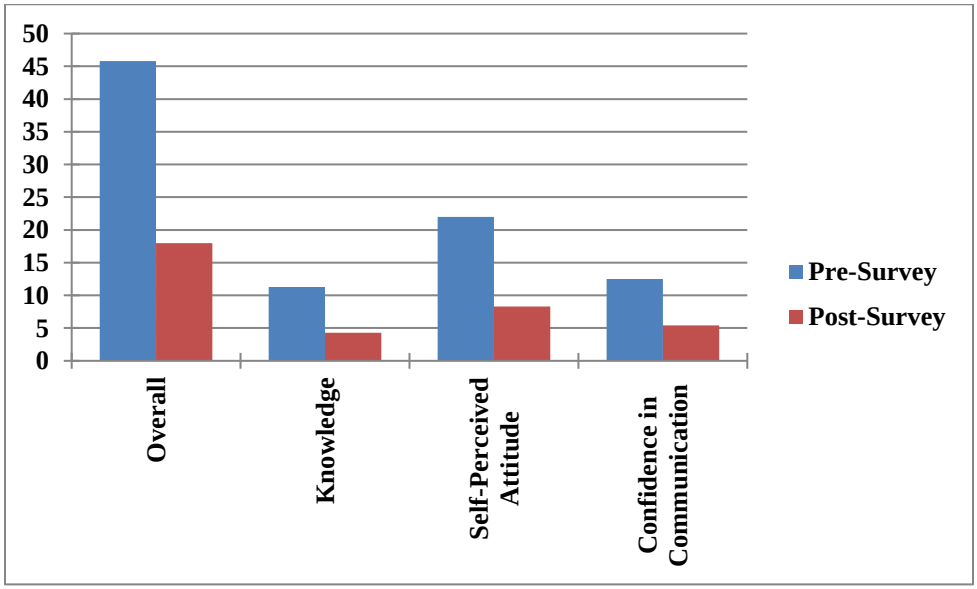
Variables	N	Mean	SD[1]	SE[2] Mean	z[3]	Sig. [4]
Knowledge of the SBAR Tool Pre-Survey	10	11.30	0.67	0.21		
Post-Survey	10	4.30	0.48	0.15	-2.87	0.004

1 - Standard deviation
2 - Standard Error
3 - Wilcoxon Signed Rank Test Statistic
4 - Asymptotic significance (2-tailed)

The figure 1 summarizes the findings in the form of a bar chart from the differences between Pre and Post Test Surveys, overall and disaggregated according to sub-constructs.

Figure 1

Bar Chart Showing the Differences Between Pre and Post Test Surveys



Findings from Medication Error Chart Audit

Examination of charts were conducted for pre-test and post-test errors and medication

error rates were compared to see if there were significance in overall error reductions. Given that the audits were done, and the records not linked to an individual, an independent t test technique was the statistic that was used to compare error rates to indicate if there are differences in means.

Descriptive Statistics

The descriptive statistics of the medical error audits are presented in Table 1 below showing both the pre- and post-test values. The table presents individual errors (missing signature, expired medicines, missing dose, and wrong time) as well the total medical errors. The total number of errors recorded for pre-audit were 12 and 4 for post-audit. Expired medicines were the most prevalent errors at 92% of all errors.

The standard deviation values were relatively small, indicating the values were tighter around the means. The skewness and kurtosis values indicating the distribution of the data however, had larger values from zeros indicating the sample data might not be normally distributed.

Assumption Analysis for Independent t-test statistic

To compare the audit results from the pre and post audits, it was proposed to use independent t-test since the audits were aggregated and could not identify individual nurses audited. The following assumptions were tested: i) no significant outliers, ii) the dependent variable (number of medication errors) should be approximately normally distributed for each group of independent variables (pre and post audits), and iii) need for homogeneity of variances. The assumption analysis results showed that the data were not normally

Table 4:

Descriptive Statistics for the Medication Chart Audits

	Pre-Audit Report						Post Audit Report						All Audit Report					
Variables	**N**	**Sum**	**Mean**	**SD**	**Kurt.**	**Skew.**	**N**	**Sum**	**Mean**	**SD**	**Kurt.**	**Skew.**	**N**	**Sum**	**Mean**	**SD**	**Kurt.**	**Skew.**
Medication Errors	***20***	***12***	***0.6***	***0.68***	***-0.45***	***0.71***	***20***	***4***	***0.2***	***0.41***	***0.7***	***1.62***	***40***	***16***	***0.4***	***0.59***	***0.52***	***1.2***
Missing Signature	20	2	0.1	0.31	7.04	2.89	20	0	0	0			40	2	0.05	0.22	17.29	4.29
Expired Meds	20	7	0.35	0.49	-1.72	0.68	20	4	0.2	0.41	0.7	1.62	40	11	0.28	0.45	-0.95	1.05
Missing Dose	20	1	0.05	0.22	20	4.47	20	0	0	0			40	1	0.03	0.16	40	6.32
Wrong Time	20	2	0.1	0.31	7.04	2.89	20	0	0	0			40	2	0.05	0.22	17.29	4.29

distributed (Table 5) and had a lot of outliers in the data.

Table 5:

Shapiro-Wilk Test of Normality for the Medication

Chart Audits

		Statistic	df	Sig.
Total	Pre-Audit	0.76	20	< 0.001
Errors	Post-Audit	0.50	20	< 0.001

The independent t-test computed via SPSS produces Levene's test for homogeneity of variances and so will be presented when discussing the results. This enables the independent t-test to produce two sets of results: those assuming equal variances and those assuming unequal variances. Despite the data not meeting all the assumptions, the analysis however, used the independent t-test and presented the valid results based on either equal variances or not.

Differences between Pre and Post Audits.

The independent t-test results for the total number of pre and post audit errors are presented in Table 6 below. The null hypothesis of Levene's test is that all groups of independent variables (pre and post) have equal variances. The test results of F=10.83, p = 0.02, indicated that the variances between pre and post audit scores were not equal since the p-value was less than .05 of rejecting the null hypothesis. The independent t-test results of equal variances not assumed are the ones presented in Table 6. The results show there was indeed a difference in average mean of total errors between pre and post audits indicate that the post-audit errors were much less than the pre-audit ones. The pre-audit errors were average mean of 1.2 while those of post-audit were 0.4, representing a 67% reduction in medication errors. The statistics t(31.2) = 2.25, p = .03 were statistically significant.

Table 6:

Independent T-Test for Medication Chart Audits

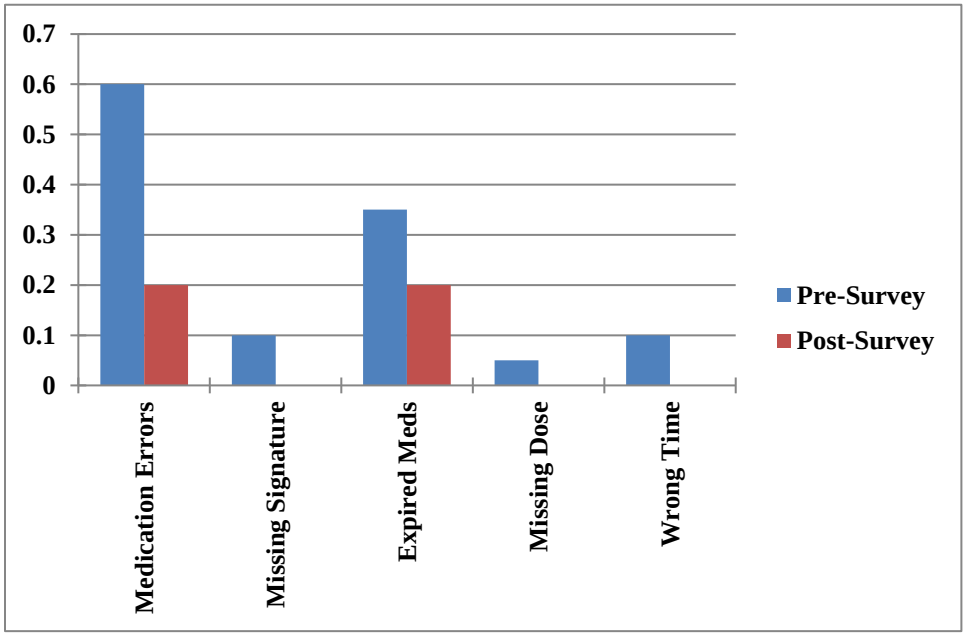
Variables		N	Mean	SD[1]	SE[2] Mean	t[3]	df[4]	Sig. [5]
Total Errors [6]	Pre-Audit	20	1.20	1.36	0.30	2.25	31.20	0.03
	Post-Audit	20	0.40	0.82	0.18			

1 - Standard deviation
2 - Standard Error
3 - T Test Statistic
4 - The degrees of freedom
5 - Statistical significance (2-tailed)
6 - Equal variances not assumed

Figure 2 summarizes the findings in terms of a bar chart showing the differences, overall medical audit, with disaggregation according to the specific audits.

Figure 2

Bar Chart Showing the Differences Between Pre and Post Medication Chart Audits



Summary

The purpose of this project was aimed at assessing the impact of implementation of an SBAR communication tool to reduce medication errors among mental health staff nurses in a

clinical setting as compared to current practice. The main project question has been explored and results generated based on various test statistics, showing some impact on the SBAR communication tool to reduce medication errors by 67%. The results generated from this project will add to the contributing literature regarding the importance of effective communication to reduce medication inaccuracy.

A standardized communication tool, Team STEPPS 2.0 SBAR that was created by the U.S. navy and adapted for health care has been recognized in clinical practice to enhance communication and increase safety (Shahid & Thomas, 2018). SBAR is indicated as being effective, improving safety and nursing satisfaction in the handoff process and decreasing medical errors (Usher et al., 2018).

Further evaluation of the results will present and discuss the findings from the project analysis. The discussion will include interpretation of the findings, limitations of the project and describe the potential implications and recommendations.

Limitation

Bias

Cohen & Ray, (2020) indicate that potential bias can occur in project research data, as this can be skewed for various reasons. The project lead had predetermined ideas of what the findings of the intervention will be regarding the outcome of the QI project. The predictions can advertently or inadvertently skew the data (Cohen & Ray, 2020). The data was collected in a standardized manner to mitigate the risk of skewing the medication error data, and no changes were made to the medication error data collection throughout implementation of the project (Cohen & Ray, 2020).

Design

This QI project utilized a quasi-experimental design to evaluate the correlation between the variables of SBAR and medication errors. Charts on the unit were examined for medication errors as staff nurses utilized the SBAR in their handoff communication report. The data from medication errors were assessed 4 weeks before the SBAR implementation, and 4 weeks after implementation of the SBAR in nursing handoff communication. Due to time constraints, there were keen focus on keeping the project aligned with its quasi-experimental design to effectively evaluate the intervention without randomization.

Data Collection

Examination of charts were conducted for pre-test and post-test errors, and medication error rates were assessed to observe if there were significance in medication error reduction. Collected data included the de-identified numerical data of medication errors generated by the nurse manager on the unit four weeks pre and post implementation of the QI project to address the clinical question. Data generated on medication errors had a limited period of 4 weeks pre-and post-initiation of SBAR intervention, with the raw data input into a Microsoft Excel spreadsheet and exported to IMB SPSS software. Given audits were completed, the records were not linked to individual patients. The nursing staff were encouraged to stay on course throughout the 4-week intervention to make sure data was captured concisely and in a timely manner. Careful observation and evaluation of data was employed to minimize risk of inaccuracy or flaws of the results.

Data Analysis

The collected data included numerical values of pre and post audited charts of medication errors retrieved 4 weeks before the initiation of SBAR and 4 weeks post implementation of SBAR which is the dependent variable. The independent variable, which is the SBAR reports

that were completed in the 4-week time frame of this project. To ensure accuracy in results from collected data, medication error reports generated were precisely checked for inaccuracies.

Conclusion

In this QI project, the effects of SBAR intervention and medication error rates were examined and found to have a significance reduction in error rates by 67 % post SBAR intervention. Nurses had a better understanding of the SBAR after being educated in SBAR training sessions. Nurses' knowledge, attitude, and skills (KSA) improved after SBAR intervention was delivered with observed medication error reduction after post-SBAR education. Therefore, the project outcomes of the SBAR intervention were met with more than half reduction in medication errors.

The project was useful because the results showed significant difference in average mean of total errors between pre and post audits, indicating that the post-audit errors were much less than the pre-audit ones. Pre-audit errors were average mean of 1.2 while those of post-audit were 0.4, representing 67% reduction.

The project is sustainable as nursing administration support the implementation of SBAR intervention in their nursing handoff communication after medication errors were reduced at the project site. Continued training as well as implementation of an SBAR policy should be considered as supportive measures for sustainability of the project.

The implications of this project are that when using SBAR in this type of practice, errors may be reduced. SBAR knowledge dissemination such as SBAR training sessions and further intervention of SBAR communication tool will be beneficial in this area of practice with potential for project expansion. Similar practices may consider adoption, but further data collection should be pursed to determine long term outcomes.

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Appendix A

Permission to Use SBAR Tool

Good afternoon Ms. McFarlane,

This email constitutes permission from the Agency for Healthcare Research and Quality (AHRQ) for you to use the TeamSTEPPS® 2.0 SBAR tool in your project for the DNP degree from Touro University (Henderson, NV). You can reprint or adapt the SBAR tool from "Module 3: Communication" of TeamSTEPPS® 2.0 or the TeamSTEPPS® Pocket Guide (https://www.ahrq.gov/sites/default/files/publications/files/pocketguide.pdf). In addition, you have permission to use the SBAR video, which can be downloaded from the TeamSTEPPS® 2.0 website (https://www.ahrq.gov/teamstepps/instructor/videos/downloads.html), or accessed from AHRQ's Patient Safety YouTube® channel (https://www.youtube.com/user/ahrqpatientsafety).

You can reprint the SBAR tool in your project paper. However, if you subsequently want to reprint it in a professional journal article or book chapter, you will have to contact the AHRQ Office of Communications to obtain reprint rights for the publisher.

The suggested reference citation is:

> Pocket Guide. Team Strategies &Tools to Enhance Productivity & Patient Safety (TeamSTEPPS) 2.0. Content last reviewed January 2020. Agency for Healthcare Research and Quality, Rockville, MD. https://www.ahrq.gov/teamstepps/instructor/essentials/pocketguide.html

All the best on the success of your project and your degree program.

Sincerely,

David I. Lewin, M.Phil.

Health Communications Specialist/Manager of Copyrights & Permissions

Office of Communications

Agency for Healthcare Research and Quality

5600 Fishers Lane

Room # 07N58D / Mail Stop # 07N94A

Rockville, MD 20857 USA

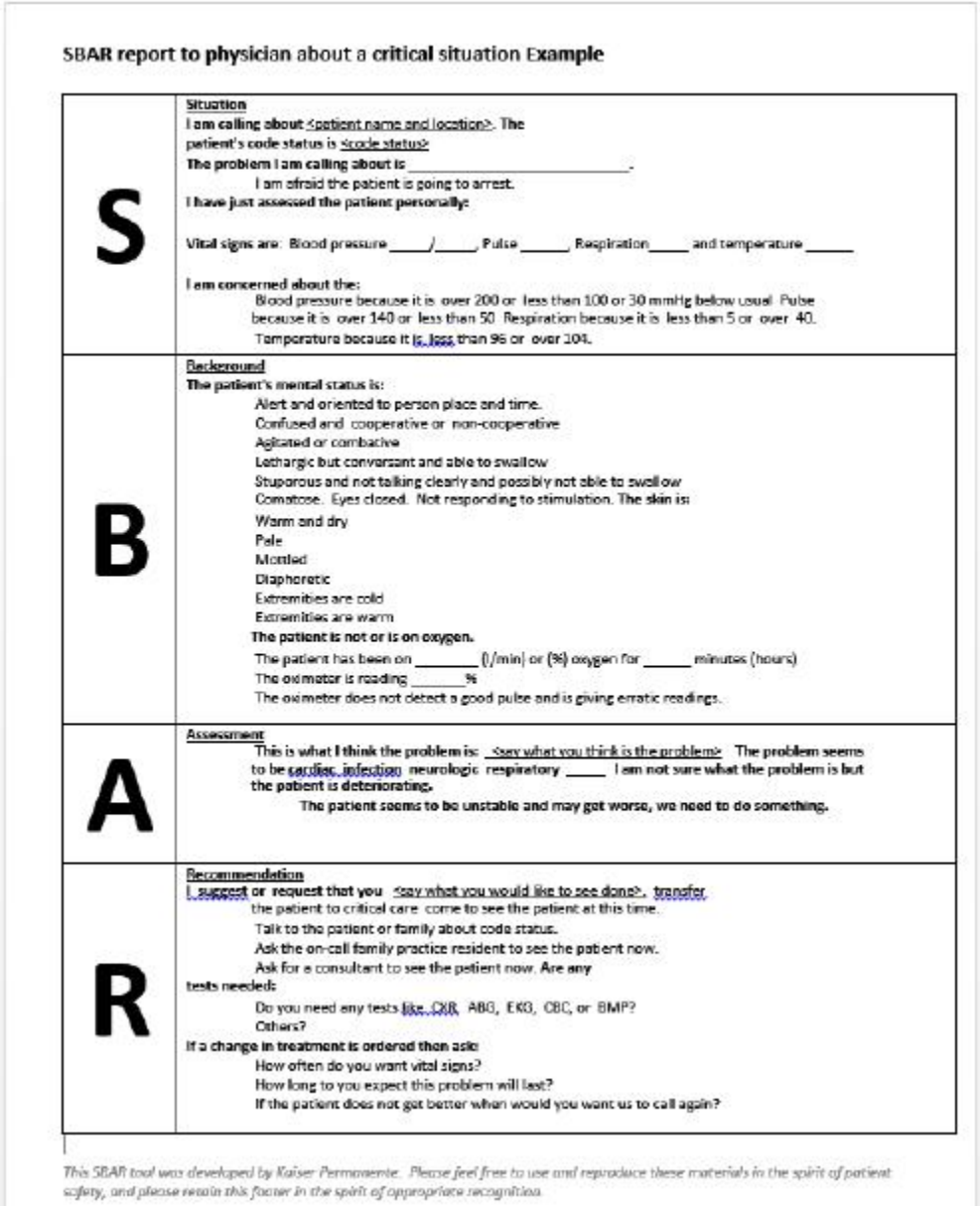
Email: David.Lewin@ahrq.hhs.gov

Phone: +1 301-427-1895

Fax: +1 301-427-1783

Appendix B

SBAR Tool



SBAR report to physician about a critical situation Example

S	**Situation** **I am calling about** <patient name and location>. **The patient's code status is** <code status> **The problem I am calling about is** _____. I am afraid the patient is going to arrest. **I have just assessed the patient personally:** **Vital signs are:** Blood pressure _____/_____, Pulse _____, Respiration_____ and temperature _____ **I am concerned about the:** Blood pressure because it is over 200 or less than 100 or 30 mmHg below usual. Pulse because it is over 140 or less than 50. Respiration because it is less than 5 or over 40. Temperature because it is less than 96 or over 104.
B	**Background** **The patient's mental status is:** Alert and oriented to person place and time. Confused and cooperative or non-cooperative Agitated or combative Lethargic but conversant and able to swallow Stuporous and not talking clearly and possibly not able to swallow Comatose. Eyes closed. Not responding to stimulation. **The skin is:** Warm and dry Pale Mottled Diaphoretic Extremities are cold Extremities are warm **The patient is not or is on oxygen.** The patient has been on _____ (l/min) or (%) oxygen for _____ minutes (hours) The oximeter is reading _____% The oximeter does not detect a good pulse and is giving erratic readings.
A	**Assessment** **This is what I think the problem is:** <say what you think is the problem> **The problem seems to be cardiac infection neurologic respiratory _____ I am not sure what the problem is but the patient is deteriorating.** **The patient seems to be unstable and may get worse, we need to do something.**
R	**Recommendation** **I suggest or request that you** <say what you would like to see done>. transfer the patient to critical care come to see the patient at this time. Talk to the patient or family about code status. Ask the on-call family practice resident to see the patient now. Ask for a consultant to see the patient now. **Are any tests needed:** Do you need any tests like CXR, ABG, EKG, CBC, or BMP? Others? **If a change in treatment is ordered then ask:** How often do you want vital signs? How long to you expect this problem will last? If the patient does not get better when would you want us to call again?

This SBAR tool was developed by Kaiser Permanente. Please feel free to use and reproduce these materials in the spirit of patient safety, and please retain this footer in the spirit of appropriate recognition.

Appendix C

TeamSTEPPS® 2.0 Pocket Guide

AHRQ TEAMSTEPPS INSTRUCTOR ESSENTIALS POCKET GUIDE SBAR

Communication

[D] Select for Text Description

SBAR

A technique for communicating critical information that requires immediate attention and action concerning a patient's condition

Situation—What is going on with the patient?

"I am calling about Mrs. Joseph in room 251. Chief complaint is shortness of breath of new onset."

Background—What is the clinical background or context?

"Patient is a 62 year old female post-op day one from abdominal surgery. No prior history of cardiac or lung disease."

Assessment—What do I think the problem is?

"Breath sounds are decreased on the right side with acknowledgement of pain. Would like to rule-out pneumothorax."

Recommendation and Request—What would I do to correct it?

"I feel strongly the patient should be assessed now. Can you come to room 251 now?"

Call-Out

Strategy used to communicate important or critical information

- Informs all team members simultaneously during emergent situations.
- Helps team members anticipate next steps.
- Important to direct responsibility to a specific individual responsible for carrying out the task.

Example during an incoming trauma:

Leader: *"Airway status?"*
Resident: *"Airway clear"*
Leader: *"Breath sounds?"*
Resident: *"Breath sounds decreased on right"*
Leader: *"Blood pressure?"*
Nurse: *"BP is 96/62"*

Check-Back

Using closed-loop communication to ensure that information conveyed by the sender is understood by the receiver as intended.

The steps include the following:

1. Sender initiates the message.

2. Receiver accepts the message and provides feedback.
3. Sender double-checks to ensure that the message was received.

Example:

Doctor: *"Give 25 mg Benadryl IV push"*
Nurse: *"25 mg Benadryl IV push"*
Doctor: *"That's correct"*

Handoff

The transfer of information (along with authority and responsibility) during transitions in care across the continuum. It includes an opportunity to ask questions, clarify, and confirm.

Examples of transitions in care include shift changes; transfer of responsibility between and among nursing assistants, nurses, nurse practitioners, physician assistants, and physicians; and patient transfers.

Handoff

Strategy designed to enhance information exchange during transitions in care

"I PASS THE BATON"		
I	Introduction	Introduce yourself and your role/job (include patient).
P	Patient	Name, identifiers, age, sex, location.
A	Assessment	Present chief complaint, vital signs, symptoms, and diagnosis.
S	Situation	Current status/circumstances, including code status, level of (un)certainty, recent changes, and response to treatment.

S	Safety	Critical lab values/reports, socioeconomic factors, allergies, and alerts (falls, isolation, etc.).
THE		
B	Background	Comorbidities, previous episodes, current medications, and family history.
A	Actions	Explain what actions were taken or are required. Provide rationale.
T	Timing	Level of urgency and explicit timing and prioritization of actions.
O	Ownership	Identify who is responsible (person/team), including patient/family members.
N	Next	What will happen next? Anticipated changes? What is the plan? Are there contingency plans?

Referenced by:

Pocket Guide. Team Strategies &Tools to Enhance Productivity & Patient Safety (TeamSTEPPS) 2.0. Content last reviewed January 2020. Agency for Healthcare Research and Quality, Rockville, MD. https://www.ahrq.gov/teamstepps/instructor/essentials/pocketguide.html

Appendix D

SBAR Training PowerPoint

Appendix E

Permission Request

External

Inbox

Sandra Mcfarlane <smcfarla@student.touro.edu> Sep 25, 2022, 5:23 PM (7 days ago)

to deniser

To Whom it May Concern,

I am a DNP student at Touro University Nevada and I am working on a project pertaining to SBAR communication among nurses. I am requesting permission to utilize the KA-SBAR instrument within my project. Please advise on how I can obtain a copy of the KA-SBAR tool that was utilized in the study "Preliminary Psychometrics of the Knowledge and Attitudes Toward SBAR Instrument (KA-SBAR)" to use in my project. Any information will be much appreciated. Thank you.

Regards,

Sandra McFarlane

Denise Cooper Sep 26, 2022, 10:55 AM (6 days ago)

to me

Hi Sandra,

I've shared the article per your request however this article references the study where the tool was used.

Cooper, D., Keiser, M., Berg, K., & Sherman, E. (2019). Improving Interprofessional Communication Confidence among Physical Therapy and Nurse Practitioner Students. *Journal of Physical Therapy Education*, 33(3), 177-184. https://doi.org/10.1097/JTE.0000000000000092

Appendix E

Denise Cooper Thu, Sep 29, 10:09 PM (3 days ago)

to Erica, Megan, Karen, me

Hi Sandra,

Here are the pre and post tests that we used in the 2019 JOPTE study. You have permission to use this but please make sure it is cited.

Best of luck

***Denise Cooper*, DNP, RN, ANP-BC**
Director of Graduate Nursing Affairs
Associate Professor
University of Michigan-Flint
School of Nursing
WSW 2109
303 East Kearsley St.
Flint. MI 48502
810-424-5409 Office
810-762-3420 SON Office
810-766-6851 Fax
deniser@umich.edu

Appendix F

IPC Confidence Assessment of DPT Students and DNP Students Pre-Post survey

Start of Block: Default Question Block

This study was designed to assess student Physical Therapist and student Nurse Practitioner confidence in interprofessional healthcare communication. This study was originally conducted by Dr. Karen Berg, PT, DPT, OCS, Dr. Erica Sherman PT, DPT, MBA, Dr. Megan Keiser DNP, RN and Dr. Denise Cooper DNP, RN, ANP-BC. It has been reviewed by the University of Michigan-Flint Institutional Review Board and found to be exempt. This survey consists of knowledge of the SBAR tool and attitudes towards using the SBAR tool. The survey should take 5 minutes or less to complete. All responses are anonymous. If you agree to participate in this survey please check "Agree" to begin the survey. If you do not wish to participate, please check "Disagree" and your responses will not be included in the survey.

- ○ Agree (1)
- ○ Disagree (2)

Page Break

Q5 The following questions address your knowledge of the SBAR tool.

Q6 My ability to report clearly about the patients situation.

- Excellent (1)
- Good (2)
- Average (3)
- Fair (4)
- Poor (5)

Q7 My ability to report the background of the situation clearly.

- Excellent (1)
- Good (2)
- Average (3)
- Fair (4)
- Poor (5)

Q8 My ability to report current assessment of the situation clearly.

- Excellent (1)
- Good (2)
- Average (3)
- Fair (4)
- Poor (5)

Q9 My ability to report the recommendation or request clearly.

- Excellent (1)
- Good (2)
- Average (3)
- Fair (4)
- Poor (5)

Page Break

Q10 The following questions address your self-perceived attitude towards using the SBAR tool.

Q11 Using SBAR will help me to improve communication skills in interactions with other healthcare providers.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Neutral (3)
- ○ Disagree (4)
- ○ Strongly disagree (5)

Q12 Using SBAR will help me to improve communication skills with physicians and other primary care providers.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Neutral (3)
- ○ Disagree (4)
- ○ Strongly disagree (5)

Q13 Using SBAR will increase my critical thinking skills during patient encounters.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Neutral (3)
- ○ Disagree (4)
- ○ Strongly disagree (5)

Q14 Using SBAR will increase the quality and safety of patient care.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Neutral (3)
- ○ Disagree (4)
- ○ Strongly disagree (5)

Q15 Using SBAR to communicate is an efficient use of my time.

- Strongly agree (1)
- Agree (2)
- Neutral (3)
- Disagree (4)
- Strongly disagree (5)

Q16 SBAR is applicable to my clinical practice.

- Strongly agree (1)
- Agree (2)
- Neutral (3)
- Disagree (4)
- Strongly disagree (5)

Q17 SBAR is easy to practice.

- Strongly agree (1)
- Agree (2)
- Neutral (3)
- Disagree (4)
- Strongly disagree (5)

Q18 I will use SBAR during my clinical practice.

- Strongly agree (1)
- Agree (2)
- Neutral (3)
- Disagree (4)
- Strongly disagree (5)

Page Break

Q21 The following questions address your confidence in interprofessional healthcare communication.

Q22 I am confident in my interprofessional healthcare communication ability.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Neutral (3)
- ○ Disagree (4)
- ○ Strongly disagree (5)

Q23 I am confident in my ability to report pertinent information in an interprofessional healthcare phone call.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Neutral (3)
- ○ Disagree (4)
- ○ Strongly disagree (5)

Q27 Using the SBAR tool improved my confidence in interprofessional healthcare collaboration and communication.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Neutral (3)
- ○ Disagree (4)
- ○ Strongly disagree (5)

Q28 This interprofessional educational experience improved my confidence in interprofessional healthcare communication.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Neutral (3)
- ○ Disagree (4)
- ○ Strongly disagree (5)

Q25 I would benefit from additional interprofessional education experiences to improve my confidence in my ability to effectively communicate with other health care professionals.

- ○ Strongly agree (1)
- ○ Agree (2)
- ○ Neutral (3)
- ○ Disagree (4)
- ○ Strongly disagree (5)

End of Block: Default Question Block

Referenced by:

Cooper, D., Keiser, M., Berg, K., & Sherman, E. (2019). Improving Interprofessional Communication Confidence among Physical Therapy and Nurse Practitioner Students. *Journal of Physical Therapy Education*, 33(3), 177-184. https://doi.org/10.1097/JTE.0000000000000092

Appendix G

Option A: **Paired t test: Utilized to compare means between two similar samples. (Generally, pairs the same group of people's test results before and after an intervention such as pre-posttest)**

Data Collection Tool

Participant #	Total Pre-test score	Total Post-Test Score
1		
2		
3		
4		
5		

Appendix G

Option C: Descriptive Statistics with Confidence Interval Testing

Data Collection Tool:

Number of errors before and after	Medication Error Report (Pre-intervention)	Medication Error Report (Post-intervention)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Average:		

Appendix H

Figure: Project's Timeline

Week 1: November 7th – 11th, 2022	Live educational training session for staff LPNs and RNs. Question-and-answer periods Administer SBAR Pre-posttest survey SBAR surveys will be placed in a secured folder Provide nurses with blank SBAR fill-in-the blank sheets to be use in their handoff shift reports Nurse manager and charge nurse distribute Sbar tool at beginning of shift for 4 weeks The nurses will then place the SBAR sheets in a secured folder Obtain medication error report
Week 2: November 14th – 18th,2022	Provide nurses with blank SBAR fill-in-the blank sheets to be use in their handoff shift reports Gather feedback via group discussion
Week 3: November 21st – 25th ,2022	Provide nurses with blank SBAR fill-in-the blank sheets to be use in their handoff shift reports Gather feedback via group discussion
Week 4: November 28th – Dec 2nd,2022	Provide nurses with blank SBAR fill-in-the blank sheets to be use in their handoff shift reports Obtain medication error report Evaluate outcome by analyzing data Provide results

Appendix I

SBAR Training

Situation * Background

Assessment * Recommendation

An ***easy-to-use*** communication tool to improve handoff report for Nurses (LPNs & RNs)

Staff Conference Room

There will be 2 Sessions:

8:00 am – 8:30 am

4:00 pm – 4:30 pm

Date: Nov 7th & 8th 2022

Appendix J

Appendix J:

Description of the Survey to gauge Knowledge and Attitude for the SBAR Tool

No.	Question	Response	Sub-Construct
1	My ability to report clearly about the patient's situation	Excellent(1) Good(2) Average(3) Fair(4) Poor(5)	Knowledge of the SBAR tool
2	My ability to report the background of the situation clearly		
3	My ability to report current assessment of the situation clearly		
4	My ability to report the recommendation or request clearly		
5	Using SBAR will help me to improve communication skills in interactions with other healthcare providers	Strongly agree(1) Agree(2) Neutral(3) Disagree(4) Strongly disagree(5)	Self-perceived attitude towards using the SBAR tool
6	Using SBAR will help me to improve communication skills with physicians and other primary care providers		
7	Using SBAR will increase my critical thinking skills during patient encounters		
8	Using SBAR will increase the quality and safety of patient care		
9	Using SBAR to communicate is an efficient use of my time		
10	SBAR is applicable to my clinical practice		
11	SBAR is easy to practice		
12	I will use SBAR during my clinical practice		
13	I am confident in my inter professional healthcare communication ability	Strongly agree(1) Agree(2) Neutral(3) Disagree(4) Strongly disagree(5)	Confidence in inter professional healthcare communication.
14	I am confident in my ability to report pertinent information in an inter professional healthcare phone call		
15	Using the SBAR tool improved my confidence in inter professional healthcare collaboration and communication		
16	This inter-professional educational experience improved my confidence in inter-professional healthcare communication		
17	I would benefit from additional inter-professional education experiences to improve my confidence in my ability to effectively communicate with other health care professionals		