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ANALYSIS OF HEALTHCARE MISCOMMUNICATION AND HOW TO EFFECTIVELY IMPROVE COMMUNICATION OUTCOMES: AN INTEGRATIVE REVIEW

A Scholarly Project

Submitted to the

Faculty of Liberty University

In partial fulfillment of

The requirements for the degree

Of Doctor of Nursing Practice

By

Jill Suzanne Smith

Liberty University

Lynchburg, VA

March, 2021

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Scholarly Project Chair Approval:

Lynne Sanders, EdD, MSN, RN, CNE Date

ABSTRACT

Healthcare workers convey client information regularly to provide essential and safe care. Errors in communication have been linked to a decrease in client satisfaction and an increase in medical errors. Both the Joint Commission and the World Health Organization have recommended using a standard communication tool, SBAR, to increase client satisfaction and decrease medical errors. A review of 52 research articles determined effective SBAR training should be conducted utilizing simulations to improve the healthcare providers' self-confidence and usage of the SBAR tool. This integrative review also concluded the number and length of SBAR simulation sessions have no consequence on the effectiveness of training. Successful communication training increases SBAR self-confidence and usage, which has been linked to fewer communication errors.

Keywords: healthcare communication, effects of healthcare miscommunications, communication tools, SBAR, simulation, simulation length, simulation timing, SBAR self-confidence, and SBAR usage

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First, I would like to thank and extend my gratitude to my project chair, Dr. Sanders. Without her support and encouragement, this endeavor would have never come to fruition. Our conversations and correspondence lifted my spirits and supplied the motivation I needed to continue my educational path. Her faith in Christ and me was apparent throughout this process and was much appreciated.

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Last, I would like to extend my sincere appreciation to my parents, Ron and Glenda, my sister, Amy, and my brother-in-law, Gene. Without their words of inspiration and providing me the time to complete this project and all my other coursework over these past two years, I would have never completed this project. My parents asked for frequent project updates, which kept me on schedule. My sister encouraged me to complete my degree to fulfill the potential she knows is within me. Gene kept me laughing and seeing the silver lining in all aspects of my work.

I should acknowledge the impact COVID-19 has had on our lives and my project. Initially, I wished to complete this project by working with the nursing staff at John Randolph Medical Center. My project could have been stopped at any time due to the COVID-19 meeting restrictions. The project was moved from an in-person study to a literature review. At first, I was

saddened by the fact I would not complete my initial project. While conducting the literature review, my attitude has dramatically changed. I now realize I have learned even more about this project than I had initially thought. God did close one pathway for me, but He opened a much larger road allowing me to grow intellectually and reinforce my faith.

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List of Abbreviations

Institute of Medicine (IOM)

Institutional Review Board (IRB)

Situation, Background, Assessment, and Recommendation (SBAR)

World Health Organization (WHO)

SECTION ONE: FORMULATING THE REVIEW QUESTIONS

Introduction

The exchange of information is an outcome of communication that helps individuals make informed decisions (Manojlovich et al., 2015). In the healthcare setting, communication refers to both the formal and informal sharing of crucial and timely information between healthcare workers and between healthcare workers and clients (Pokojova & Bartlova, 2018). Strong communication skills are required to ensure the participants have confidence in the exchanged information (Woda et al., 2018). Effective communication between healthcare workers is vital to maintain continuity of care and client safety and reduce adverse events and medical errors (Yu & Kang, 2017).

To preserve the continuity of care, healthcare providers often exchange information during a formal handoff process (Kostoff et al., 2016). It has been shown that hospitalized clients have, on average, 15 or more handoffs during a 5-day hospital stay (Merten et al., 3017). Handoffs intend to ensure a client's medical history is transferred from one provider to the next (Foronda et al., 2019). The Joint Commission has identified miscommunication during handoffs as the predominant cause of reported disruptions in care; it has been determined that up to 37% of all handoffs did not contain all the necessary information (Kostiuk, 2015). The World Health Organization (WHO), World Alliance for Patient Safety, and Institute for Safety & Quality in Health Care Research have all stated that accurate and complete communication should be a priority during handoffs and called for a standardized handoff format to improve continuity of care, nursing efficiency, and client safety (Pokojova & Bartlova, 2018). WHO has also predicted the increased use of standardized handoff reports will reduce adverse events (Pokojava & Bartlova, 2018).

Adverse events include erroneous operations, client falls, medical errors, delay in care, and accidental deaths, all of which lead to increased financial costs (Wang et al., 2015). Ineffective communication is the primary factor causing adverse events (Wang et al., 2015). A review of nurse-healthcare provider verbal transactions revealed various factors, including different communication styles. The lack of mutual understanding of roles and responsibilities contributed to miscommunications between healthcare workers (Shahid & Thomas, 2018). Miscommunications can also be attributed to the hierarchical reporting format, gender, education level, cultural backgrounds, stress, fatigue, and social structure (Shahid & Thomas, 2018). Using a standardized communication tool provides uniformity regardless of profession or experience and allows the user to focus on the information being exchanged and not the participants (Stewart & Hand, 2017). Improving communication effectiveness between healthcare providers improves client safety and has been a priority for both the Institute of Medicine (IOM) and the Joint Commission for the past several years (Wang et al., 2105).

In a study focusing on client safety, the Joint Commission reviewed 936 sentinel events and determined 744 were caused by miscommunication (Brust-Sisti et al., 2019). The WHO has defined client safety as reducing unnecessary harm associated with healthcare interventions to an acceptable minimum safety standard (Muller et al., 2018). Minimizing damage to clients is a critical component of effective, high-quality healthcare. Client safety parameters are regulated by state reporting laws and the Joint Commission (Hawthorne et al., 2017). The Institute for Healthcare Improvement released a report stating that standardized communication would positively impact the transfer of a client's medical information and client safety (Hawthorne et al., 2017).

Standardized communication is also critical to reducing medication errors (Im & Aaronson, 2020). The IOM reported nearly 100,000 deaths yearly related to medical error (Costello et al., 2017). It has also been estimated that hospitalized clients can be subjected to at least one medication error per day (Schmidt et al., 2017). Studies have reported that medication errors could be attributed to errors of omission, errors of commission, and communication errors (Clapper & Ching, 2020). Effective communication between the nurse and the client during the drug administration has been demonstrated to reduce medication errors (Scott, 2016).

Since nurses spend more time with clients than other healthcare workers, the ability to communicate is essential (Wang et al., 2015). The verbal interactions between the nurse and clients should be clear, concise, and productive (Ting et al., 2017). Effective nurse-client communication also helps to ensure a positive working nurse-client relationship (Pokojova & Bartlova, 2018). Also, nurses should be adept at relaying crucial client information to other healthcare workers (Wang et al., 2015). Therefore, nurses need to convey information to other healthcare providers effectively to reduce communication errors (Maraccini et al., 2018). The objective of this review was to collect, organize, and evaluate current trends in education to demonstrate simulations are the best method to teach healthcare workers how to use the communication tool, Situation, Background, Assessment, and Recommendation (SBAR). The second objective of this review was to determine the most effective simulation strategies, including the optimal number and length.

Defining Concepts and Variables

SBAR Communication Format

Hospital communications are often complex and vulnerable to misunderstandings. These errors have been correlated to reducing client safety and continuity of care and increasing

medication errors and adverse events (Muller et al., 2018). According to the Joint Commission, since 2004, miscommunications have been among the top three leading root causes of sentinel events (Stewart & Hand, 2017). The Joint Commission stated a standardized communication tool would decrease communication errors (Stewart & Hand, 2017). One useful communication tool used in the clinical setting is the SBAR technique (Cudjoe, 2016). The Joint Commission stated SBAR is the best practice for standardized communication in any medical setting (Wang et al., 2015).

The SBAR format was devised by the U.S. Navy to communicate vital information during highly charged events (Glondys, 2016). The Navy's SBAR tool allowed all users, regardless of their rank and experience, to communicate using a standardized format (Kostoff et al., 2016; Stewart & Hand, 2017). The medical community quickly adopted it because the SBAR format is easy to remember, standardized, and simplifies verbal or face-to-face communication (Brust-Sisti et al., 2019). The SBAR tool's introduction has brought uniformity and predictability to hospital communications and has been endorsed by the Joint Commission and WHO (Stewart & Hand, 2017).

The SBAR communication tool is composed of four steps. The first step, situation, includes the caller's identity, the healthcare provider, and the client (Cudjoe, 2016). Step two is the background, which contains all the brief and relevant medical history (Brust-Sisti et al., 2019). Step three is assessment, which consists of analyzing the client's current problem (Brust-Sisti et al., 2019). The last step is recommendation, a list of options or requests the speaker believes might solve the client's current problem (Cudjoe, 2016).

Simulation

Simulation or deliberate practice has been proven to improve the performance of both technical and nontechnical skills acquired by individuals (Yen et al., 2019). Purposeful and reoccurring practice with feedback from an instructor has been demonstrated to motivate the individual's performance and enhance the speed at which the learner acquires new skills (Taylor et al., 2017). This practice-ready teaching style improves a healthcare workers' skillset and promotes optimal outcomes and services (Reising et al., 2017). Simulation or deliberate practice can be divided into four distinct parts: practice with preset objectives, immediate feedback from instructors, self-reflection completed by the learners, and repeating the practice (Yen et al., 2019). These distinct parts are accomplished during the prebriefing, scenario, and debriefing (Gharibi & Arulappan, 2020).

Simulations have been utilized in nursing education over the past 20 years; simulations have evolved over this period due to the increased client complexity, the growing demand to provide high-quality care, and the reduction of client risk (Gharibi & Arulappan, 2020). The National Council of State Boards of Nursing has defined simulation as a computer-based learning activity imitating hands-on clinical experience using manikins (i.e., high, medium, or low fidelity), real-life clinical situations, standardized clients, nursing skills, role-playing, and the incorporation of critical thinking (Kenny et al., 2019). The International Nursing Association for Clinical Simulation and Learning Simulation has defined simulation as a teaching method that intends to improve nursing skills by promoting novices to experts (Gharibi & Arulappan, 2020). Opportunities to provide direct client care and resolve client issues have diminished due to client safety issues and ethical concerns: therefore, simulations can be used to substitute these lost clinical opportunities and help fill the education-practice gap (Grealish et al., 2019). Studies have

shown simulation-based learning has improved safety competencies in all health-related disciplines (Harder, 2019).

Self-confidence

Self-confidence is a positive attitude concerning an individual's skills and abilities ("What is self-confidence?," 2020). It also means that the individual accepts and trusts themselves, and they communicate assertively ("What is self-confidence?," 2020). Individuals with low self-confidence are often full of self-doubt, passive, and have difficulty effectively communicating with others ("What is self-confidence?," 2020). Low self-confidence often stems from being exposed to unsupportive environments, and often the individuals have errors in their thinking ("What is self-confidence?," 2020). High self-confidence can be obtained through education, practice, and supportive environments ("What is self-confidence?," 2020).

Rationale for Conducting the Review

Medication errors lead to adverse client outcomes, decreased client satisfaction, and increased hospital costs (Kostoff et al., 2016). Most medication errors can be attributed directly to communication failures (Shrader et al., 2015). To improve healthcare workers' communication skills, the Joint Commission and WHO have recommended using the SBAR communication tool. SBAR is simple, straightforward, standardized, and widely used in numerous healthcare settings (Kostoff et al., 2016). It has been demonstrated that with the use of the SBAR communication tool, errors linked to miscommunication have decreased (Wang et al., 2015). This integrated review demonstrated SBAR is the most effective communication tool for healthcare providers. This integrated review also revealed the most effective SBAR teaching method was simulation. It was also concluded there was no optimal simulation length to achieve positive effects. This integrated review also concluded no set number of simulations achieved

positive effects. It was determined simulations could be completed once or multiple times with the same effective results.

Purpose

Miscommunication has been demonstrated to cause medical errors and adverse events and decreased client satisfaction (Kostoff et al., 2016). Communication skills can be increased using a formatted communication tool, specifically SBAR (Kostoff et al., 2016). Healthcare workers should be instructed on how to use the SBAR communication format effectively. Training should lead to an increase in self-confidence and usage of the SBAR communication tool. The completion of a literature search demonstrated that simulations are a successful teaching method to instruct healthcare workers on how to use the SBAR communication tool confidently and effectively to transfer client information. The length of the simulation training and the number of simulation training sessions was not conclusively determined with this literature review because the length and number of SBAR simulations did not alter the positive effects of the training. When simulations were used for SBAR training, healthcare workers reported increased self-confidence and usage of the SBAR communication tool.

Review Questions

What is the most effective teaching method to instruct healthcare workers on how to use the SBAR communication tool?

What is the optimal length for each SBAR educational session?

What is the ideal number of SBAR educational sessions?

What effect does communication training have on a healthcare worker's self-confidence?

What effect does communication training have on a healthcare worker's SBAR usage?

Inclusion and Exclusion Criteria

A literature search of English-language studies on healthcare communication strategies was conducted to determine which was the most effective. A second literature search was conducted to determine the optimal teaching strategy for the preferred communication strategy. The third search was conducted to determine the best length and number of each communication teaching session. Last, a literature search was conducted to determine the effects of SBAR training on the participants' SBAR self-confidence and usage. The databases searched included CINAHL Plus with full text, Cochrane Library, Medline with full text, and OVID using keywords "healthcare communication," "effects of healthcare miscommunication," "communication tools," "SBAR," "simulation," "simulation length," "simulation timing," "SBAR self-confidence" and "SBAR usage." Dates of inclusion were set between 2015 to present. The inclusion date reflected only the current data needed for this study and the inclusion of the current best practice.

Conceptual Framework

Whittemore et al. (2005) created the conceptual framework utilized for this project in 2005. This conceptual framework is divided into five stages of review: problem identification, literature search, data evaluation, data analysis, and presentation. In the first step, problem identification, the purpose/reason for the literature was clearly articulated. In the second step, the literature search, perimeters of the literature search were defined, including keywords, inclusion/exclusion dates, and databases were clarified. The third step, data evaluation, elaborated on how articles were used or excluded from the literature review. In the fourth step, data analysis, data from research papers were compared typically in a matrix for ease of comparison. The fifth and final step included how to present or synthesize all the data collected

and concluded the problem or purpose/reason for the literature review. This framework was used in the order in which it was originally designed. At the end of each step, there was an evaluation to ensure the next step occurred only if the step before it has been effectively completed. The framework drove the work necessary to complete this integrated review. This integrated review was completed without bias.

SECTION TWO: COMPREHENSIVE AND SYSTEMATIC SEARCH

Search Organization and Reporting Strategies

Liberty University's Jerry Falwell Library was the only source of databases searched for this integrated project. Before the initial literature search began, the online research tools and virtual tour of the library were accessed and reviewed to better understand how to best use electronic database search engines. CINAHL Plus with full text, Cochrane Library, Medline with full text, and OVID were the databases used to search for articles for this literature review. The initial literature search garnered the number of research articles needed to effectively complete this project; therefore, no further databases were searched.

Bing was the only search engine used for keyword searches. The only webpages used for this project had the endings of .org, .edu, or .gov. Webpages used for this project were also vetted to ensure they were reliable and trustworthy. Webpage sources were not the primary sources of information for this scholarly project.

Terminology

For this scholarly project, the term *database* referred to a searchable electronic collection of published works (Toronto & Remington, 2020). These published works included journal articles, books, and dissertations. The term *search engine* was also used in this scholarly project. A search engine describes internet platforms like Google, Bing, and Yahoo. The Bing search engine was utilized to scan the internet for relevant resources.

SECTION THREE: MANAGING THE COLLECTED DATA

No electronic literature organizational tool was utilized for this project. All research papers and webpage information were organized by hand.

SECTION FOUR: QUALITY APPRAISAL

Sources of Bias

Possible sources of bias in this scholarly project included transferability, credibility, dependability, and confirmability (Toronto & Remington, 2020). Each of these potential sources of bias was monitored and controlled. Transferability was monitored and controlled by ensuring the findings from research articles used in this scholarly project could be used in other settings. Credibility was also monitored and controlled by establishing each article included in the scholarly project was believable and credible. Dependability was monitored and controlled by reviewing the methods and decisions to ensure they were clear and logical for each of the research articles used in this scholarly project. Last, confirmability was monitored and controlled by ensuring each article's findings were supported by the data presented in the article.

Internal Validity

Internal validity can be defined as how closely the research results mirror the truth (Toronto & Remington, 2020). Validity was monitored during this scholarly project by ensuring the proper scientific methods were utilized in each of the selected research papers used for this project. Internal validity was controlled by limiting the bias and increasing the believability. Managing internal validity made the scholarly project more trustworthy, reliable, and transferable to other situations.

Appraisal Tools

The articles uncovered during the database search were managed using a research grid supplied by Liberty University. The grid contains columns that have been organized under the following rows: Article Title and Author (APA format), Study Purpose and Demographics, Sample (Characteristics of the sample), Methods, Study Results, Level of Evidence (Melnyk

framework was used), Study Limitation, and Would use as evidence to support a change? (yes or no). This grid was filled out for all articles read to prepare for this scholarly project, regardless of whether the article was used in the final paper. This grid was stored on a computer but managed by hand. Please see Figure 1 for further details.

Applicability of Results

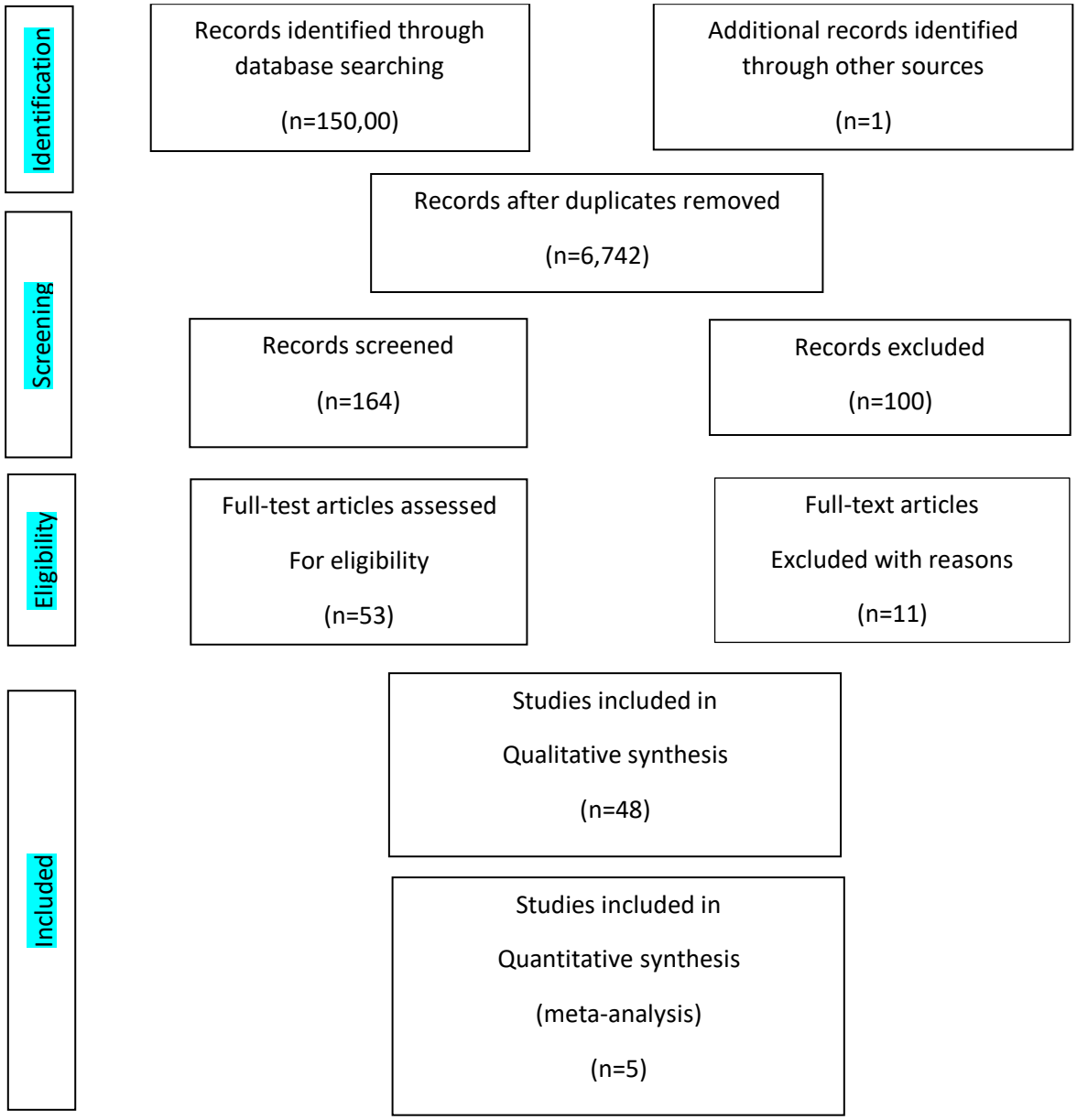
Each article reviewed for this scholarly project was critically appraised. Each section of the research paper, including title, abstract, introduction, design, sampling, data collection, ethical matters, results, discussion, and relevance were analyzed (Toronto & Remington, 2020). After this thorough examination, a decision was made to either include or exclude the article from the final scholarly project. Using this process, the scholarly project's quality was enhanced, bias was minimized, and transparency was increased (Toronto & Remington, 2020).

Reporting Guidelines

The Preferred Reporting Items for Systematic Reviews and MetaAnalyses (PRISMA) was used to minimize bias in this scholarly project (Toronto & Remington, 2020). The purpose of this review ensured the entire scholarly project was sound (Toronto & Remington, 2020). This systematic review increased the quality and transparency of the final scholarly project (Toronto & Remington, 2020). Appraising the articles ensured rigor and consistency were maintained (Toronto & Remington, 2020).

Figure 1

PRISMA Flow Diagram



SECTION FIVE: DATA ANALYSIS AND SYNTHESIS

Data Analysis Methods

Effective Teaching Method

A literature review on SBAR training revealed various instructional methods, including standardized client videotaping and feedback, role-play, didactic, and computer instruction have been utilized to teach communication skills (Gharibi & Arulappan, 2020). This review concluded simulations were the most effective and adopted teaching methodology in current nursing schools' curriculum (Gharibi & Arulappan, 2020). Chae (2019) drew similar conclusions by demonstrating role-playing simulation was a more effective method of teaching SBAR than a pamphlet review. Yu and Kang (2017) compared SBAR simulations to SBAR lectures and concluded SBAR simulations increased communication clarity, handover confidence, and educational satisfaction. In another study conducted by Yen et al. (2019), both online and in-person SBAR simulation training was reviewed; the researchers determined the online method offered a more flexible and safe opportunity and a more cost-effective teaching alternative. Simulations have been endorsed by several national organizations, including the Institute of Medicine and the American Association of Colleges of Nursing (Lubbers & Rossman, 2016).

Table 1

Effective Teaching Method

Author(s)	Year	Method	Sample Size	Teaching Method	Results
Chae	2019	Experimental design level 2	*N* = 60	Simulation versus pamphlet	Significant increase in communication clarity, self-leadership, patient safety attitude scores, and safety care performance scores in the simulation group versus pamphlet only group
Yeh, Sherwood, Durham, Edgren, Schwartz, & Beeber	2019	Experimental design level 2	*N* = 43	Online SBAR instruction versus online SBAR instruction with simulation training	Higher performance and confidence levels for group who completed SBAR training with online and simulation versus group who completed only the online training
Yu & Kang	2017	Quasi-experimental level 3	*N* = 62	SBAR handout training versus SBAR simulation with handout training	Communication clarity scores were higher in group who completed SBAR simulation, and no significant difference in SBAR self-confidence between the two groups
Gharibi & Arulappan	2020	Systematic review of descriptive and qualitative studies level 5	11 papers were analyzed	Integrative review	Simulations are the most effective method of SBAR instruction. Simulations are the most effective teaching methodology in nursing education.

Optimal Simulation Length

Various studies utilized different lengths of time to complete SBAR simulations. The length of the SBAR simulations varied from five minutes to five hours in the reviewed published articles (Brust-Sisti et al., 2019; Gross et al., 2019; Lee et al., 2016; Lubbers & Rossman, 2016; Reising et al., 2017; Stevens et al., 2020; Taylor et al., 2017; Uhm et al., 2019; Wang et al., 2015). The lengths of the SBAR simulations had no significant effect on the outcomes. Each period was sufficient to achieve the desired results set for each of the SBAR research studies.

The SBAR instructor could confidently choose a time that accommodated the healthcare worker's needs versus needing to pick a longer length of time based on the subject being taught.

Table 2

Optimal Simulation Length

Author(s)	Year	Method	Sample Size	Simulation Length	Results
Brust-Sisti, Sturgill, & Volino	2019	Quasi-experimental level 3	*N* = 198	25 minutes	Significant increase in self-confidence and communication skills in experimental group
Stevens, McNiesh, & Goyal	2020	Quasi-experimental level 3	*N* = 35	20 minutes	Significant increase in self-confidence in experimental group
Wang, Liang, Blazeck, & Greene	2015	Quasi-experimental level 3	*N* = 18	5 hours	Significant increase in knowledge and self-perceived attitudes SBAR usage in experimental group
Uhm, Ko, & Kim	2019	Quasi-experimental level 3	*N* = 81	90 minutes	Significant increase SBAR communication clarity, self-confidence in experimental group
Lubbers & Rossman	2016	Quasi-experimental level 3	*N* = 58	60 minutes	Significant increase in SBAR self-confidence and quality of care in experimental group
Gross, Rusin, Kiesewetter, Zottmann, Fisher, Pruckner, & Zech	2019	Quasi-experimental level 3	*N* = 129	15 minutes	Significant increase in knowledge retention in experimental group
Taylor, Tucker, Donehower, Pabian, Dieker, Hynes, & Hughes	2017	Quasi-experimental level 3	*N* = 3	5 minutes	Significant SBAR scores and participants felt experience was beneficial
Reising, Carr, Gindling, Barnes, Garletts, & Ozdogan	2017	Quasi-experimental level 3	*N* = 59	2 hours	Simulation is an effective method to develop and maintain communication and teamwork skills
Lee, Dong, Lim, Poh, & Lim	2016	Quasi-experimental level 3	*N* = 32	3 hours	SBAR simulation was an effective interprofessional communication tool
Brust-Sisti, Sturgill, & Volino	2019	Quasi-experimental level 3	*N* = 198	25 minutes	Significant increase in self-confidence and communication skills in experimental group
Stevens, McNiesh, & Goyal	2020	Quasi-experimental level 3	*N* = 35	20 minutes	Significant increase in self-confidence in experimental group

Ideal Simulation Session Number

Studies incorporating a differing number of simulated SBAR training sessions were evaluated for this review. Several studies included only one educational session, and with each, the author concluded there were positive effects on communication skills (Chae, 2109; Lee et al.,

2016; Maraccini et al., 2018; Wang et al., 2015). Another researcher included two SBAR simulation training sessions eight weeks apart; this study also concluded the participants' communication skills had increased (Stevens et al., 2020). A similar research study also utilized two SBAR simulation training sessions with only one day between each session; this study also concluded a positive effect on communication abilities (Brust-Sisti et al., 2019). Another study utilized five SBAR simulation training sessions; the researchers concluded that the nurses' communication skills improved (Uhm et al., 2019). It can be reasonably concluded that the number of SBAR simulations used during training has no correlation to the training's effectiveness. The same positive results were noted with any number of SBAR simulation training sessions.

Table 3

Ideal Simulation Session Number

Author(s)	Year	Method	Sample	Number of Simulations	Results
Maraccini, Houmanfar, Kemmelmeier, Piasicki, & Slonim	2018	Quasi-experimental level 3	*N* = 132	two	Significant improvement in communication accuracy
Chae	2019	Quasi-experimental level 3	*N* = 60	one	Significant increase in communication clarity, self-leadership scores, patient safety attitude scores, and safety care performance in experimental group
Wang, Liang, Blazeck, & Greene	2015	Quasi-experimental level 3	*N* = 18	one	Significant improvement in SBAR knowledge and self-perceived SBAR attitudes in experimental group Communication skills improved
Lee, Dong, Lim, Poh, & Lim	2016	Quasi-experimental level 3	*N* = 54	two	Experimental group significantly stated SBAR was simple and effective and communication skills had improved
Stevens, McNiesh, & Goyal	2020	Quasi-experimental level 3	*N* = 35	one	Significant improvement in self-confidence and communication skills in experimental group
Brust-Sisti, Sturgill, Volino	2019	Quasi-experimental level 3	*N* = 197	one	Significant improvement in self-confidence and increased communication skills in experimental group
Uhm, Ko, & Kim	2019	Quasi-experimental level 3	*N* = 81	five	Significant communication clarity and self-confidence in experimental group

Simulation Effect on Self-Confidence

Many of the studies examined the effects of SBAR simulation on healthcare workers' self-confidence by analyzing pre-and-post tests (Abdullah et al., 2020; Brust-Sisti et al., 2019; Costello et al., 2017; Kostiuk, 2015; Kostoff et al., 2016; Lubbers & Rossman, 2016; Stevens et al., 2020; Uhm et al., 2019; Wang et al., 2015). Each study demonstrated a significant change in the nursing students' SBAR self-confidence after the simulations were completed. In one study, 92% of the participants reported increased communication skills and self-confidence after completing an SBAR simulation (Brust-Sisti et al., 2019). The increase in self-confidence allows nursing students to seek opportunities to engage other healthcare providers and effectively exchange information. One study determined the positive effects of simulation training could be detected six months after the experience (Woda et al., 2019). Though one simulation demonstrated significant positive effects on communication skills and self-confidence, the authors of the same study concluded "booster" simulation (simulated experiences one to three semesters after the initial training) helped to maintain the communication skills and self-confidence (Reising et al., 2017).

Table 4

Simulation Effect on Self-Confidence

Author	Year	Method	Sample Size	Results
Reising, Carr, Gindling, Barnes, Garletts, & Ozdogan	2017	Quasi-experimental level 3	*N* = 60	Improved communication and teamwork skills
Wang, Liang, Blazeck, & Greene	2015	Quasi-experimental level 3	*N* = 18	Significant improvement in SBAR knowledge and self-confidence
Woda, Dreifuerst, Villarreal	2018	Quasi-experimental level 3	*N* = 115	Significant improvement in self-confidence and higher job satisfaction
Kostoff, Burkhardt, Winter, & Shrader	2016	Quasi-experimental level 3	*N* = 170	Significant improvement in self-perception and attitudes toward SBAR use and interprofessional collaboration
Lubbers & Rossman	2016	Quasi-experimental level 3	*N* = 54	Significant improvement in self-confidence
Uhm, Ko, & Kim	2019	Quasi-experimental level 3	*N* = 81	Significant communication clarity and self-confidence in experimental group
Stevens, McNiesh, & Goyal	2020	Quasi-experimental level 3	*N* = 35	Significant improvement in self-confidence in experimental group
Brust-Sisti, Sturgill, & Volino	2019	Quasi-experimental level 3	*N* = 197	Significant improvement in self-confidence and increased communication skills in experimental group
Gharibi & Arulappan	2020	Systematic review of descriptive and qualitative studies	11 articles were evaluated	repeated simulations positively affect self-confidence, critical thinking, and competence
Kostiuk	2015	Quasi-experimental level 3	*N* = 28	SBAR simulations had a strong effect on anxiety levels, moderate effect on self-confidence
Costello, Huddleston, Faller, Prelack, Wood, Barden, & Adly	2017	Quasi-experimental level 3	*N* = 122	Interprofessional SBAR simulations had a positive effect on cultural self-confidence, understanding of roles, and interprofessional communication
Wang, Liang, Blazeck, & Greene	2015	Quasi-experimental level 3	*N* = 18	Participation in SBAR simulation positively affected self-confidence and SBAR knowledge

Simulation Effect on Self-Reported Usage

Several studies analyzed during this integrated review concluded the completion of SBAR simulations had a positive effect on the future usage of the SBAR communication tool by healthcare providers. Kostoff et al. (2016) determined SBAR simulations lead to a positive self-perception of interprofessional competence, which gave the participants more confidence to utilize the SBAR communication tool more frequently. In another conducted by Wang et al. (2015), 93.8% of study SBAR simulation participants agreed or strongly agreed they would use the SBAR communication tool during their practice. Costello et al. (2017) determined SBAR simulations promote teamwork among healthcare providers, which has been linked to increasing

usage of the SBAR communication tool. Shahid and Thomas (2018) concluded SBAR simulations lead to improved healthcare handoffs due to the increased usage of the SBAR communication tool. SBAR simulation training sessions improved the self-confidence of the study participants, which in turn, led to an increase in the self-reported usage of the SBAR communication tool.

Table 5

Simulation Effect on Self-reported Usage

Author	Year	Method	Sample Size	Results
Kostoff, Burkhardt, Winter, & Shrader	2016	Posttest survey after the completion of SBAR simulation	*N* = 96 pharmacy and nursing students	SBAR simulation improved self-perception of interprofessional collaboration and attitudes toward the use of SBAR
Wang, Liang, Blazeck, & Greene	2015	Pre-and-post surveys after SBAR simulation workshop	*N* = 18 Graduate nursing students	After the SBAR simulation training, 93.8% of participants stated they would use SBAR in the clinical work
Costello, Huddleston, Atinaja-Faller, Prelack, Wood, Barden, & Adly	2017	Pre-and-post surveys after SBAR simulation training	*N* = 122 Nursing, physical therapy, nutrition, and social work students	After the SBAR simulation training, there was a significant change in the students' attitudes toward SBAR and the future use of the communication tool.
Shahid & Thomas	2018	Literature review of SBAR articles	*N* = 12	Concluded SBAR was an effective communication tool that, if used, will reduce medical errors and increase client satisfaction. Healthcare workers who receive SBAR training are more confident and self-report an increase in SBAR usage.

Synthesis

Due to both the complex nature (hierarchical structure and frequent team member changes) of the current U.S. healthcare system and the utilization of various communication platforms (i.e., IPASS, SBAR, and CUS), sentinel events linked to miscommunication have increased, and client satisfaction scores have decreased (Kostoff et al., 2016). It has also been reported that improvements in communication skills have led to a decreased number and severity of adverse events and increased client satisfaction scores (Shahid & Thomas, 2018). Communication is particularly important for nurses since they have more direct care interactions

with clients than all other healthcare providers (Wang et al., 2015). The use of a standardized communication tool would aid nurses in understanding healthcare providers' instructions and how to convey information from the healthcare team to the clients (Wang et al., 2015). The Joint Commission and WHO have highly suggested using standardized communication, SBAR, which has been shown to reduce communication errors (Costello et al., 2017).

SBAR is a simple, straightforward, and standardized communication tool designed to be used in highly charged situations (Wang et al., 2015). Healthcare workers should be educated or trained on using the SBAR tool effectively (Wang et al., 2015). Studies have shown the optimal SBAR teaching method is simulation sessions (Grealish et al., 2019). Using simulation aids in the translation of skills/concepts from practice into application (Woda et al., 2019). Simulation is a guided and interactive teaching method, which allows the participants the opportunity to take part in "real-life" situations in a nonthreatening environment; this allows for the translation of skill/concepts from the classroom into the hospital setting (Grealish et al., 2019). Completing evidence-based debriefing after the simulation has been shown to increase positive learner outcomes (Woda et al., 2019). The use of SBAR simulation has been reported to strengthen the participants' communication skills, confidence, and reported future SBAR usage (Taylor et al., 2017).

Though it has been clearly demonstrated that simulations are the most effective SBAR teaching method, more specific details about how to conduct the SBAR simulation sessions vary widely (Abdullah et al., 2020). There is no direct evidence that demonstrates the optimal SBAR simulation length because all the various time lengths utilized in SBAR simulations research projects garnered the same positive results on self-confidence and self-reported future usage (Brust-Sisti et al., 2019; Gross et al., 2019; Lee et al., 2016; Lubbers & Rossman, 2016; Reising

et al., 2017; Stevens et al., 2020; Taylor et al., 2017; Uhm et al., 2019; Wang et al., 2015). The SBAR simulation length varied from as short as five minutes to five hours (Taylor et al., 2017; Wang et al., 2015). The average SBAR simulation session length from the nine studies reviewed was 90 minutes. It was concluded the length of the simulation did not affect the positive learning outcomes of the SBAR training.

No conclusions concerning the optimal number of SBAR simulations that would produce a positive effect on self-confidence and usage could be drawn either. This integrated review did demonstrate that any number of educational sessions have the same positive effects. The analysis of seven published papers revealed that between one and five SBAR simulation sessions were utilized during the research studies (Brust-Sisti et al., 2019; Chae, 2019; Lee et al., 2016; Maraccini et al., 2018; Stevens et al., 2020; Uhm et al., 2019; Wang et al., 2015). Four of the studies utilized only one SBAR simulation session. Two studies used two SBAR simulation sessions, and the remaining used five SBAR simulation sessions. All the studies reported positive effects on the participants learning outcomes. Though this integrative review could not determine the optimal number of SBAR simulations that were the most effective, the review did verify that SBAR simulation positively affected the participants' learning outcomes no matter how many sessions were completed.

All 12 of the articles analyzed for this review reported positive effects related to SBAR simulation training (Brust-Sisti et al., 2019; Costello et al., 2017; Gharibi & Arulappan, 2020; Kostiuk, 2015; Kostoff et al., 2016; Lubbers & Rossman, 2016; Reising et al., 2017; Stevens et al., 2020; Uhm et al., 2019; Wang et al., 2015; Woda et al., 2018). The research articles demonstrated a significant increase in the participants' communication self-confidence. This improvement in their attitudes toward their skills and abilities should lead to more assertive

communication. Increased communication skills have been shown to improve client safety, reduce medication errors, and raise client satisfaction scores.

Four articles analyzed for this review concluded their study participants would use the SBAR communication tool more regularly after completing the SBAR simulation educational session (Costello et al., 2017; Kostoff et al., 2016; Shahid & Thomas, 2018; Wang et al., 2015). Wang et al. (2015) reported 93.8% of their study participants self-reported they would use the SBAR communication tool during their normal hospital activities. The SBAR communication tool's increased use is a high priority of WHO, the World Alliance for Patient Safety, and the Institute for Safety and Quality (Yu & Kang, 2017). Increased use of the SBAR would help to reduce the number of medical errors and sentinel events and increase client satisfaction.

Unfortunately, communication errors are commonplace in the hospital setting. Miscommunications can lead to medical errors, sentinel events, and decreased client satisfaction scores. The SBAR communication tool should be used to decrease communication errors. SBAR training should be completed with the use of simulations. The SBAR simulations have been shown to increase communication self-confidence and usage. This integrated review could not draw any conclusions on the length or number of SBAR simulations needed to produce the most effective results. It was determined that SBAR training lengths can vary widely and still have the same positive effects. The integrated review also concluded that there was no optimal number of simulation sessions that produced the best results. Even one session produced positive results on the participants' learning outcomes. SBAR simulations are the most effective teaching method, but the other aspects (i.e., length and number) can be left to the individual health educators. Those aspects of the simulation training have been shown to be very flexible and forgiving, and the health educator can vary the number and length without altering the positive outcomes. The

increased and effective use of the SBAR communication tool would help decrease medical errors and sentinel events and increase client satisfaction scores.

Ethical Considerations

This scholarly project was submitted to the Liberty University Institutional Review Board (IRB). Since this scholarly project was an integrated review, the IRB exempted this project from a lengthy review. After receiving an email from the IRB, this project was completed.

SECTION SIX: DISCUSSION

Implications for Practice

Providing effective and safe healthcare requires accurate and concise communication between all hospital employees. The SBAR communication tool, as recommended by the Joint Commission and WHO, has been shown to be a highly successful tool. All healthcare workers would benefit from using the SBAR tool when conveying information. Using the SBAR tool would provide clearer and more effective hospital reports and correspondence. Accurate communication between all healthcare workers from upper management to environmental services would ensure a smoother transmission of information and ensure policies and procedures are carried out correctly.

Using simulations is an effective SBAR teaching strategy. It has been demonstrated in this integrated review that the length and number of simulations do not alter the positive results. Hospital educators can tailor the SBAR simulation training to fit the audience. For those groups who have never used SBAR, longer training could be offered. Shorter simulations could be used for groups who just require a refresher.

Dissemination

This scholarly project will be used as a basis for a manuscript for SAGE Open Nursing Journal. If the manuscript is accepted, the article will be posted online and free for anyone to review and read. The author will promote this article and encourage other healthcare workers and educators to read it. The scholarly project will also be published and made available for viewing through the Liberty University Library service.

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Appendix A

Liberty Research Grid

Table A1

Liberty Research Grid

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Brust-Sisti, L., Sturgill, M., & Volino, L. (2019). Situation, background, assessment, recommendation (SBAR) technique education enhances pharmacy student communication ability and confidence. *Currents in Pharmacy Teaching and Learning, 11*, 409-416. http://dx.doi.org/doi.10.1016/j.cptl.2019.01.006	Demonstrated SBAR training instituted during the earlier terms of a pharmacy school was valuable – meant for health educators	Study group was 198 first-year pharmacy students.	Pre-and-post surveys were completed by the study participants.	The training increased the usage of SBAR and the study participants' confidence.	Quasi-experimental design level 3	Small study limited to one pharmacy cohort.	Yes – supports the premise that SBAR training is relevant and has been demonstrated to increase usage and confidence.
Burger, D., Jordan, S., & Kyriacos, U. (2017). Validation of a modified early warning score-linked situation-background-assessment-recommendation communication tool: a mixed-methods study. *Journal of Clinical Nursing 26*, 2794-2806. https://doi.10.111/jocn.13852	To validate the creation of a combined SBAR and a Cape Town modified warning score to increase the number of early warnings reported by healthcare staff – intended for healthcare staff	n/a	18 experts created a new early warning tool that combined SBAR, and the Cape Town modified warning score tool	The new tool was found to be valid and reliable	Expert opinion level 7	Should be used and reviewed by more nurses	Yes, a good source for SBAR information to demonstrate how useful the SBAR tool is

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Chae, M. (2019). The effect of simulation-based SBAR education programs of nursing students. *Indian Journal of Public Health Research & Development, 10* (11), 4262-4267. Htpps://doi.org/10.5958/0976-5506.2019.04278.5	Comparing the acquisition of communication skills by two different teaching methods – simulation versus lecture	*N* = 60 nursing students Intended for healthcare educators	Pre-and-post survey after either a SBAR lecture or a SBAR simulation	Nursing students who participated in the SBAR simulation had a significant increase in communication skills versus the nursing students who participated in the lecture only	Quasi-experimental design level 3	Study only completed once should be completed again to show validity	Yes, demonstrates that simulations have a stronger effect on the acquisition of communication skills than lecture only
Costello, M., Huddleston, J., Atinaja-Faller, J., Prelack, K., Wood, A., Barden, J., & Adly, S. (2017). Simulation as an effective strategy for interprofessional education. *Clinical Simulation in Nursing, 13*, 624-627. https://dx.doi.org/10.1016/j.ecns.2017.07.008	Purpose to demonstrate the effects of SBAR simulation on communication competency and attitudes	*N* = 122 Physical therapy, nursing, nutrition, and social work students Intended for healthcare educators	Pre-and-post surveys were completed after a SBAR simulation	Increased communication competency and attitudes after the SBAR simulation	Quasi-experimental design level 3	Study was completed only once should be completed again to demonstrate validity	Yes, source for background and demonstrated effects of SBAR simulation
Cudjoe, K. (2016). Add identity to SBAR. *Nursing made incredibly* Easy*! 1*, 6-7. https://doi.org/10.1097/01.NME.0000475212.01090.46	Editor's opinion on why an introduction should be added to SBAR	n/a	n/a	Demonstrated rationale for adding I for identity to the SBAR communication tool	Expert opinion level 7	One person's opinion	Yes, information about SBAR which was used as background information
Davis, S. (2018). The key to safety: *communication*. *AORN Journal, 108* (1), 3-5. http://doi.org/10.1002/aorn.12298	Editor's letter for need to use communication tools in the OR to reduce medical errors – meant for medical workers	N/A	Editor's opinion	Using communication tools in the OR should reduce the number of medication errors	Expert opinion level 7	Expert opinion only	No, useful information, but it was one person opinion

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Edwardson, N., Gregory, S., & Gamm, L. (2016). The influence of organization tenure on nurses' perceptions of multiple work process improvement initiatives. *Health Care Management Review 41,* (4), 344-355. https://doi.org/10.1097/HMR.0000000000000078	Compared the length of nursing tenure to the acceptance of new improvement protocols. Geared toward hospital educators and managers	421 nurses were surveyed	Nurses were surveyed to determined their perceptions toward three new quality improvement protocols – AIDET, hourly rounding, and discharge phone calls	Tenure was shown to affect the perceptions significantly and negatively toward AIDET. Tenure had no effect on the perceptions of hourly rounding or discharge phone calls.	Correlation design level 4	Survey responders skewed female and younger. Younger nurses would have less tenure and therefore skew the data.	No, the data was interesting but did not include the quality improvement SBAR protocol
Foronda, C., Walsh, H., Budhathoki, C., & Bauman, E. (2019). Evaluating nurse-physician communication with a rubric: A pilot study. *The Journal of Continuing Education in Nursing, 50* (4), 163-169. https://doi.10.3928/00220124-20190319-06	Study proved the Interprofessional Communication Rubric is a reliable tool to evaluate SBAR usage. – intended for health educators	*N* = 8 Nursing students were used in this study	SBAR simulations were used to instruct 8 nursing students how to use SBAR, and their usage of SBAR was evaluated by a rubric	The interprofessional communication rubric is a reliable tool for evaluating SBAR usage. Nursing students had poor scores.	Descriptive design level 6	Small sample size	Yes, information on SBAR for background but study did not provide data to support change for my paper
Foronda, C., MacWilliams, B., & McArthur, E. (2016). Interprofessional communication in healthcare: An integrative review. *Nurse Education in Practice 19,* 36-40. https://dx.doi.org/10.1016/j.nepr.2016.04.005	Literature Review of 28 articles to evaluate why there are communication errors – intended for healthcare educators	n/a	n/a	Review demonstrated why there are communication errors between nurses and doctors – including types of training, levels of training, egos, and lack of confidence	Systematic review level 1	A limited number of papers were reviewed	Yes, source of SBAR information and source of communication errors

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Gharibi, K., & ARulappan, J. (2020). Repeated simulation experience on self-confidence, critical thinking, and competence of nurses and nursing students – an integrative review	Literature review to demonstrate simulations are the most adoptive teaching method in nursing education	11 articles were reviewed	11 articles were reviewed	Demonstrated repeated simulations increased self-confidence, knowledge, competence, critical thinking, and satisfaction	Systematic review level 1	Limited articles reviewed	Yes, source of background information and demonstrated effects of SBAR simulation on self-confidence
Glondys, B. (2016). Getting started with information governance: Applying SBAR to IG. *Journal of AHIMA, 87* (2), 34-36. Htpps://ezproxy.liberty.edu/login?qurl	Editors' comments	n/a	n/a	The author concluded the effective use of SBAR could affect retention, IG, and integrity	Expert opinion level 7	One person's opinion	Yes, source of information for why SBAR should be used and information for background
Grealish, L., Myers, S., Scott, C., Krug, M., & Todd, J. (2019). Simulation as a research translation technique. *Clinical Simulation in Nursing 31,* 17-20. https://doi.org/10.1016/j.ecns.2019.03.007	Purpose of study was to demonstrate how simulation can be used to put skills into practice – intended for health educators	*N* = 22 Nurses and healthcare staff	Study participants completed an hour-long simulation concerning the care of a patient with delirium after the simulation	Researchers concluded the participants had a deeper understanding of how to care for delirium patients – these conclusions were drawn because of the depth and length of the post-simulation discussions and the comments made by participants	Quasi-experimental design level 3	Lack of formal evaluation of post-simulation discussion	Yes, demonstrated that a one-hour simulation had positive effects on nursing skills, and simulations can help to translate education into practice
Gross, B., Rusin, L., Kiesewetter, J., Zottmann, J., Fischer, M., Pruckner, S., & Zech, A. (2019). Microlearning for patient safety: Crew resource management training in 15-minutes. *Plos One, 14* (3). https://doi.org/10.1371/journal.pone.0213178	To demonstrate 15-minute simulated trainings are effective – managers from any discipline	*N* = 129 all medical students	One group was taught a skill by lecture only the second group was taught the same skill using a 15-minute simulation	The group who completed the 15-minute simulation retained more knowledge than the group who completed the lecture only	Quasi-experimental design level 3	There was no longitudinal study to demonstrate the study participants retain the knowledge for a longer period of time	Yes, showed that a 15-minute simulation was effective. The study also demonstrated that simulations are a better teaching method over lecture only.

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Harder, N. (2019). Simulation and patient safety: Continuing to provide evidence. *Clinical Simulation in Nursing 29,* 38-39.https://doi.org/10.1016/j.ecns.2019.03.006	Editorial demonstrating the importance of simulation	n/a	n/a	Using simulations will help reduce medical errors	Expert opinion level 7	One person's opinion	Yes, background information on effects of simulation
Hunter, H., Tara, C., Wesley, C., Bingener, J., Hallbeck, S., Santrach, P., Elliot, S., Lindeen, K., Kang, Y., & Blocker R. (2017). Assessing SBAR during intraoperative handoff. *Perioperative Care and Operating Room Management 6,* 7-10. https://doi.org/10.1016/j.pcorm.2016.12.004	Evaluation of the use of SBAR during handoffs between surgical team members	Analyzed 119 handoff reports	Observed 23 operative procedure that contained 119 SBARs	90% contained the S, 58% contained the B, 64% contain the A, and 55% contain the R.	Descriptive design level 6	No information was given on the quality or completion of each section of SBAR that was analyzed	No, data given was not pertinent to my paper
Im, D., & Aaronson, E. (2020). Best practices in patient safety and communication. *Emergency Medicine Clinics of North America, 38* 693-703. https://doi.org/10.1016/j.emc.2020.04.007	Paper written to explain best practices for ER departments – intended for ER healthcare workers	n/a	n/a	Best practices to ensure patient safety in ERs include cultivating a culture of safety, completing quality improvement projects (which included using SBAR), and creating systems-based approaches to patient safety	Expert opinion level 7	Two people's opinions - no controlled studies	Yes, background information on SBAR and how the usage of SBAR increases patient safety
Kenney, E., Martin, M., McClain, A., Stanley, R., Saunders, J., Lo, C., & Cohen, D. (2019). Nurse-driven simulations to prepare and educate for a clinical trial. *Clinical Simulation in Nursing 28,* 35-38. https://doi.org/10.1016/j.ecns.2018.12.005	Purpose was to demonstrate high-fidelity simulations can be effectively used to train ER personnel. – intended for healthcare educators	*N* = 9713 seizure simulations were conducted – ER personnel	Quiz on how to treat seizure patients was administered to all ER staff	Staff who had completed the seizure simulation were 3 times more likely to answer the questions correctly, and 98.8% of the study participants found the simulations helpful	Quasi-experimental design level 3	Simulations were informal and were conducted like mock codes. No time length for simulation was given	Yes, demonstrated the effectiveness of simulation in general but did not use SBAR as part of the simulation

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Kostiuk, S. (2015). Can learning the ISBARR framework help to address nursing students' perceived anxiety and confidence levels associated with handover reports? *Journal of Nursing Education, 54* (10), 583-587. https://doi.10.3928/01484834-20150916-07	Purpose to demonstrate effects on anxiety and confidence of nursing students after SBAR simulation	*N* = 28 nursing students intended for healthcare educators	Pre-and-post surveys after SBAR simulations	Simulated SBAR training significantly decreased anxiety and increased the confidence levels of the study participants	Quasi-experimental design level 3	Study only conducted once should be conducted again to demonstrate validity	Yes, demonstrated self-confidence levels were increased after SBAR simulations
Kostoff, M., Burkhardt, C., Winter, A., & Shrader, S. (2016). Instructional design and assessment: An interprofessional simulation using the SBAR communication tool. *American Journal of Pharmaceutical Education, 80*(9). Retrieved from www.amjpe.org	Demonstrated the effectiveness of using simulations to teach study participants about SBAR usage – meant for health educators	96 pharmacy students were part of this study.	Study participants were asked to answer a 20-question survey after completing SBAR training using simulations.	Use of SBAR simulations improved the study participants' confidence, competence, and attitudes toward SBAR utilization.	Quasi-experimental design level 3	Study was limited to one cohort of pharmacy students (*N* = 96).	Yes, demonstrated using simulations is an effective way to teach SBAR.
Lee, S., Dong, L., Lim, Y., Poh, C., & Lim, W. (2016). SBAR: toward a common interprofessional team-based communication tool. *Medical Education, 50*, 1145-1172. http://dx.doi.org/doi:10.1111/medu.13171	Demonstrated the use of simulations and discussion-based small-groups was an effective method to educate study participants about SBAR – meant for health educators	32 health care leaders	Completion of a 14-question survey after a three-hour SBAR training – which included simulation and small group discussions	Participants endorsed the utilization of SBAR. Researchers also determined there was an increase of SBAR usage after the SBAR education sessions.	Quasi-experimental design level 3	Small sample size (*N* = 32)	Yes, demonstrated that SBAR can be effectively taught using simulations and that education can increase SBAR usage.

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Lubbers, J., & Rossman C. (2016). The effects of pediatric community simulation experience on the self-confidence and satisfaction of baccalaureate nursing students: A quasi-experimental study. *Nurse Education Today 39*, 93-98. https://dx.doi.org/10.1016/j.nedt.2016.01.013	Purpose was to demonstrate the effects of pediatric community simulations on nursing student's self-confidence	*N* = 54 nursing students – intended for healthcare educators	Pre-and-post surveys were completed after a pediatric community simulation	Self-confidence levels were increased after the pediatric community simulations were completed.	Quasi-experimental design level 3	Study should be repeated to demonstrate validity	Yes, demonstrated simulations can affect self-confidence – simulation was not completed using SBAR
Manojilovich, M., Squires, J., Davies, B., & Graham, I. (2015). Hiding in plain sight: communication theory in implementation science. Implementation *Science, 10* (58), 1-11. https://doi.org/10.1186/s13012-015-0244-y	Literature review – explaining the communication theory	Review of 28 published papers	Review of literature	Use of the communication theory will increase the effectiveness during the exchange of information between healthcare workers	Expert opinion level 7	Not an easy article to read	Yes, source for background information only
Maraccini, A., Houmanfar, R., Kemmelmeier, M., Piasicki, M., & Slonim, A. (2018). An interprofessional approach to train and evaluate communication accuracy and completeness during the delivery of nurse-physician student handoffs. *Journal of Interprofessional Education & Practice, 12*, 65-72. https://doi.org/10.1016/j.xjep.2018.06.003	Impact of using IPASS on completeness and accuracy of communications between nurses and doctors	*N* = 132 intended for all healthcare workers	Pre-and-post comparative design was used to evaluate the use of IPASS communication tool before and after training	Significant change in correct and effective communication was noted after the IPASS training	Quasi-experimental level 3	Completed on nursing and medical students only – with no working knowledge of IPASS	Yes, information on a different communication tool will be used for background material only – study was not conducted on SBAR

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Martin, H., & Ciurzynski, S. (2015). Situation, background, assessment, and recommendation – guided huddles improve communication and teamwork in the emergency department. *Journal of Emergency Nursing, 41* (6), 484-488. http://dx.doi.org/10.1016/j.jen.2015.05.017	Determine the effects of using the SBAR communication during huddles in a pediatric ER -meant for all medical workers	*N* = 3432 nurses and 2 DNPs	Pre-and-post tests and structured observations after the use of SBAR in huddles completed in the pediatric ER	The use of SBAR during huddles improved communication, teamwork, and nurse satisfaction scores. Concluded enhanced communication would improve patient safety.	Quasi-experimental design level 3	Only conducted in one unit	No, useful information but demonstrated improved communication, teamwork, and nurse satisfaction and simply drew a conclusion on the effects on medical errors
Merten, H. (2017). Safe handover. *British Medical Journal, 359*. https://doi.10.1136/bmj.j4328	Defines the term handover and how and why it should be completed correctly	n/a	n/a	Article validating the use of handovers, the best way to complete a handover, and how effective handovers increase patient safety	Expert opinion level 7	One person's opinion	Yes, source of background information and explains how important SBAR is to handovers
Muller, M., Jurgens, J., Redaelli, M., Klingberg, K., Hautz, W., & Stock, S. (2018). Impact of the communication and patient handoff tool SBAR on patient safety: a systemic review. *BMJ Open, 8*. http://dx.doi.org/doi:10.1136/bmjopen-2018-022202	Demonstrated the effect of using SBAR on patient safety.	Systematic review of 8 published research articles. Each study had similar training – improvement of SBAR lead to an increase in patient safety.	Review of 8 published research articles, all with similar training and objectives.	Review found an increase in patient safety when SBAR was used correctly. Also noted a significant increase in patient safety when SBAR was utilized with phone conversations.	Systematic review of descriptive and qualitative studies level 5	Limited to 8 research papers	Yes, demonstrated effective SBAR usage will increase patient safety, especially when the communication occurred over the phone.
Oh, P., Jeon, K., & Koh, M. (2015). The effects of simulation-based learning using standardized patients in nursing students: A meta-analysis. *Nurse Education Today 35* (6-15). https://dx.doi.org/10.1016/j.nedt.2015.01.01912	Literature review to evaluate the effect of simulations on cognitive, affective, and psychomotor outcomes of learning	Review of 18 articles – intended for health educators	Review of 18 articles	Simulations have an impact on self-efficacy and learning motivation and affect knowledge and skill acquisition	Systematic review level 1	Review of only 18 papers	Yes, source of background information on the effects of simulation

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Park, L. (2019) Using the SBAR handover tool. *British Journal of Nursing.* Laura.j.park@northumbria.ac.unv	Letter to the Editor	n/a	n/a	SBAR is an effective communication tool for handovers and helps to improve patient safety	Expert opinion level 7	One person's opinion	Yes, source of information for SBAR and how it can be used effectively to increase patient safety
Patterson, P. (2016). Retrospective: tracking the impact of communications effectiveness on client satisfaction, trust and loyalty in professional services. *Journal of Services Marketing,30* (5) 485-489. https://doi.10.1108/JSM-05-2016-0190	To update a paper written in 1999 entitled – The impact of communication effectiveness and service quality on relationship commitment in consumer, professional services.	Review of articles – meant for service workers	Review of articles	Effective communication helps to ensure productive client/employee relationships, increase client engagement, and client empowerment	Descriptive design level 6	Paper draws many conclusions based on one person's opinion	No, did draw conclusions that communication between people is necessary to improve their relationships, but this article was not written directly for health care workers
Panesar, R., Albert, B., Messina, C., Parker, M. (2016). The effect of an electronic SBAR communication tool on documentation of acute events in the pediatric intensive care unit. *American Journal of Medical Quality, 31* (1), 64-68. https://doi.org/10.1177/1062860614553263	To demonstrate the usage rates of various forms of the SBAR communication tool – paper versus electronic	Review of medical charts – meant for all health care workers	Review of 84 of 542 pediatric charts to determine how often written or electronic SBAR tool was used by hospital staff	The electronic SBAR tool was used more often by hospital staff	Descriptive design level 6	The study only looked at 84 or the 542 charts	No, demonstrated the SBAR tool is being used as an effective communication tool but did not provide evidence about how to best teach how to use the tool

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Pokojava, R., & Bartlova, S. (2018). Effective communication and sharing information at clinical handovers. *Central European Journal of Nursing and Midwifery, 9* (4), 947-955. htpps://10.15452/CEJNM.2018.09.0028	Literature review to determine how handover information is completed	Review of 28 articles – intended for all healthcare workers	Integrative Review of 28 articles	There were two communication tools used in the 28 articles which were reviewed. SBAR and IPASS were used in 18 of the articles. The authors concluded transfer of information can be problematic.	Systematic review level 1	Limited to 28 papers	Yes, information for background to demonstrate SBAR and IPASS are two communication tools widely used in the healthcare settings
Riesenberg, L., Leitzsch, J., & White, B. (2019). Systematic review of handoff mnemonics literature. *American Journal of Medical Quality, 34* (5), 446-454. htpps://10.1177/1062860609332512	Literature review of handoff mnemonics	Review of 46 articles – intended for healthcare workers and educators	Review of 46 articles	Of the 24 handoff mnemonics uncovered in the review, SBAR was mentioned 69% of the time.	Systematic review level 1	Only one article had IRB approval, and a review of more articles in peer-reviewed literature should be used	Yes, source for background information concerning SBAR and other communication tools
Reising, D., Carr, D., Gindling, S., Barnes, R., Garletts, D., & Ozdogan, Z. (2017). An analysis of interprofessional communication and teamwork skill acquisition in simulation. *Journal of Interprofessional Education & Practice 8,* 80-85. https://dx.doi.org/10.1016/xjep.2017.07.001	Purpose to demonstrate the effects of repeated SBAR simulations on nursing student's communication skills	*N* = 59 nursing students Intended for healthcare educators	Nursing students were evaluated after each SBAR simulations	Repeated simulations improved communication skills	Quasi-experimental design level 3	Study should be repeated to check for validity	Yes, demonstrated 2-hour simulations were effective, and that repeated (twice) were also effective

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Schmidt, K., Taylor, A., & Pearson, A. (2017). Reduction of medication of medication errors: a unique approach. *Journal of Nursing Care Quality, 32*(2), 150-156. https://doi.org/10.1097/NCQ.0000000000000217		Focus groups consisting of nurses	Focus groups discussed the Socio-Technical Probabilistic Risk Assessment tool	The focus groups determined using just three of the recommended 11 steps would result in medication error reduction	Descriptive design level 6	Only looked at the administration of IV medications	No, this article does not address communication errors
Scott, L. (2016). Medication errors. *Nursing Standard, 30*(35). http://dx.doi.org/doi:10.7748/ns.30.35.61.s49	Demonstrated that medication errors are very common and are preventable.	Systematic review of articles concerning medication errors.	Systematic review of articles concerning medication errors	Review noted medication errors are common and that communication errors are the number one cause of medication errors.	Systematic review of descriptive and qualitative study level 5	Limited to medication errors that occurred in L&D units.	No, limited to L&D units and limited papers reviewed. Information can be found in other sources.
Shahid, S., & Thomas, S. (2018). Situation, background, assessment, recommendation (SBAR) communication tool for handoff in health care – A narrative review. *Safety in Health, 4*(7). http://dx.doi.org/doi.10.1186/s40886-018-0073-1	Narrative review of 12 studies looking into the challenges of communication among health care providers, use of SBAR to effectively handoff patient data, comparison of SBAR with other communication tools, and limitations of the SBAR tool.	Review of 12 published SBAR research studies	Systematic review of 12 published SBAR research studies	SBAR is a reliable and effective communication tool that has been approved by the Joint Commission, AHRQ, IHI, and WHO.	Systematic review of descriptive and qualitative studies level 5	Limited to 12 research papers	Yes, very information about SBAR – how it can be effectively used, how using SBAR will reduce medical errors, and how the utilization of SBAR increases patient safety

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Shrader, S., Dunn, B., Blake, E., & Phillips, C. (2015, May 15). Incorporating of simulations using standardized colleagues improve interprofessional communication skills and self-confidence. *American Journal of Pharmaceutical Education*, *79*(4), 1-8. Retrieved from www.ajpe.edu	Demonstrated the use of using simulations to teach SBAR improved interprofessional communication and self-information.	96 pharmacy students	Pre-and-post surveys were completed by study participants. The SBAR training was completed using simulations.	There was a significant increase in communication skills and self-confidence after the SBAR simulations.	Quasi-experimental design level 3	Limited to one pharmacy cohort with a small sample size (N = 96).	Yes, demonstrated how effectively simulations can be used to teach SBAR.
Spruce, L. (2016). Back to basics: patient care transitions. *AORN Journal, 104,* (5), 426-432. http://dx.doi.org/10.1016/j.aorn.2016.08.014	Explanation of two different communication tools – SBAR and SWITCH	N/A	Discussion of two communication tools	Did not draw a conclusion as to the most effective communication tool – stated the use of any communication tool would reduce medical errors	Expert opinion level 7	No, conclusions were drawn	No, useful information, but no conclusions were drawn which stated SBAR was the most effective communication tool
Stewart, K., & Hand, K. (2017, September/October). SBAR, communication, and patient safety: An integrated literature review. *Medsurg Nursing*, *26*, 297-305. Retrieved from https://liberty-alma-exlibrisgroup.com	Systematic review of 21 studies reviewing the SBAR framework and how SBAR can be used effectively.	Systematic review of 21 studies.	Search of PubMed, CinAhl Complete, and Cochrane Library databases. After exclusion criteria, 21 articles were used for this systematic review.	Four common themes regarding SBAR were noted: SBAR creates a common language, SBAR increases the confidence of the speaker, SBAR utilization improves efficiency, efficacy, and accuracy, and SBAR improves the perception of effective communication	Systematic review of descriptive and qualitative studies level 5	Limited to 21 studies	Yes, provides good background information on SBAR

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Stevens, N., McNiesh, S., & Goyal, D. (2020). Utilizing an SBAR workshop with baccalaureate nursing students to improve communication skills. *Nursing Education Perspectives, 41* (2), 117-118. https://doi.10.1097/01.NEP.0000000000000518	Purpose to demonstrate the effects of SBAR simulation training on nursing students' self-confidence and communication anxiety	*N* = 35Nursing students intended for health educators	Pre-and-post survey after a SBAR simulation	Significant change in self-confidence was noted after the SBAR simulation. No change noted in communication anxiety after the SBAR simulation.	Quasi-experimental design level 3	Small sample size	Yes, demonstrated increase in self-confidence after the SBAR simulation training
Taylor, M., Tucker, J., Donehower, C., Pabian, P., Dieker, L., Hynes, M., & Hughes, C. (2017). Impact of Virtual Simulation on the interprofessional communication skills of physical therapy students: A pilot study. *Journal of Physical Therapy Education, 31* (3), 83-90.	Purpose to demonstrate the effects of communication simulations on PT students' ability to exchange patient information with other healthcare providers	*N* = 3 PT students – intended for any healthcare educators or staff	Study participants completed a 60-minute communication simulation and were observed and evaluated during the process using the SBAR Interobserver agreement	All participants increased SBAR scores after their second simulation. Participants also reported the experience was beneficial.	Quasi-experimental level 3	Small sample size only 3 study participants	Yes, demonstrated a 60-minute SBAR simulation was effective in improving communication skills
Ting, W., Peng, F., Lin, H., & Hsiao, S. (2017). The impact of situation-background-assessment-recommendation (SBAR) on safety attitudes in the obstetrics department. *Taiwanese Journal of Obstetrics & Gynecology 56,* 171-174. https://dx.doi.org/10.1016/j.tjog.201	Purpose to demonstrate the impact of SBAR communication tool on safety attitudes and APGAR scores in an obstetrics unit – meant for health care workers	Study was conducted on one obstetric unit over a period of 3 years	Pre and posttest after a five-minute SBAR simulation lecture	SBAR simulation training had a positive effect on safety attitudes but did not have effect on the number of babies with APGAR scores less than 5	Quasi-experimental level 3	Study completed on one unit	Yes, demonstrated a five-minute SBAR simulation had a positive effect on safety attitudes

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Uhm, J., Ko, Y., & Kim, S. (2019). Implementation of an SBAR communication program based on experiential learning theory in a pediatric nursing practicum: A quasi-experimental study. *Nurse Education Today, 80,* 78-84. https://doi.org/10.1016/j.nedt.2019.05.034	Purpose was to demonstrate the effects of SBAR simulation on communication clarity and handover confidence	*N* = 81 nursing students intended for health educators	Pre-and-post survey after a SBAR simulation	Significant increase in communication clarity and confidence after the SBAR simulation	Quasi-experimental design level 3	Study was only completed once – should be repeated to test validity	Yes, demonstrated increase in self-confidence after SBAR simulation
Wang, W., Liang, Z., Blazeck, A., & Greene, B. (2015). Improving Chinese nursing students' communication skills by utilizing video-stimulated recall and role-play case scenarios to introduce them to the SBAR technique. *Nurse Education Today, 35,* 881-887. http://dx.doi.org/doi.10.1016/j.nedt.2015.02.010	Demonstrate the change in attitude toward utilizing SBAR after a workshop covering SBAR.	18 Chinese nursing students participated in the study	Pre-and-post surveys were completed. Study participants completed a workshop concerning SBAR.	The post-surveys demonstrated an increase in attitude, increase in usage, and increase of self-confidence regarding SBAR.	Quasi-experimental design level 3	Small sample size (N = 18) and only one cohort of students	Yes, did demonstrate SBAR education did change attitudes, usage, and confidence.
Whittemore, R., & Knafl, K. (2005). The integrative review: updated methodology. *Journal of Advanced Nursing, 52*(5), 546-553.	To distinguish an integrative review method from other methods used for reviews (systematic, meta-analysis, and qualitative)	n/a	Discussion of review methods	Suggested use of updated review method for integrative review articles	n/a	opinions	Yes – will suggest framework for integrative reviews
Woda, A., Dreifuerst, K., & Garnier-Villarreal, M. (2019). The impact of supplemental simulation on newly licensed registered nurses. *Clinical Simulation in Nursing 28,* (1-5). https://doi.org/10.1016/j.ecns.2018.12.002	Purpose was to evaluate the difference between clinical experience only and clinical experience and SBAR simulations	*N* = 115 Nursing students – intended for healthcare educators	11111	The cohort with SBAR training during clinical and simulations had higher job satisfaction (six months after graduating)	Quasi-experimental level 3	Only completed once – study needs to be repeated	Yes, source of SBAR background information and effects of SBAR simulation training

Article Title, Author, etc. (Current APA Format)	Study Purpose Demographics	Sample (Characteristics of the Sample, etc.)	Methods	Study Results	Level of Evidence (Use Melnyk Framework)	Study Limitations	Would Use as Evidence to Support a Change? (Yes or No) Provide Rationale.
Yeh, V., Sherwood, G., Durham, C., Kardong-Edgren, S., Schwartz, T., & Beeber, L. (2019). Online simulation-based mastery learning with deliberate practice: Developing interprofessional communication skill. *Clinical Simulation in Nursing, 32*, 27-38. https://doi.org.10.1016/j.ecns.2019.04.005	Comparison of online versus in-person SBAR simulation training	*N* = 43 Nursing students intended for healthcare educators	Pre- and posttest survey after either an online or in-person SBAR training session	Higher confidence levels were noted in nursing students who completed the online SBAR training	Quasi-experimental design level 3	Study was only completed once needs to be repeated to demonstrate validity	Yes, demonstrated SBAR simulation increased communication self-confidence
Yu, M., & Kang, K. (2017). Effectiveness of a role-play simulation program involving the SBAR technique: A quasi-experimental study. *Nurse Education Today 53*, 41-47. https://dx.doi.org/10.1016/j.mnedt.2017.04.002	Purpose to create a SBAR communication simulation and to evaluate the effects of the simulation	*N* = 62 Nursing students intended for healthcare educators	Pre-and-post survey after a SBAR simulation	Increase in communication clarity, handover confidence, and education satisfaction were demonstrated after the SBAR simulation	Quasi-experimental design level 3	Study was only completed once – should be repeated to demonstrate validity	Yes, demonstrated increase in self-confidence
Zarifsanaiey, N., Amini, M., & Saadat, F. (2016). A comparison of educational strategies for the acquisition of nursing student's performance and critical thinking: simulation-based training vs. integrated training (simulation and critical thinking strategies). *BMC Medical Education, 16*, 294. https://doi.org/10.1186/s12909-016-0812-0	Purpose was to demonstrate the effects of simulation versus lecture on critical thinking and performance	*N* = 40 Nursing students intended for healthcare educators	Pre-and-post survey after either a lecture or a simulation	Performance levels increased in the group who completed simulations. Critical thinking skills were not increased by either teaching method.	Quasi-experimental design level 3	Study was only conducted once should be conducted again to demonstrate validity	Yes, demonstrated simulations have a greater effect on performance than lecture alone

Appendix B

IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

December 2, 2020

Jill Smith
Lynne Sanders

Re: IRB Application - IRB-FY20-21-430 Analysis of Healthcare Miscommunication and How to Effectively Improve Communication Outcomes: An Integrative Review

Dear Jill Smith and Lynne Sanders,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Decision: No Human Subjects Research

Explanation: Your study is not considered human subjects research for the following reason:

(1) It will not involve the collection of identifiable, private information.

Please note that this decision only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued non-human subjects research status. You may report these changes by completing a modification submission through your Cayuse IRB account.

Also, although you are welcome to use our recruitment and consent templates, you are not required to do so. If you choose to use our documents, please replace the word *research* with the word *project* throughout both documents.

If you have any questions about this determination or need assistance in determining

whether possible modifications to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research

Appendix C

City Training Validation

Completion Date 29-Mar-2020 Expiration Date 29-Mar-2023 Record ID 36098921 This is to certify that: Jill Smith Has completed the following CITI Program course: Biomedical Research - Basic/Refresher (Curriculum Group) Biomedical & Health Science Researchers (Course Learner Group) 1 - Basic Course (Stage) Under requirements set by: Liberty University Not valid for renewal or certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM) COMPLETION REPORT - PART 1 OF 2 COURSEWORK REQUIREMENTS* * NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements. • Name: Jill Smith (ID: 9034477) • Institution Affiliation: Liberty University (ID: 2446) • Institution Email: jssmith14@liberty.edu • Curriculum Group: Biomedical Research - Basic/Refresher • Course Learner Group: Biomedical & Health Science Researchers • Stage: Stage 1 - Basic Course • Description: Choose this group to satisfy CITI training requirements for Investigators and staff involved primarily in biomedical research with human subjects. • Record ID: 36098921 • Completion Date: 29-Mar-2020 • Expiration Date: 29-Mar-2023 • Minimum Passing: 80 • Reported Score*: 98

Rehttps://www.citiprogram.org/verify/?wd41010ba-6860-4dbb-96ae-365be2683b19-36098921search Ethics Office

CITI PROGRAM

Completion Date 29-Mar-2020
Expiration Date 29-Mar-2023
Record ID 36098921

This is to certify that:

Jill Smith

Not valid for renewal or certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Has completed the following CITI Program course:

Biomedical Research - Basic/Refresher (Curriculum Group)
Biomedical & Health Science Researchers (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Liberty University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wd41010ba-6860-4dbb-96ae-365be2683b19-36098921