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Educating Acute Care and Emergency Nurses on Infant Safe Sleep Practices

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Walden University

College of Nursing

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Kimberly MacKeil-White

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2023

Abstract

Educating Acute Care and Emergency Nurses on Infant Safe Sleep Practices

by

Kimberly MacKeil-White

MSN, Walden University, 2015

BN, Memorial University of Newfoundland, 2010

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

August 2023

Abstract

Rates of infant deaths due to sudden infant death syndrome, asphyxia, and sudden unexplained infant death dropped significantly during the original marketing and education push for infant safe sleep practices during the 1990s following the recommendations from the Center for Disease Control and the American Academy of Pediatrics, but a plateau has occurred with no further recent decreases. Safe sleep practices are inconsistent in the practicum site and guidelines for safe sleep practices do not exist. Although aware of the concepts, staff do not consistently educate families about maintaining the practices within the hospital environment, as evidenced by non-compliance with safe sleep practice basic principles on informal crib checks. A review of the literature revealed increases in safe sleep practice adherence in inpatient hospital settings with the education of staff and quality improvement projects. Using Lewin's change theory, a staff education project was implemented to update staff awareness of AAP 2022 recommendations. Pre and post-surveys revealed staff did indeed have knowledge of these practices, but barriers prevented consistent practice in the inpatient setting, including the caregivers themselves, and variability in provider recommendations with other positioning guidelines such as gastric reflux precautions. The project highlighted that future work was needed in bundle/guideline creation, caregiver education, and reduction in hospital unit variability. Future goals will aim to use this project as a basis to create guidelines for safe sleep practices in our entire hospital to address these barriers, affecting social change by modeling these guidelines for caregivers to take home, and hopefully affecting infant mortality rates in our county and state.

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Section 1: Nature of the Project

Introduction

The ability to affect social change for positive outcomes is a major objective for the doctorate-prepared nurse. Recognizing when and what is needed for the change is how we begin to affect it. In a community-based pediatric hospital, a gap in practice exists between the current literature on infant safe sleep practices (SSP) and what is practiced when infants are admitted to the hospital. This Doctorate of Nursing project is a staff education project to close this knowledge gap, model the practices for parents and caregivers, and eventually affect parent/caregiver adherence to SSP at home, decreasing the risk of infant death due to unsafe sleep practices.

Problem Statement

There is a solid body of evidence on the positive outcomes of SSP in the infant, including specific recommendations for both the home and the hospital, (American Academy of Pediatrics, 2022; Heitman et al., 2017; Moon et al., 2022). The health care system, specifically in Mother/Baby units, is exceptionally skilled at educating caregivers that babies should sleep alone on their back, and in a crib, (ABC) until they can roll over by themselves. Data have shown a decrease in infant mortality rates since the institution of education on these American Academy of Pediatrics (AAP) recommendations (Center for Disease Control, 2022a), and national efforts to instill these recommended guidelines for all inpatient facilities and caregiver discharge education have been robust (Heitman et al. 2017, Salm Ward & Yasin, 2022). However, the practicum setting has yet to implement in the acute care unit and staff often lay babies to sleep in an unsafe

environment or fail to re-educate parents when they do the same. The issue of modeling and coaching SSP is relevant to families of infants in all hospital units that serve this population, as families are more likely to imitate SSPs they have witnessed in healthcare facilities (Bechtel et al., 2020; Heitman et al., 2017; Salm Ward et al., 2022, Sobaihi et al. 2020). Furthermore, the bedside nurse should also regularly engage in anticipatory guidance conversations with families of infants regarding SSP to ensure an understanding of why these recommendations should be followed for every sleep session. From a DNP perspective, this project will increase the awareness of bedside nurses of the most recent data and literature around SSP, will help to change practices for themselves, and in turn, help families recognize best practices.

The knowledge gap in the current state is centered around staff practices of supporting infant safe sleep habits during emergency department visits and inpatient stays. Our pediatric hospital staff should be modeling the same techniques expected to be practiced by the caregiver at home. This is not happening consistently. Frequently, while rounding, infants are observed asleep with a caregiver in hospital beds or recliners, or there are multiple items in the crib with the patient including extra blankets, diapers, cleaning wipe packages, etc. An assessment of why this is happening is needed to determine the educational particulars.

Purpose Statement

The gap noted between the literature and the practicum setting is infant SSP in the inpatient and emergency settings. The practice question is, “What are the barriers to practicing safe sleep principles consistently in the pediatric inpatient acute and pediatric

emergency care units?" This question is aimed at identifying knowledge deficits, parental compliance, or other barriers that may be identified. If the barriers are addressed, practice can be better aligned with best practices and caregivers may increase adherence to SSP at home when discharged, ultimately lowering the infant mortality rate for our area.

Nature of the Doctoral Project

This will be a staff education-focused project aimed at acute care inpatient and emergency department staff in a community pediatric hospital. This hospital has 10 acute care and eight emergency department beds that serve patients from newborns to 18 years of age. The adjoining adult hospital also houses labor and delivery, a newborn nursery, and a neonatal intensive care unit, so the pediatric hospital serves in a continuum of care. The pediatric hospital itself is affiliated with a larger, academic children's hospital center that provides leadership and provider coverage, yet policies for the setting are owned by the community hospital. Thus, the direction for policy and guidelines can be confusing for staff. There are a total of 35 staff members combined in both units of the pediatric hospital and include registered nurses, paramedics, and nurse technicians (techs). Evidence for the need for the project has been gathered through pre-project informal crib checks for the affected population. A thorough literature search and synthesis was conducted supporting the use of staff education as a model to increase awareness of SSP in the hospital setting (see Appendix A). The approach was based on Lewin's change theory, using the nursing process as a framework for the change. A pre-education survey measuring the staff's knowledge of SSP was measured against a post-education survey to assess gain in knowledge.

Significance

Educating the staff on SSP of hospitalized infants included advocating for engagement from a provider group, who are at bedside frequently, and other bedside caregivers such as lab and respiratory therapy. Nursing is the frontline of care coordination and can advocate for SSP maintenance with each bedside visit. Also, as nursing is the most trusted profession, the ability to influence caregivers' safety practices could be impactful, as modeling SSP in the hospital environment becomes the standard. Contributing to decreased infant mortality rates in the area is incredibly significant. This project can be replicated in similar settings throughout the healthcare community, and disseminating results will support the nursing profession in several ways. First, the site staff will benefit from the process of evidence-based practice, giving meaning and application to those words that are frequently spoken, yet not evident in the current community hospital culture. Also, on a broader view, the profession itself can use the results of this project to bring EBP to their environments, following the project framework. Affecting a nationwide decrease in infant mortality will be the ultimate positive patient outcome.

Summary

To summarize, the nature of the project focused on staff education to increase knowledge of the AAP 2022 Safe Sleep Practice guidelines in a community pediatric hospital for the inpatient acute care and emergency departments. Staff included nurses, paramedics, and nurse techs. The knowledge gap was assessed and measured via a staff survey. The aim was to increase awareness of these principles to affect change in actions

for infants at risk for SUID and SIDS both in the hospital environment and extending to home with caregivers, by modeling the behaviors consistently.

The following sections will describe a background on the social issue of safe sleep practice adherence and the framework used to structure the project.

Section 2: Background and Context

Introduction

The practice problem is an inconsistent adherence to SSP by the staff of eligible (12 months and younger) infants in the inpatient acute care and emergency departments of a small community-based children's hospital. The purpose of this project was to close the knowledge gap of SSP within the staff, leading to better modeling of these practices, ultimately affecting both adherence as well as infant mortality rates overall for the community. The practice question then, was "What are the barriers to practicing SSP consistently in the pediatric inpatient acute and pediatric emergency care units?" The following section includes a review of the concepts, framework, and theories used to guide the project, the relevance to nursing practice, background and context, and the role of the DNP student within the project.

Concepts, Models, and Theories

Concepts of adult learning principles drive the staff education portions of this project. It is safe to assume that adults are self-motivated to learn and use experiences they have encountered to relate to and embrace new information (Collins, 2004; Speis et al. 2015). For example, pediatric nurses are typically aware of an infant that has succumbed to a "crib death" in their careers, whether SIDS, SUID, or suffocation. The presenting information will resonate with most pediatric healthcare staff and motivate them to engage and learn, as the information is relevant to their practice. Using Lewin's theory of change (Wagner & Udod, 2018), staff education is visualized as being the driving force to promote change in practice. Barriers to the newest AAP guidelines

include conflicting messages regarding reflux precautions, staff attitudes, and past practice habits grown from family/community culture. These will be the opposing forces that the education plan will need to push against to create the practice change. Proactively addressing as many identified barriers as possible will help the change be successful.

The nursing process provides a solid baseline to guide the project (Wagner & Udod, 2018). To review, the nursing process consists of the following steps; assessment, diagnosis, planning, implementation, evaluation. When aligning the project to this process, the following were considered; assessment of the current knowledge base using a survey, diagnosing what the knowledge gap may be, planning the intervention to ensure the education encompasses both staff needs and available content, implementation of the education plan itself, and a post-evaluation of the education that includes a post-survey for knowledge gap closure. Future extension of the project work will include creating a clinical practice guideline with implementation through this process as well.

Relevance to Nursing Practice

SSP guidelines have been recommended by the AAP for several decades, with the latest updates being released in 2022. These should be core knowledge for all healthcare staff that work with infants, as discharge instructions for infants from the hospital environment typically include these guidelines when an infant is first released after birth, pediatrician's offices have included them in educational materials for new parents, and community health departments and Center of Disease Control (CDC) marketing campaigns ensure the information gets to the general public via written material and mass media. With these avenues of information, it is curious that there are no guidelines or

adherence to the principles in the hospital units of interest. This is a body of evidence that already exists, yet there is a gap in the actual bedside practice. Closing the knowledge gap for SSP in this environment encourages staff to practice according to this evidence, and create future goals that lead to hospital guideline creation, ensuring the practice of safe sleep is regulated throughout the hospital, thus closing the practice gap. This project of closing the knowledge gap included addressing the common barriers that staff face with SSP implementation, including parental beliefs, conflicting messages regarding other positioning recommendations (such as reflux precautions), and post-feeding rituals. The profession of nursing will be supported to engage in current evidence-based care when the knowledge gap is narrowed, encouraging a standard of care for these infants.

Currently, the literature shows this practicum area is not the only hospital struggling with this practice gap. Numerous articles on the nursery and acute care pediatric units have recognized the opportunity for staff education and the need to model the behavior for caregivers. (Frey, 2020; Heitman, 2017; Paul, 2021). Quality Improvement projects that include staff education have been successful in closing the gap in most incidents, (Frey, 2020; Mason, 2013; McMullen, 2016; Rose, 2015; Ward, 2022), all including staff education in their project plans.

Local Background and Context

The environment is a community pediatric hospital with a 10-bed acute care inpatient unit admitting approximately one thousand patients annually between 1 day and 18 years of age, and an eight-bed pediatric emergency department seeing approximately eleven thousand visits per year. This smaller hospital exists within a contract between the

community hospital and a larger urban academic center children's hospital. It has a mix of the academic center's leadership, treatment guidelines, and providers with the community hospital staff and policies. Both the academic center and the community hospital share two missions, both of which are regarding safe, quality care for those they serve. Advocating in the community hospital for pediatric policy and guidelines is a shared effort of leadership for both organizations.

Typically, infants that fall within the recommended guidelines for SSP (12 months and under) are admitted with respiratory issues or hyperbilirubinemia, or to rule out sepsis, along with other less common diagnoses. The pediatric emergency department sees a plethora of infants for various other reasons as well, who are either admitted to the acute care unit, transferred to the larger academic center children's hospital, or released home. All interactions with families have the opportunity to be influenced by this project, as anticipatory guidance conversations are encouraged.

Currently, infant mortality in the state of Tennessee has plateaued (6.38/1,000 live births) after a significant decrease post the initial Safe Sleep campaign of the early 2000s (8.77/1,000 live births; CDC, 2022). The literature indicates several possible explanations for this, mainly non-adherence and barriers to SSP such as co-sleeping, inconsistent messaging regarding reflux precautions and post-feeding, and loose items in cribs. An opportunity was identified to influence SSP for admitted infant caregivers in our hospital environments as evidenced by informal crib checks that revealed a lack of adherence to SSP. By modeling SSP, coaching, and educating caregivers on these concepts, nurses can influence what practices caregivers adhere to once leaving the hospital environment.

Ultimately, with more families practicing SSP in the home, the infant mortality rate in the state of Tennessee may be positively affected.

Role of the DNP Student

Starting with this initial project, I saw my role in this environment was to help develop a "wonder" culture (this being a culture where all staff are empowered to ask the question, "I wonder why we do it this way?") within the community hospital pediatric units, encourage staff to ask practice questions and seek evidence to support whether a practice change is required. Using this initial project as a starting point opened the staff up to the concept of practice change and introduced them to the process of evidence-based inquiry, growing a culture familiar and comfortable with evidence-based change in the setting.

Specifically for this project, analysis of the barriers to practicing SSP in our setting, synthesis of the evidence to address the barriers, and creation of the plan, execution, and evaluation of the project were the major focuses of my work. Moving forward past this project, the work will continue with creating hospital-wide clinical guidelines and involvement of key hospital stakeholders to ensure cohesiveness with other units that support infants that are not currently under the pediatric umbrella, namely Newborn Nursery and Neonatal Intensive Care units. As the clinical education specialist for the community pediatric hospital, the education of the staff is my main role. A wider and grander social change is my reach goal. This project was an extension of that role, creating a better informed and structured process to ensure evidence-based practice makes it to the bedside and is sustained.

As a leader, risks such as unsafe sleep practices are a priority to fix. For nurses, modeling safe behaviors and educating families is a significant portion of their responsibilities. My motivation for the project is grounded in these aspects of my nursing identity, education, safety, leadership, and the pediatric population in general. Perspectives from the staff, literature focused on other community hospitals, and the culture of our hospital itself have assisted in the formation of the practice question. The ability to affect the larger infant mortality rate both state and nationwide is also a motivator. Worth mentioning, being an educator may bias the thought that staff education is the best way to fix the practice gap in SSP. This was explored more in the literature synthesis ensuring education was the best avenue to closing the gap.

Summary

To summarize, this project addressed a practice gap in a community pediatric hospital in SSP for hospitalized infants from a staff perspective. Modeling SSP has been shown to increase caregivers' adherence to SSP in the home environment, along with coaching and in-the-moment education in the hospital environment. Staff knowledge of SSP was assessed, addressed, and reassessed after education to affect crib checks for adherence to SSP. Overall, the hope was/is to affect the infant mortality rate in the state of Tennessee, starting with modeling and coaching the practices in our small environment.

Section 3: Collection and Analysis of Evidence

Introduction

The practice question was, “What are the barriers to practicing SSP consistently in the pediatric inpatient acute and pediatric emergency care units?” This project aimed to address a practice gap in a community pediatric hospital in SSP for hospitalized infants from a staff perspective. Using adult learning principles and Lewin’s change theory as the guiding principles, these community hospital pediatric units were the focus of a staff education project aimed to increase the knowledge base of SSP and in turn increase adherence to SSP for their patients consistently. The following sections will describe the search, analysis, and synthesis of the literature available on SSP in the hospital environment and what others have done to increase adherence to the principles recommended by the AAP (2022) guidelines.

Practice-Focused Question

The practice question was “What are the barriers to practicing safe sleep principles consistently in the pediatric inpatient acute and pediatric emergency care units?” This project aimed to address a practice gap in a community pediatric hospital in SSP for hospitalized infants from a staff perspective. The following sections will describe the search, analysis, and synthesis of the evidence available on SSP in the hospital environment and what others have done to increase adherence to the principles recommended by the AAP (2022) guidelines. It will also describe what data the project collected to support the need for change and what knowledge gaps exist at present. To clarify, currently, the hospitalized infant in our pediatric community hospital does not

consistently receive SSP from the staff. These guidelines are imperative to adhere to from a safety perspective and for purposes of modeling for caregivers to continue at home. The practice question of "What are the barriers to practicing safe sleep for the hospitalized infant" aligned with the practice gap apparent with informal crib checks in both the acute care and emergency department environments. Thorough literature reviews reveal how best to address this gap and will be discussed in the next sections.

Sources of Evidence

Sources of evidence that informed this project consisted of a thorough literature search, analysis, and synthesis of outcomes and elements, staff surveys both pre and post-intervention, and informal crib checks. The literature was obtained from both my school library as well as the academic medical center library resources. The staff survey is based on an existing survey I modified using questions that inform the data being collected through a needs assessment framework. Formal crib checks will be addressed in future continuations of the project, along with clinical guideline creation to support and sustain the change. These sources informed change for the practice problem outlined above and additionally support staff education as the intervention to overcome the barriers.

Published Outcomes and Research

A literature review was performed using CINAHL, Medline, Google Scholar, and PubMed with the search terms "infant sleep practices," "safe sleep," and "infant sleep safety," yielding 301 results (n=301). Exclusions for "home" and "parent practices" were removed from the search and filters of "hospitalized," "peer-reviewed," and "full text" reduced the number to 77 (n=77). With a title/abstract review, 22 articles were acceptable

for this project, and after a full review, 22 were synthesized by both outcomes and elements of safe sleep to create the body of evidence (n=22). The search was halted when synthesis table saturation occurred. Several expert data source websites were also included in the data, including the AAP and the CDC. Date ranges for the data was filtered from 2013-present.

Using the Ohio State FULD Institute tools for evidence synthesis, synthesis tables were created for Levels of Evidence (Appendix A), outcomes (Appendix B), and safe sleep elements being addressed (Appendix C), and I analyzed the results. As the synthesis table suggests, the body of evidence points toward both staff education to fill the knowledge gap of staff in similar settings, and quality improvement projects. These were reflected as valuable tools to create change and consistency with this topic. The main elements for education focus concentrated on the main four: flat and firm surface, on their back, no loose items in the crib, and no co-sleeping. Some other elements from the 2022 updates include the use of a pacifier and baby in the same room but a different bed than a parent. Most data suggest the back-to-sleep recommendation has been widely accepted, and prone sleeping is not a popular option with parents or staff.

Evidence Generated for the Doctoral Project

To understand what knowledge gaps existed, a survey was administered that assesses staff knowledge of the 2022 AAP recommendations for infant sleep practices and barriers that prevent consistent practice in the hospital setting. This was concentrated around the main four concepts of safe sleep as stated above, with questions regarding the 2022 update item knowledge and what the staff considers to be barriers to consistency in

this practice. The survey was conducted using Redcap, a secure data collection tool and database, making survey reports simple to access.

Staff included in the survey were registered nurses from the inpatient acute care pediatric unit & the pediatric emergency department, and the nurse techs in the pediatric emergency department as well. The techs initially interact with every emergency department patient, are transporters from the emergency setting to the acute care unit, and are often the person to place the baby in the crib before the nurse arrives at the bedside in both settings. There are no nurse techs specifically in the inpatient pediatric setting. All staff were offered the survey for a total of 35 staff members. No selection criteria besides employed in either unit was used to determine survey participants, as the topic was relevant to all staff of both units.

A modified and updated staff survey referenced from the Arkansas Children's Hospital Safe Sleep Taskforce (Rowe, 2015) was used as the staff survey tool (Appendix D), measuring current knowledge in 2022 AAP recommendations for safe sleep as well as staff beliefs toward SSP in the hospital. Rowe (2015) reported the instrument has not been psychometrically tested or validated, yet this tool specifically addressed and helped construct a better understanding of how staff interprets both their understanding of and their role in SSP in the hospitalized infant. The instrument was modified to reflect the latest AAP recommendations. Informal crib audits were conducted as a pre-measure eliciting information regarding general practice in the SSP category. A more formalized crib audit will be conducted post-education and in further work beyond this staff education project that will be more suited outside the scope of this current project.

Protections

This is a staff education project and meets the criteria for Walden University Internal Review Board (IRB) pre-approval as stated in the DNP Project Guidelines (Walden, 2022). I completed all steps for ethical approval, as well as a project approval form signed by the site chief nursing officer (in lieu of an official IRB board that is non-existent at the site facility.)

The survey was distributed to all staff members of both the inpatient acute care as well as the pediatric emergency departments electronically through the hospital's internal email system. The survey remained open for 2 weeks, and a reminder email was sent after the first week. Communication was clear that completion of the survey was voluntary and not required for employment. No coercion or repercussions for non-participation occurred. Staff education occurred at a regularly scheduled staff meeting and education session that staff were not mandated to attend, but typically enjoy. This project was focused on staff education, but in future work, it will be expanded to support bedside compliance by creating a practice guideline, crib audits to ensure sustainability, and a collaboration with other hospital units for consistency.

Analysis and Synthesis

Once pre-survey results were collected, I completed the analysis and took it into consideration to create the education. Gaps in knowledge were identified and shared with the presenter (a unit pediatrician/hospitalist) to fully understand and address them in the educational presentation. Redcap, an institutional data collection tool, was used to collect and report the data. Redcap is a validated and reliable tool used in multi-data collection

projects, used frequently in patient medical information by the site's facility, and to secure against data breaches. Any outliers in the surveys were analyzed separately for relevance before discarding. Missing information was discouraged by using the Redcap tool to make each survey question mandatory, lessening the chance of blank data.

The survey used a combination of Likert scales, blank entries, and multiple-choice questions to obtain the best identification of knowledge gaps. Statistical analysis occurred once the post-survey was completed to reflect changes in knowledge from the education provided. Post-project, further analysis will occur with crib audits over some time.

Summary

The current body of evidence shows that hospital staff has an opportunity to affect infant mortality by both modeling SSP and consistently educating hospitalized families on the importance of doing the same at home. The AAP has recently released updated recommendations to their SSP recommendations, and staff may not be aware of these updates. Surveying the staff on current knowledge helped inform the education and in turn, increased staff awareness and compliance as to the importance of SSP for infants. Moving forward, I will explore the implementation of the initiative by describing the crib audits, staff survey, education components, and follow-up plan.

Section 4: Findings and Recommendations

Introduction

The practice question was, “What are the barriers to practicing SSP consistently in the pediatric inpatient acute and pediatric emergency care units?” This project aimed to address a practice gap in a community pediatric hospital in SSP for hospitalized infants from a staff perspective. The literature was searched using a modified PRISMA in CINAHL, PUBMED, and Medline, and a synthesis table was created revealing best sleep practices for the hospitalized infant. The staff survey resultswere analyzed with both Wilcoxon and McNemar tests by a qualified statistician due to small sample sizes.

Findings and Implications

Pre- and post-surveys were analyzed once education was completed and revealed some helpful information regardless of survey response limitations (Appendix A). Firstly, the initial two questions of the survey referenced items from the 2022 Safe Sleep updates and showed statistical significance for an increase in knowledge overall, as how the staff viewed the recommendations as being beneficial. Secondly, the staff who were initially surveyed reflected a high knowledge of the fundamental aspects of certain SSPs criteria before education was presented, and so post-surveys did not reflect a significant difference in Questions 3 through 8.

Qualitatively, staff reported barriers to SSP implementation as being the unwillingness of the caregivers to follow the recommended guidelines, insisting on co-sleeping, refusing to use a crib, family culture that differs from guidelines, and caretakers following outdated reflux precaution recommendations.

Unanticipated implications included the need for an organizational release authorization form that parents may sign if refusing to place the hospitalized infant in a crib to sleep or insist on co-sleeping. Reportedly, this has happened several times in the units of study. Parents can be resistant to education and insistent on their chosen methods, thereby placing staff in a difficult position. Liability would need to be addressed with these families, and an authorization form added to the medical chart for legality purposes. It will be imperative that the education of the family be documented appropriately as well. This implication has less to do with staff educational growth than with the ability for them to be successful when passing the education on to caregivers. A future phase of this project will need to address this aspect.

The findings of the staff survey showed a statistically significant increase in the knowledge gained from the educational session of the latest recommendations of SSP. Many offered to join a SSP committee to help influence a unit and hospital culture change by creating guidelines for this work moving forward. The organization may benefit from this future work, as we invited the newborn nursery and NICU units to join the committee as well. Standardized care established around SSP would be modeled to the community on a united front, with consistent education being given to families. This, in turn, may affect home practices for infant sleep and decrease tragedies from unsafe home sleep practices. Systems can learn from this initiative, creating guidelines and standards of care through staff education models.

Implications for positive social change are also possible through this important work. As we can see, barriers to SSP are strongly based in family culture, with caregivers

practicing the way their families have done so for generations. With consistent education and modeling of the recommended guidelines for infant safe sleep, and data to show improvement in infant deaths related to unsafe sleep practices, perhaps a culture shift can occur for all. Reaching vulnerable families that the CDC reports as having an increase in infant mortality rates would be a goal for this work as well.

Recommendations

Evidence-based recommendations for this work moving forward include the following: (1) Creating hospital guidelines/policies that include newborn nursery and NICU on SSP for consistency throughout the care continuum, (2) Establishing a quality improvement project that institutes the 2022 AAP Safe Sleep Practice recommendations into practice with the aforementioned guidelines, (3) Creating consistent staff education that is added to onboarding resources for all neonatal/pediatric staff who are newly hired, and (4) Implementing consistent caregiver education to be introduced on patient admission and reinforced throughout the hospitalization or in the emergency department as anticipatory guidance conversations with caregivers of infants less than 1 year of age that visit for other reasons. Materials are available through the National Institute of Health (NIH 2023) and local health departments for this purpose (Appendix F), and should be introduced as part of the environmental orientation to the unit upon admission, and reinforced throughout the stay.

As an implementation plan, several staff members have become enthusiastic about the topic and requested to create a safe sleep committee, whereby this work can progress. Staff engagement in practice changes is beneficial with compliance and peer

accountability and will add to the value of the initiative (Wagner 2018). Stakeholders will include the leadership teams of other infant units (newborn nursery and NICU), information technology to aid with the documentation portion, the director of the lab phlebotomy team, director of respiratory therapy, medical director of the pediatric and newborn nursery/NICU units, and a policy representative to guide this process in particular. SSP guidelines will need to be created initially that include recommendations of what to include as the standard in caregiver education, staff education, room set-up, crib checks, discharge instructions, and how to handle refusals from caregivers to comply.

Once a framework and guidelines are created, plan, do, study, act (PDSA) cycles will be initiated to change practice in increments, following a quality improvement model. A rapid cycle implementation will be well suited to this initiative, in that it is possible to build in each section for a full implementation in a quick timeline.

Crib audit adherence will measure compliance as well as sustainability. These will be reported to stakeholders quarterly, as well as to leadership monthly for compliance and supervision purposes. Documentation in the patient's electronic health record will reflect anticipatory guidance and educational conversations. Materials for families can be obtained with no financial implications from public health sites such as NIH and CDC and will be added to admission packets for families as well as posted in hospital rooms for educational purposes in the first PDSA cycle.

Contribution of the Doctoral Project Team

Contributions to the project include the pediatric unit nursing director and medical director who both supported the effort and educated the staff. The nursing director was instrumental in identifying the need and knowledge gap of staff on this particular topic and bringing it to the attention of the author in an attempt to find a solution. Also, there was assistance in distribution and encouragement for staff to complete both pre- and post-surveys. The medical director worked with me to research and bring a formalized educational session to staff with a virtual option, reaching more staff than without the option. An agreement to join the SSP committee has been made by both in future phases of this work. As previously discussed, this staff education project will extend to the next phases of guideline creation, staff documentation and parent education as well.

Strengths and Limitations of the Project

Although unit staff numbers are small, participation in pre-surveying was 75% with a 45% post-survey of the entire staff (Appendix E). Engagement by the staff in the education itself was strong, and the intent to continue the work into the next phases was as well, with many requesting to be included. This was identified as a strength, as well as the engagement of leadership in the work itself as evidenced by their support, communication, and educational resources.

Limitations of the project include the exclusion of the other neonatal units of the hospital in the staff education, with no assurance that those team members are teaching SSP consistent with the 2022 guidelines. Inconsistency to families along the continuum may occur, as these units are typically the first to engage in the topic before patient

discharge after birth. Also, informal crib checks occurred before the education, making it difficult to accurately compare to any official crib audits that occur post education.

Due to the small survey sample size, ANOVA tests were deemed not the most appropriate statistical analysis testing to be used. Most questions were analyzed using Wilcoxon Signed Ranks tests.

Future Work in Safe Sleep Practices

The education of staff on the newest guidelines in SSP is but a first step in ensuring we are modeling the best behaviors in SSP for infants with our families. Without consistency in these efforts, and guidelines for staff to refer to regularly, the united front of all professionals advocating for SSP is moot. Caregivers can be frustrated and confused with hearing recommendations that differ depending on whom they are speaking with, as can staff themselves. As previously described, future work in this space will include creating hospital guidelines, acquiring available educational materials for caregivers, and engaging stakeholders that frequent the patient rooms to help with reinforcement and documentation builds/adjustments to record staff efforts. In addition, regular crib checks with real-time re-education if needed will need to be instituted to ensure staff are adhering to SSP guidelines once created and rolled out.

Section 5: Dissemination

Dissemination Plan

Results from this safe sleep practice staff education project will be disseminated to the involved units via the monthly newsletter and walking rounds to ensure understanding and opportunity to discuss. Results will also be shared throughout all units in the hospital that admit any infant under the age of 1 year to elicit collaboration for future phases of this work, including hospital guidelines and documentation builds.

Given the inconsistency between knowledge of SSP and random crib checks, it is evident that even though staff were aware of the recommendations, there was a non-compliance factor associated with consistency in this practice, perhaps largely affected by caregivers themselves. There is a plethora of literature published regarding SSP implementation in pediatric and newborn nursery/NICU environments, yet modeling the recommendations seems inconsistent. Continued dissemination of this information is valuable to all who admit infants, in that it highlights a good understanding of both the inconsistency of knowledge versus practice and the barriers that contribute to the inconsistency as well. For infant healthcare staff to impact infant mortality rates due to unsafe sleeping practices, an understanding of these realities must occur. Therefore, this would be an appropriate submission to a peer-reviewed journal and/or poster/podium presentation nationally for nursing colleagues to consider in their facilities.

Analysis of Self

Several lessons were learned in the planning, implementation, and evaluation of this project that were incredibly valuable. Initially, the addition of those who are closest

to this work would have been very helpful to include from the beginning stages in that a thorough understanding of the barriers present for SSP would have helped develop better educational content. The session should have been based around the pre-survey, and not based on the perceived need beforehand.

Also, although using a validated tool for the staff survey, consulting with a statistician beforehand would have been incredibly valuable, as there were problematic aspects of the evaluation that could have been avoided with a better pre-plan. For instance, altering the choice of how the participant answered (sliding scale versus a Likert scale) invalidated the tool itself. This was an eye-opener and could have been avoided. The experience of consulting a statistician helped me understand the language of research interpretation better.

Working on this particular project also afforded me a unique view of the intricacies of what practice change entails. Appreciating the process of policy creation, interdepartmental collaboration, electronic medical record improvement, and stakeholder engagement are all aspects of change that one would not think would be a part of staff education, but they are indeed. The opportunity to affect change in healthcare via the implementation of evidence into practice is an opportunity to also advance our professional practice. Being a change agent to better support the patients and staff has been a very rewarding experience, and I look forward to both continuing with this project and beginning others.

Summary

In summary, this was a staff education evidence-based project focused on increasing the staff knowledge of SSP for hospitalized infants to model and educate the practices for caregivers to continue at home. Staff were pre- and post-surveyed to measure this knowledge. The results were surprising in that staff mostly knew the aspects of safe sleep, but identified barriers to consistency in practice, namely caregiver behaviors that were difficult to overcome. Next steps in the continuation of this project include guideline creation, electronic medical record opportunities for charting, and collaboration with other hospital units to create consistency in caregiver education and modeling practices.

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Appendix A: Levels of Evidence

X (copy symbol as needed)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Level I: Systematic review or meta-analysis (all RCA)																						
Level II: Randomized controlled trial																						
Level III: Controlled trial without randomization					X																	
Level IV: Case-control or cohort study			X												X	X						
Level V: Systematic review of qualitative or descriptive studies	X							X				X										
Level VI: Qualitative or descriptive study, CPG, Lit Review, QI or EBP project		X		X		X	X		X	X	X						X	X		X	X	X
Level VII: Expert opinion													X	X					X			

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Appendix B: Outcomes Synthesis

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
QI is successful at changing safe sleep practices	↑			↑		↑	↑		↑		↑							↑		↑	↑	↑
Multidisciplinary staff education	↑	↑	↑	↑	↑	↑		↑	↑	↑	↑	↑				↑		↑		↑	↑	↑
Knowledge of safe environment			↑				↑	↑	↑	↑	↑	↑	↑			↑		↑				
Knowledge of room temperature			↑																			
Knowledge of firm surface			↑					↑														
Knowledge of laying baby down if you are tired			↑									↑										
Crib audits				↑	↑		↑		↑	↑	↑							↑		↑	↑	↑
Role modeling			_	↑	↑	↑	↑	↑	↑	↑	↑	↑						↑		↑		
Policy (or Guideline) Implementation					↑	↑		↑	↑	↑			↑		↑	↑	↑	↑	↓	↑	↑	↑
Fall Prevention												_										

Appendix C: Intervention Synthesis Table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Supine sleep	X		X	X	X	X	X	X	X	X	X		X			X	X	X		X	X	X
Alone not co bedding	X		X	X	X	X		X	X				X			X	X	X	X	X	X	X
Same room as parents					X	X		X	X				X			X	X					
Specifically in a crib					X		X													X	X	
No loose items in crib			X	X	X	X	X	X	X	X	X		X			X	X	X		X	X	X
Appropriate bundling				X			X		X		X						X	X				
Firm surface to sleep			X			X	X	X		X			X			X	X					
Ensuring not overly heated -room temp <78			X										X			X	X					
Flat surface (Reflux precautions)				X			X		X				X			X						X
Role modeling	X		X	X	X		X	X	X		X	X						X		X		
Smoking increases risk of SIDS													X			X	X					
Immunizations								X					X				X					
Pacifiers								X		X	X	X	X			X	X					
Breastfeeding								X				X	X			X	X					
EMR Documentation Prompts																		X				X

Appendix D: Staff Survey

Q1	I am knowledgeable of current Safe Sleep Guidelines recommended by the American Academy of Pediatrics	Likert 1-5
Q2	Overall view of Safe Sleep Practices (SSP) recommended by the AAP in 2022	Likert 1-5
Q3	SSP are followed consistently by staff (RN's, paramedics, Techs, Lab, Providers, Respiratory Therapy)	Likert 1-5
Q4	I routinely assess that my patients are in a Safe Sleep environment.	Likert 1-5
Q5	Implementation and providing education to caregivers/families on importance of Safe Sleep in a priority.	Likert 1-5
Q6	I feel confident in providing education and role modeling for caregivers/families on SSP.	Likert 1-5
Q7	What barriers have you encountered in providing SSP with your patients and families?	Blank Text
Q8	Reflux precautions should include positioning devices, (ie. Wedges, slings, nests)	True/False
Q9	Which interventions do you feel are effective for reflux in infants?	Multiple Choice
Q10	Swaddling techniques leaving the hips and legs loose is both effective and safe compared to tight papoose swaddling.	True/False

Appendix E: Data for Analysis

Demographics:

What unit do you work in at WMC?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pediatric Inpatient Department	5	71.4	71.4	71.4
	Pediatric Emergency Department	2	28.6	28.6	100.0
	Total	7	100.0	100.0	

(Pre) Knowledgeable Safe Sleep Guidelines

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	??	1	14.3	14.3	14.3
	??	2	28.6	28.6	42.9
	4	3	42.9	42.9	85.7
	??	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

(Post) Knowledgeable Safe Sleep Guidelines

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	2	28.6	28.6	28.6
	??	5	71.4	71.4	100.0
	Total	7	100.0	100.0	

Wilcoxon Signed Ranks Test

Test Statistics[a]

	(Post) Knowledgeable Safe Sleep Guidelines - (Pre) Knowledgeable Safe Sleep Guidelines
Z	-2.333[b]
Asymp. Sig. (2-tailed)	.020

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

(Pre) View of Safe Sleep Practices (SSP)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unfamiliar	2	28.6	28.6	28.6
	2	1	14.3	14.3	42.9
	Aware	3	42.9	42.9	85.7
	Very Familiar	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

(Post) View of Safe Sleep Practices (SSP)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aware	2	28.6	28.6	28.6
	4	1	14.3	14.3	42.9
	Very Familiar	4	57.1	57.1	100.0
	Total	7	100.0	100.0	

Wilcoxon Signed Ranks Test

Test Statistics[a]

	(Post) View of Safe Sleep Practices (SSP) - (Pre) View of Safe Sleep Practices (SSP)
Z	-2.032[b]
Asymp. Sig. (2-tailed)	.042

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Statistics

		(Pre) SSP Followed Consistently by Staff	(Post) SSP Followed Consistently by Staff
N	Valid	6	6
Median		77.50	74.50
Minimum		0	50
Maximum		100	100

(Pre) SSP Followed Consistently by Staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	1	16.7	16.7	16.7
	Sometimes	1	16.7	16.7	33.3
	76	1	16.7	16.7	50.0
	79	1	16.7	16.7	66.7
	Always	2	33.3	33.3	100.0
	Total	6	100.0	100.0	

(Post) SSP Followed Consistently by Staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	2	33.3	33.3	33.3
	72	1	16.7	16.7	50.0
	77	2	33.3	33.3	83.3
	Always	1	16.7	16.7	100.0
	Total	6	100.0	100.0	

Wilcoxon Signed Ranks Test

Test Statistics[a]

	(Post) SSP Followed Consistently by Staff - (Pre) SSP Followed Consistently by Staff
Z	-.135[b]
Asymp. Sig. (2-tailed)	.893

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Statistics

		(Pre) Routinely Assess Patients in a Safe Sleep Environment.	(Post) Routinely Assess Patients in a Safe Sleep Environment.
N	Valid	7	7
Median		92.00	79.00
Minimum		0	50
Maximum		97	100

(Pre) Routinely Assess Patients in a Safe Sleep Envt.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	1	14.3	14.3	14.3
	68	1	14.3	14.3	28.6
	76	1	14.3	14.3	42.9
	92	1	14.3	14.3	57.1
	94	1	14.3	14.3	71.4
	97	2	28.6	28.6	100.0
	Total	7	100.0	100.0	

(Post) Routinely Assess Patients in a Safe Sleep Environment.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	1	14.3	14.3	14.3
	70	1	14.3	14.3	28.6
	77	1	14.3	14.3	42.9
	79	1	14.3	14.3	57.1
	94	1	14.3	14.3	71.4
	97	1	14.3	14.3	85.7
	Always	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

Wilcoxon Signed Ranks Test

Test Statistics[a]

	(Post) Routinely Assess Patients in a Safe Sleep Environment. - (Pre) Routinely Assess Patients in a Safe Sleep Environment.
Z	-.524[b]
Asymp. Sig. (2-tailed)	.600

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Statistics

		(Pre) Education to Caregivers/Families a Priority.	(Post) Education to Caregivers/Families a Priority.
N	Valid	7	7
Median		93.00	97.00
Minimum		0	68
Maximum		100	100

(Pre) Education to Caregivers/Families a Priority.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	1	14.3	14.3	14.3
	71	1	14.3	14.3	28.6
	74	1	14.3	14.3	42.9
	93	1	14.3	14.3	57.1
	97	2	28.6	28.6	85.7
	Always	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

(Post) Education to Caregivers/Families a Priority.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	68	1	14.3	14.3	14.3
	70	1	14.3	14.3	28.6
	96	1	14.3	14.3	42.9
	97	1	14.3	14.3	57.1
	98	1	14.3	14.3	71.4
	99	1	14.3	14.3	85.7
	Always	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

Wilcoxon Signed Ranks Test

Test Statistics[a]

	(Post) Education to Caregivers/Families a Priority. - (Pre) Education to Caregivers/Families a Priority.
Z	-.420[b]
Asymp. Sig. (2-tailed)	.674

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Statistics

		(Pre) Confident Providing Education	(Post) Confident Providing Education
N	Valid	7	7
Median		68.00	73.00
Minimum		0	50
Maximum		100	100

(Pre) Confident Providing Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Do Not	1	14.3	14.3	14.3
	A Little	2	28.6	28.6	42.9
	68	2	28.6	28.6	71.4
	Am Confident	2	28.6	28.6	100.0
	Total	7	100.0	100.0	

(Post) Confident Providing Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	1	14.3	14.3	14.3
	67	1	14.3	14.3	28.6
	70	1	14.3	14.3	42.9
	73	1	14.3	14.3	57.1
	88	1	14.3	14.3	71.4
	93	1	14.3	14.3	85.7
	Always	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

Wilcoxon Signed Ranks Test

Test Statistics[a]

	(Post) Confident Providing Education - (Pre) Confident Providing Education
Z	-1.016[b]
Asymp. Sig. (2-tailed)	.310

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

(Pre) Reflux Precautions Should Include Positioning Devices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	False	4	57.1	57.1	57.1
	True	3	42.9	42.9	100.0
	Total	7	100.0	100.0	

(Post) Reflux Precautions Should Include Positioning Devices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	False	7	100.0	100.0	100.0

McNemar Test

Test Statistics[a]

	(Pre) Reflux Precautions Should Include Positioning Devices & (Post) Reflux Precautions Should Include Positioning Devices
N	7
Exact Sig. (2-tailed)	.250[b]

a. McNemar Test

b. Binomial distribution used.

(Pre) Swaddling Hips/Legs Loose Safe

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	False	5	71.4	71.4	71.4
	True	2	28.6	28.6	100.0
	Total	7	100.0	100.0	

(Post) Swaddling Hips/Legs Loose Safe

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	False	2	28.6	28.6	28.6
	True	5	71.4	71.4	100.0
	Total	7	100.0	100.0	

McNemar Test

Test Statistics[a]

	(Pre) Swaddling Hips/Legs Loose Safe & (Post) Swaddling Hips/Legs Loose Safe
N	7
Exact Sig. (2-tailed)	.250[b]

a. McNemar Test

b. Binomial distribution used.

Appendix F: NIH Safe Sleep Printable Handouts

Honor the Past, Learn for the Future.
What Does A **Safe Sleep Environment** Look Like?

The image below shows a safe infant sleep environment.

Baby should not sleep in an adult bed, on a couch, or on a chair alone, with you, or with anyone else.

Baby's sleep area is in the same room, next to where parents sleep.

Do not smoke or let anyone else smoke around your baby.

Use a firm and flat sleep surface like a cradleboard, or a mattress in a safety-approved crib*, covered by a fitted sheet.

Do not put pillows, blankets, sheepskins, or crib bumpers anywhere in your baby's sleep area.

Keep soft objects, toys, and loose bedding out of your baby's sleep area. Make sure nothing covers the baby's head.

Dress your baby in sleep clothing, such as a wearable blanket. Do not use a loose blanket, and do not overbundle.

Always place babies on their backs to sleep, for naps and at night.

NIH Eunice Kennedy Shriver National Institute of Child Health and Human Development

SAFE TO SLEEP

HEALTHY NATIVE BABIES
A Program of the National Institutes of Health

* A crib, bassinet, portable crib, or play yard that follows the safety standards of the Consumer Product Safety Commission (CPSC) is recommended. For information on crib safety, contact the CPSC at **1-800-638-2772** or http://www.cpsc.gov.