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Infant Safe Sleep Initiative

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Infant Safe Sleep Initiative (Quality Improvement Project)

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Abstract

Background: Sudden Unexpected Infant Death (SUID), which includes sudden infant death syndrome (SIDS), is one of the leading causes of infant deaths in the United States and a significant health issue. Although there has not been a distinct single cause found for SIDS, it has been determined that there are several risk factors identified that increase the risk of an infant dying from SIDS. Infant Safe Sleep Education as recommended by the American Academy of Pediatrics is essential for healthcare professionals to educate new families on infant safe sleep.

Objective: The objective of this project was to create and evaluate a Quality Improvement Initiative that would improve the knowledge and implementation of infant safe sleep practices and role modeling in the hospital setting both before and after an educational initiative.

Methods: A QI initiative with a pre- and post- test analysis was conducted utilizing a convenience sample of newborn infants and staff. A crib audit tool was implemented on an inpatient Womens' and Infant Floor as well as a knowledge-based survey for nursing staff. The data was analyzed with inferential and descriptive statistics to determine statistical significance.

Results: There were forty-nine cribs included in the pre-crib audit and forty-two post initiative. Thirty-two nursing staff completed the surveys. The crib audit aggregate data scores show an improvement overall from 51.7% to 67.5% following the education and the nurse knowledge aggregate data scores improved from 71.05% to 95.24% post education. This showed statistically significant improvement on both crib audit and survey with a p score < 0.001.

Conclusions: Statistically significant improvements were made in both the safe sleep environment and nursing knowledge after the introduction of an educational initiative.

Keywords: SIDS, Safe Sleep, Nurse, Hospital, Initiative, Sudden Infant Death Syndrome, Infant Education, Intervention

Copyright Declaration

Executive Summary

The Centers for Disease Control and Prevention (CDC) report an average 3,500 infants die unexpectedly from sudden infant death syndrome (SIDS) in the United States each year (CDC, 2022). Nurses and staff do not routinely receive education on the most up to date, evidence-based infant safe sleep guidelines recommended and supported by the American Academy of Pediatrics (CMS, 2012). The PICO question of "Do staff nurses demonstrate improved nursing knowledge and role modeling of safe sleep practices and SIDS risk-reduction strategies after an educational initiative compared to prior to receiving the education?" was the driving force behind this project. The purpose and goal of this project aimed to create a Quality Improvement (QI) educational initiative to improve the knowledge and implementation of infant safe sleep practices and correct role modeling in the hospital setting and to educate staff on the modifiable risk factors that can be avoided that increase SIDS risk. A pre- and post- test analysis was conducted with a convenience sample of newborn infants utilizing a crib audit tool on the inpatient units on a Women's and Infant Floor as well as on nursing staff utilizing an anonymous knowledge-based survey. The data was analyzed with inferential and descriptive statistics to determine statistical significance. There were forty-nine cribs included in the pre-crib audit and forty-two cribs post initiative. Thirty-two nursing staff completed the pre and post survey. The crib audit aggregate data scores showed an improvement overall from 51.7% to 67.5% following education and the nurse knowledge aggregate data improved from 71.05% to 95.24% post education. Statistically significant improvements were made and proved successful in both sleep environments and nursing knowledge after the introduction of an educational initiative with an overall p value <0.001 for each. This project demonstrates that nurses are in a pivotal position to educate and model evidence based infant safe sleep risk reduction strategies.

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Introduction

Background Information

The Centers for Disease Control and Prevention (CDC) report an average 3,500 infants die unexpectedly from sudden infant death syndrome (SIDS) in the United States each year (CDC, 2022). Twenty-two percent of mothers' report not placing their newborns supine for sleep and thirty-nine percent report using soft bedding or blankets while sleeping despite both practices increasing the risk of death from SIDS (CDC, 2022). Nurses and staff do not routinely receive education on the most up to date, evidence-based infant safe sleep guidelines recommended by both the American Academy of Pediatrics (AAP) and National Association of Neonatal Nurses (NANN) (AAP, 2022 & NANN, 2020). Safe sleep strategies are also not routinely being role modeled correctly during hospitalization or as part of discharge teaching. The National Institute of Nursing Research (NINR) recognizes that "even a brief intervention on the part of nurses can have an impact on parents' behaviors" (NIH, 2007). Hospital initiatives involving theoretical frameworks to guide safe sleep practices are essential in reducing SIDS cases. Improving hospital nursing education and staff role modeling of safe infant sleep allows that knowledge to follow the family home and improve infant death rates related to SIDS (CMS, 2012). Even one preventable infant death is too many.

Problem Recognition

The significant identified clinical problem affecting Colorado and the U.S. is that "the rate of infant death in the first year of life has remained steady over the past 30 years since the development of the Back to Sleep (now Safe to Sleep) Initiative" (CDC, 2022) (Appendix A). The U.S. ranks fifty-five out of 224 among industrialized countries with a SIDS rate of 5.8/1000 live births (NANN, 2019). SIDS is the third leading cause of death for infants younger than one-

year-old (CDC, 2022). Studies have shown that families are not consistently receiving recommendations from their providers about SIDS prevention and that is consistent with the AAP guidelines for safe sleep (Moon, 2016). NANN follows the AAP recommendations and provides guidelines that address the challenges of implementing and role-modeling infant-safe sleep in the hospital, specifically for infants discharged from the Neonatal Intensive Care Unit (NICU). NICU infants should transition to AAP-recommended infant-safe sleep guidelines at 32 weeks post gestational age (NANN, 2019). Unsafe sleep practices continue to be a significant reason SIDS cases do not continue to decrease in the U.S. (AAP, 2022).

Problem Statement

The problem statement for this Doctor of Nursing Practice (DNP) Project was: Unsafe infant sleeping practices remain a problem in the U.S. and Colorado, as evidence by lack of improvement in SIDS rates and goals set by Healthy People 2030. Healthy People 2030 has objective goals of both increasing the proportion of infants who are placed to sleep on their backs and reducing the rate of infant deaths (health.gov, 2022) (Appendix B).

Project Purpose

This DNP Project aimed to create a quality improvement initiative to improve the knowledge and implementation of infant safe sleep practices and role modeling in the hospital setting and to educate staff on the modifiable SIDS risk reduction strategies.

This practice problem includes a knowledge deficit and a lack of proper role modeling by nurses and hospital staff that is needed to promote safe sleep practices (CMS, 2012). Infant safe sleep education and understanding of SIDS risks for staff based on AAP safe sleep updates is needed within organizations. The accurate role modeling of infant safe sleep in the hospital crib should routinely occur in every organization. Staff should educate parents during admission,

hospitalization, and before discharge on safe sleep recommendations for infants and risk factors that increase SIDS rates. Safe Sleep Initiatives have proven statistically successful in SIDS reduction in several other projects conducted at Children's Hospitals (CMS, 2012). The most recent AAP release of updated infant safe sleep recommendations for newborns and infants was in June 2022. The updated information is essential for staff to review annually to keep up their knowledge on the most up-to-date safe sleep practice (SSP) recommendations for families to bring that information into their communities (AAP, 2022).

PICO Question

Do staff nurses demonstrate improved nursing knowledge and role modeling of safe sleep practices and SIDS risk-reduction strategies after an educational initiative compared to prior to receiving the education? This PICO question was the driving force behind this DNP quality improvement project and is appropriate and needed to improve nursing practice. The population for this project is the staff on the Women's and Infant Floor, particularly the Mother/Baby Unit and the Neonatal Intensive Care Unit (NICU). The intervention was the implementation of an educational program based on the AAP recommendations for infant safe sleep. A comparison was completed assessing staff knowledge and proper role modeling of safe sleep prior to and following implementation of the educational program. The outcome of the project was improved staff knowledge and role modeling at the one-month mark.

Project Significance/Scope

SIDS is a preventable cause of infant deaths. With a Q.I. safe sleep initiative within a community hospital, improved safe sleep practices will ideally improve the infant safe sleep environments in the units of the QI project and potentially surrounding communities as staff, parents and family members share their knowledge and role modeling. This QI project only

addressed practice changes within the hospital setting where the interventions take place. According to the NIH (2020), research has shown that correct infant safe sleep modeling in a hospital setting improved correct sleep positions from 50-96%. Creating an expectation of education being provided by staff to every family from admission to discharge is essential for organizations to make a priority. "Nurses should anticipate reluctancy and refusal of new evidence-based data on safe sleep and be prepared to back it up with reliable resources for the family" (AAP, 2022). Staff in healthcare facilities should work to educate families with the correct knowledge of the high SIDS risk that comes with parent-infant bed-sharing (AAP, 2022). The possibility of new parents receiving education on infant safe sleep having as much as a 50% reduction in the risk of their child dying of SIDS/SUID is evident in the need for this intervention.

The Center for Medicare & Medicaid Services (CMS) supported Initiative for Improving Maternal and Infant Health which brings together the activities of the CMS, the Health Resources and Services Administration (HRSA), the Administration on Children and Families (ACF), Centers for Disease Control, National Institute of Health, and the March of Dimes (CMS, 2012). CDC collaborates with the Eunice Kennedy Shriver National Institute of Child Health and Human Development in its Safe to Sleep campaign, formerly known as the Back to Sleep campaign. The Safe to Sleep campaign has outreach activities to spread safe sleep messages and educational materials about ways to reduce the risk of SIDS and other sleep-related infant deaths (CDC, 2020). These materials can also be used as educational materials for staff and families.

Foundational Theory

Imogene King's Theory of Goal Attainment is the foundational nursing theory used to guide this project. This middle-range theory defines nursing as a combined action, reaction, and

interaction process by which the staff and patient share information and their perception of a nursing situation (Appendix C). This theory is based on the "mutual perceptions of both nurses and patients and facilitates patient and family-centered care" (Abid-Hajbaghery, 2018). Updating nursing knowledge and the repetition of role-modeling safe sleep will positively affect family learning and knowledge for a mutual goal of preventing SIDS in the newborn once discharged from the hospital.

This Quality Improvement project also utilized the Self-Efficacy Theory, which states that learners can change their behavior to obtain the desired outcome and positively influence their health practices. This theory aims to provide education and facilitate behavior change for the nurse as an individual and as a healthcare organization. It aimed to increase knowledge and awareness among healthcare staff while also creating a culture of infant sleep safety, with a consistent standard of care and role modeling expected of all staff members. Nurses were asked to gauge their confidence in safe sleep knowledge and education using the Likert scale questions, knowledge-based questions and the self-efficacy scale (1-5) prior to and following the educational assessment. The goal was that staff will feel confident in teaching and role modeling the knowledge they have on infant safe sleep.

Review of Evidence

Systematic Review of Literature

A systematic review of the literature was conducted to evaluate and analyze data related to the project question. This review entailed an appraisal, evaluation, synthesis, and recommendations gained from literature published regarding the issue of safe sleep education for nurses and families to help determine best practices to achieve the outcome of the PICO question. The databases used to access research studies related to the PICO question were

Medline, Cochrane, and CINAHL. Medline was chosen to research this clinical problem because it is "widely recognized as the premier source for bibliographic coverage of biomedical literature" (Polit & Beck, 2017, pp. 94-95). CINAHL was chosen to analyze research because it "references virtually all published nursing and allied health journals, books, dissertations, and selected conference proceedings" (Polit & Beck, pp. 92-93). Keywords used were SIDS, safe sleep, sudden infant death syndrome, combined with nurse, hospital, initiative, infant, education, and intervention. Inclusion and exclusion limiting criteria set was English language and a period in the past five years. These search criteria initially returned 5,574 articles. After the elimination of non-peer-reviewed articles, the number decreased to 2,651. After including Medline, Cochrane, and CINAHL as limiting factors to articles, the search returned 154 articles related to the PICO question.

The systematic review of articles allowed for the interpretation of general themes noted when researching safe sleep and nurse education. Themes identified include nurses' knowledge deficit regarding AAP recommendations regarding safe sleep, availability of appropriate time for nurses to give thorough discharge teaching instructions, and lack of good role modeling of safe sleep environments in the hospital setting before discharge home. Twenty-six articles regarding the topic were found to have a level of evidence VI, which describes a single descriptive or qualitative study to gather greater insight into the problem of SIDS prevention (Regis University, 2022). Three articles were systematic reviews of descriptive and qualitative studies and meta-synthesis reviews (Level V). Two articles are opinion guidelines and consensus of organizations, such as AAP and NANN, based on EBP recommendations and therefore fall into a level of evidence VII. The AAP releases guidelines based on expert consensus with AAP, NANN, and NIH collaboration and opinion on infant safe sleep.

The emergent themes from the literature review show that safe sleep initiatives have proven statistically successful in several studies conducted at Children's Hospitals across the U.S. Role modeling of safe sleep statistically shows improvement in infant safe sleep environments pre- and post-education. Annual education refresher with staff is also essential to refresh nurse knowledge and acknowledgment of any cultural and traditional differences noted as part of teaching to families. The main consensuses of the literature review are guided by the collaboration with the AAP, NANN, and NIH for most of these studies, as well as with this DNP project. The scope of evidence in Table 1 categorizes significant articles related to the project.

Safe Sleep Initiatives conducted at several large U.S. Children's hospitals have identified increased nursing and healthcare provider knowledge of standardized, safe sleep practices for infants (CMS, 2012). The AAP releases updated recommendations for safe sleep approximately every five years, most recently in 2022. This current information is vital for staff to receive during annual competencies to remain educated and updated on these recommendations to educate their patients and the community (AAP, 2022). According to NANN, advice given to parents from their providers was found to increase the likelihood of following safe sleep recommendations, yet the education remains inconsistent (NANN, 2019).

Most studies analyzing the effectiveness of interventions are observational studies due to the nature of safe sleep education and analyzing the nurse's knowledge. These studies review how an intervention was implemented, the results of the outcome after the intervention, and finally, a comparison of the two to provide information on the effectiveness of the educational framework. Facilitating a change in behavior through increased knowledge and awareness while creating a positive culture of infant sleep safety is essential in the theoretical framework regarding health promotion and prevention. In a study by Abney-Roberts (2015), a large

observational audit of newborns in bassinets pre- and post-initiative showed a statistical improvement in the safe sleep practices regarding the presence of objects in the infant's sleep area decreased from 92% pre-intervention to 18% post. Increasing staff knowledge to bring about a positive, safe sleep culture in an organization and facilitate a change in practice is the basis of the theoretical framework of health promotion and prevention.

Miller (2018) found evidence that a nurse placing a newborn on their side created a situation where the parent was more likely to place their newborn prone when laying them to bed for the night. Yale-New Haven Hospital established that only 20% of newborn infants were placed in the supine position. Therefore, all nursing personnel in the well-newborn nursery were required to attend a 30-minute educational session about SIDS and safe sleep recommendations, which explicitly addressed concerns about choking and aspiration in the newborn period. The importance of modeling recommended behavior was emphasized. The intervention effectively altered healthcare professional behavior, such that 99% of infants were in the supine position in unannounced audits three months after the intervention. Parents were also twelve times more likely to report after the intervention that they observed nursery staff exclusively using the supine position (Colson et al., 2002). A similar study at a Washington D.C. hospital assessed nurses' attitudes and beliefs through a questionnaire before the initiative started. This study concluded that the staff was able to verify their knowledge of safe sleep, but merely one-third of the crib audits verified that knowledge being applied (Bartlow, 2016). These studies continue to emphasize the importance of staff being responsible for the most up-to-date education for families regarding safe sleep practices for their newborns.

Project Plan and Evaluation

Market/Risk Analysis

SWOT Analysis

A SWOT analysis is done to identify internal and external strengths and weaknesses that will affect the outcome and success of the project (Zaccagnini & Peachacek, 2021). For this QI project, the following is the SWOT analysis:

- **Strengths –** Education support, low cost of project, strong engagement with staff
- **Weaknesses –** Current unsafe role modeling is done, high staff turnover with travelers and inconsistent staffing models
- **Opportunities–** Improve Staff Education related to Infant Safe Sleep as recommended by the AAP, and an Improved culture of safe sleep
- **Threats –** Possible Hawthorne Effect during crib audit, lack of current safe sleep culture with staff, cultural or familial beliefs within the community as boundaries

Risk analysis identified

Risk analysis for this Q.I. project identified forces driving, restraining, and sustaining the success of this initiative. The driving forces identified were a goal to improve safe sleep in the community after discharge utilizing resources available from safe sleep collaborations such as AAP, NIH, and NANN, as well as collaboration with the unit educators from both the Mother/Baby Unit and NICU as well as support from the Neonatal Nurse Practitioners (NNP) and Physicians (MD). The restraining forces identified for this project are the limited timelines to conduct the initiative and crib audits, as well as staffing issues. The high staff turnover rate and poor staffing for the needed unit matrix numbers will potentially allow staff to not complete the pre-post assessment and educational module. Sustaining forces for this Q.I. project is continued

support for culture change from leadership, leadership rounds with charge nurses sustaining crib audit monthly, and an overall low budget for this initiative.

Stakeholders

The stakeholders for this Q.I. project was everyone taking an active role in, being empowered by, or learning from the educational initiative and the families and infants. The project team consisted of a project lead, a DNP Mentor, and a DNP Chair. The hospital staff considered the main stakeholders for this project are the Unit Educators, staff nurses, hospital leadership, and the providers (NNP and MDs). The end goal stakeholders were the infants born at the community hospital and their families, as well as the extended family in the community to whom they bring this new knowledge.

Project Team

The project team was led by the DNP student, as the project leader, with the guidance of a DNP Mentor who also served as an expert in the field for validity and a DNP Chair. The project team continued to collaborate to create a Q.I. project and safe sleep initiative to create empowerment and self-efficacy among staff and increase knowledge. Organizational approval was obtained throughout the implementation.

Cost-Benefit Analysis

A well-executed cost-benefit analysis is an excellent tool to gain personal stake and support in creating a new project (Zaccagnini & Pechacek, 2021). For this project, the quantifiable cost will be cost of supplies and cost-effective staff participation during an already scheduled shift. The cost to effectively execute this Q.I. project is the minimal cost of printing materials. The education module had five copies printed at a minimal cost and the cost of printing and laminating twenty safe sleep crib cards (*see Appendix D*). The benefit of this project

was increased knowledge of staff, an increase in correct role modeling of infant safe sleep, a future increase in patient satisfaction, and a future decrease in community SIDS rates. The overall benefits outweigh the minimal cost of creating this initiative.

Project Objectives

Mission/Vision Statement

The project mission statement was: To create a Quality Improvement (Q.I.) initiative within my organization that enhanced nursing knowledge of AAP-recommended safe sleep practices for infants and enhances nurse self-efficacy in passing on that education and knowledge to new families. The project vision statement was: Nurses utilized the knowledge they gain from safe sleep education to feel confident in educating and role modeling for their patients.

Goals of Project

The proposed goals for this project were improved staff self-efficacy and confidence in safe sleep teaching and role modeling, as well as the implementation of safe sleep practices observed by crib audits. These goals were obtained through the following:

1) QI implementation of AAP safe sleep practice guidelines through nurse education.
2) EBP staff role modeling of safe sleep practices for their patients in the hospital setting to improve home safe sleep practices.
3) The development of an educational initiative to improve nursing knowledge (pre and posttest design) and improve observed practice (pre and post design crib audits).

Project processes/outcomes

Process of creating an Infant Safe Sleep Initiative required a quasi-pre-experimental study with an educational pre-post-test assessment of the staff's knowledge of infant safe sleep practices as well as an observational assessments of correct role modeling of behavior. The

initiative was designed to answer the project-focused question of whether implementing an evidence-based, infant-safe sleep training initiative for staff to improve their knowledge and implementation of infant-safe sleep practices over twelve weeks. This Pre-test -Post-test Design was used for knowledge assessment before the safe sleep educational initiative was given to the staff and four weeks after the intervention. A pre- and post-intervention crib observational audit was conducted to analyze the correct role modeling of safe sleep taking place on the units. The data collection tools that were used are a repeated measure analysis when analyzing the test results and crib audits and pre- and post-educational interventions to create a statistical analysis with Wilcoxon Signed Rank Tests that demonstrated the change in staff scores. The level of data with nominal answering of simple yes or no questions. An educational initiative regarding infant safe sleep was created based on the AAP guidelines, and a module was placed at the charge nurse desk for staff signoff upon completion. This form of implementation for new practices or initiatives on the unit is standard. Staff completed the short and direct education module during regular shifts.

Proposed outcomes of this DNP project included improved implementation of the AAP-recommended safe sleep practices guidelines that could help reduce SIDS-related infant deaths. Evidence-based practice in healthcare and integrating safe sleep interventions to increase family or caregivers' use of safe sleep practices at home, particularly if emphasized in infant populations at higher risk for sleep-related mortality, such as NICU infants. One study on a similar initiative at Arkansas Children's Hospital showed the importance of correctly modeling sleep behaviors and environment and overcoming any education barriers the nurses may see with families (Rowe et al., 2016).

Outcomes of this project included the development of new practice guidelines within the organization to achieve statistically significant improvement in nursing knowledge through pre-test and post-test design and practice change following the educational initiative. Concise, accurate nursing guidelines for safe sleep education, role modeling, and implementation of a safe sleep program to improve practice at the individual nurse level and throughout the organization.

The identified outcomes for this DNP QI project include staff were to be able to:

- Identify safe sleep environments and locations for families with exact descriptive locations named within the home
- Define SIDS, know the SIDS rates and why safe sleep is important
- Identify examples indicating the importance on early recognition of risk factors for SIDS
- Identify risk reduction strategies and how to implement safe sleep role-modeling
- Discuss AAP and NANN guidelines for safe sleep
- Role model safe sleep practices

Methodology & Evaluation Plan

Project Design

Integrating infant safe sleep evidence-based practice guidelines from the AAP into an educational initiative to improve staff knowledge and their ability to teach parents and families. The project instruments for this project design are the pre- and post-assessment exams which have validity obtained by expert review by an NNP, MD, or DNP. The assessment consisted of a combination of knowledge-based questions, ordinal survey questions, Likert scale questions using ordinal data, and the demographics of the staff sample. A learning assessment module will also be created and distributed addressing AAP safe sleep guidelines. This data was analyzed using descriptive and inferential statistics to analyze data collected from pre and post-test

assessments and the observational crib audit data. This project design created the project outcomes of a safe sleep initiative, as previously discussed.

Logic Model

According to Zaccargnini & Pechacek (2021), when considering patient care environments, “a process that facilitates continuous improvement is central to an environment that produces a change in practice”. Developing a logical model for program planning is essential in the success of this DNP project. Benchmark targets to creating a logic model for infant safe sleep that create the nursing practice outcomes desired from the PICO question are following the Evaluation Logic Model Guide:

- Problem or Issue – sudden infant death syndrome (SIDS) accounts for 3,400 infant deaths per year in the U.S. and is the leading cause of post-natal mortality (CDC, 2022). Approximately fifty of those deaths occur in Colorado (CDPH, 2022). There is no universal adoption of safe sleep practices and education given to families following delivery of their newborn (Moon, 2016).
- Community Needs/Assets - Approximately 10% of births in Douglas County had no or minimal prenatal care, which is considered a risk for SIDS (CDPHE, 2020). Twelve infant deaths occurred in Douglas County and fifty in Colorado in 2019 related to SIDS (CDPH, 2020).
- Desired Results (outputs, outcomes, and impact)- An educational initiative for staff regarding infant safe sleep practices and SIDS risk-reduction strategies give nurses the knowledge and confidence to effectively instruct parents about SIDS after receiving the education. Pre and post-test analyzed change in knowledge. The impact in community is safe sleep education for every baby born at this facility.

- Influential Factors - a) Modifiable risk factors such as side or belly sleeping, co-sleeping, and placing soft items in crib can reduce the risk of SIDS. b) Nurses' retention and implementation of new knowledge learned on safe sleep practices. c) Correct safe sleep modeling in the crib while in the hospital needs to take place.
- Strategies – a) Develop a safe sleep initiative that allows staff to gain the knowledge and skills needed to promote and implement safe sleep practices. b) Annual training and understanding for staff on updates released by the AAP. c) Safe sleep role modeling while inpatient. d) Provide family with safe sleep education prior to discharge.
- Assumptions – a) Nurses are knowledgeable in the most current EBP recommendations from the AAP for infant safe sleep practices. b) Nurses are correctly educating families 100% of the time on infant safe sleep prior to discharge.

The final desired outcome for this project was the creation of a practice guideline based on the most up to date EBP recommendations regarding SSP for infants. This project followed the evaluation logic model guide to create the project, shown in Appendix E with references as indicated in Table 2.

Population/Setting

A convenience sample of staff was utilized to serve as the control/comparison group for the project. There was no randomization with this sample and the sample size was recruited from the staff on the Women's and Infant Floor of a Denver Metro Community Hospital. The Mom/Baby Unit is comprised of a total of forty-two staff nurses, and the Neonatal ICU is twenty-three staff nurses. Ideally, fifty bachelor-prepared nurses would have been recruited from the NICU and the Mother/Baby Unit. Only thirty-two staff nurses replied to the survey, with the sample not necessarily being the same nurses pre and post initiative. This sample size is 49% of

the staff on the units, so a limited convenience sample was used. Staff who did not participate in or respond to the assessment were also included in the sample size data. Ideally, fifty crib audits would have been conducted on all shifts to collect data. Forty-nine pre-test crib audits were completed and forty-two post education crib audits. Sampling parameters consisted of a convenience sampling of staff as well as crib audits being conducted on all shifts (days, nights, and weekends) and NICU infants being included after thirty-two weeks postmenstrual.

Instrument validity and reliability

The confounding variable threat in this project is the time between the pre and post-test, affecting the confidence of the independent variable (educational instruction). Other possible threats mentioned prior are selection bias, the Hawthorne effect, and the testing effect. There was a limited time to conduct crib audits and a brief time between educational intervention and post-test, which could affect the overtime consistency of test results during this project. There may also have been a sampling bias for crib audits if data is not always collected at the same time, i.e., Night shift vs. Day shift. Limited convenience sample dependent on the census in units is also a possibility that may require additional sampling to prevent incomplete data for the project. Another factor that could have created incomplete data was the completion of the project's pre- and post-educational assessment portion. The best way to manage missing data is to prevent the problem through detailed study planning and careful data collection (Kang, 2013).

- ✓ Pre-Post Test Assessment
    - Create assessment and share with clinical experts to assess for validity (Appendix F & G)
    - Anonymous via Qualtrics
    - Validity verified with Cronback’s Alpha reliability analysis

- ✓ Education Module
    - Validity utilizing AAP safe sleep guidelines published June 2022
    - Validity confirmed with expert review from DNP Mentor on materials
- ✓ Crib Audits
    - Tool utilized authorized for use by Michigan Department of Health, validity not mentioned, so used expert review by DNP Mentor (*Appendix H*)
    - Reliability can be altered with Hawthorne Effect
- ✓ Crib Card
    - Tool created by CDC and Safe to Sleep Campaign with validity from U.S. Department of Health and Human Services (*Appendix I*)

IRB vs QI

This DNP project was not conducting research involving human subjects. The project was deemed exempt by the Regis institutional review board (IRB) committee (*Appendix K*). The project was accepted by the IRB committee at Regis University and UCHealth gave approval to be conducted as a quality improvement project for the Women's and Infant Floor (*Appendix M*). The project's timeframe is stipulated in Appendix N.

Budget/Resources

The estimated budget for the initiation and completion of this QI project is listed below:

Supplies

Printing Safe Sleep Crib Cards and laminating (25)

Poster for Unit

Print educational module for unit (5 copies)

Cost ~ $100

Employee Time

Sixty employees

Pay average ~$40/hr.

1 hour (education + pre/post assessment time)

Cost ~ $2,400 maximum / $0 minimum

was able to be accomplished on their regular shift, so was zero additional cost

Total Cost and Time – Employer

Supply Cost - $100

Employee Pay - $0

Total Cost – $100

Time – Employee time of 60 hours was completed while working regular shift *(See Appendix O).*

Data Collection

Pre- and Post- Test Design

Pre intervention data collection included observational crib audits randomly conducted as a convenience sample on all shifts (day, night, weekends) as well as a pre-education staff survey emailed out to staff using Qualtrics software. Intervention consisted of educational material being distributed to staff at the charge nurse desk, which is standard practice at this facility for added information or policies. Post intervention data collection included a convenience sampling of observational crib audits done on all shifts as well as a post education survey emailed out to staff via Qualtrics.

Data Analysis

Sample Demographics

Based on the demographic information, the highest proportion of nurses surveyed, 28.1%, were nurses for 5 to 9 years (*see table 3*). Most nurses, 37.5% had worked at the hospital for 4+ years (see table 4). The highest sample proportion, 56.3%, worked 36 hours a week, followed by 24 hours (28.1%), 12 hours (12.5%), and 48 hours (3.1%) (*see table 5*). Most nurses (31.3%) were aged between 36 and 40 years (*see table 6*). The highest percentage of respondents, 84.4%, had completed a bachelor's degree, while most participants, 65.6%, had three to four children (*see table 7 & 8*).

Pre- and Post-Nurse Education Survey Scores

The study surveyed thirty-two nurses working on a Womens' and Infant unit. The nurse survey aggregate results showed that 73.7% of the responses pre-intervention were correct while 26.3% were incorrect (*see table 9 and figure 7*). In the post-intervention condition 96.4% of the responses were correct while 3.6% were incorrect (*see table 10 and figure 8*).

Differences in Pre- and Post-Nurse Education Aggregate Survey Scores

The analysis used a Wilcoxon Signed rank test to evaluate the statistical significance of the difference in paired pre- and post-nurse education aggregate survey scores looking at the p value. The ranks table offers insights by comparing the participants before (pre) and after (post) survey scores. The positive ranks show that eighty-two survey responses were correct in the post-intervention condition than pre-intervention. The Wilcoxon Signed rank test statistic showed that nurse education led to a statistically significant difference in pre- and post-aggregate survey scores at the 5% significance level, $z = -8.102$, $p < .0001$ (*see table 11*). These findings demonstrate improved nurse knowledge at one-month post-education.

Pre- and Post-Nurse Education Crib Audit

The crib audit analyzed the sleep position and crib environment for forty-nine infants (pre-intervention) and forty-two infants (post-intervention). The pre- and post-intervention aggregates score of sleep position and crib environment showed that 51.7% of infants were in both correct sleeping positions and safe crib environment before the intervention. This value increased to 67.5% after the intervention (*see table 12 and Figure 9 & 10*). 100% of the infants were in the correct sleep location pre-and post-intervention. 71.05% of infants had correct sleep position pre-intervention while 95.24% had the correct position posit intervention. 100% of the infants were correctly swaddled pre-and post-intervention (*see table 12*).

Differences in Pre- and Post-Nurse Education Aggregate Crib Audit Scores

The analysis used a Wilcoxon Signed rank test to evaluate the statistical significance of the difference in paired pre- and post-nurse education crib audit scores. The ranks table offers insights by comparing the pre- and post-intervention crib audit scores. The negative ranks indicate eighty-one correct crib audit data points pre-education than post-intervention. The positive ranks show that 220 correct crib audit data points post-intervention than pre-intervention. The Wilcoxon Signed rank test statistic show that nurse education led to a statistically significant difference in pre- and post-crib audit scores at the 5% significance level, $z = -8.012$, $p < .0001$ (see table 13). These findings demonstrate the intervention improved safe sleeping practices and SIDS risk-reduction strategies at one-month post-education.

Reliability Analysis

A reliability analysis of the pre-and post-education survey to measure its internal constancy indicated that the scale was moderately reliable and acceptable since the reported Cronbach's alpha, 0.698, is greater than 0.6 (Daud et al. 2018).

Results

The study sought to answer the question: “Do staff nurses demonstrate improved nursing knowledge and role modeling of safe sleep practices and SIDS risk-reduction strategies after an educational initiative compared to before the education?” The results showed that nurse education led to a statistically significant difference in (1) pre- and post-aggregate survey scores at the 5% significance level, $z = -8.102$, $p < .0001$, and (2) pre- and post-crib audit scores at the 5% significance level, $z = -8.012$, $p < .0001$. The survey analyzed staff knowledge, while the crib audits analyzed correct sleeping positions (pre- and post-education). The results answer the evidence-based practice question by demonstrating that the education program improved nurse understanding of SIDS, associated risk factors, mitigation strategies, patient education needs on proper infant sleep, and recommended safe sleep practices for infants one month after education. Results from the crib audit indicated that the education plan significantly improved sleep location, position, head elevation, dressing, accessories, swaddling, items found in the crib, and nesting or positioning devices used. Overall, the data supported that staff nurses demonstrate improved nursing knowledge and role modeling of safe sleep practices and SIDS risk-reduction strategies after an educational initiative compared to before receiving the education.

Conclusion, Limitation and Recommendation

Conclusion

Infant sleep-related deaths due to SIDS continue to be a problem in the U.S. despite efforts to decrease the rates. This DNP project established the need for improved staff knowledge and safe role modeling of infant safe sleep practices. Staff are in a pivotal position to provide the most up-to-date AAP safe sleep guidelines and help prevent infant deaths caused by SIDS. The study sought to answer the question: “Do staff nurses demonstrate improved nursing knowledge

and role modeling of safe sleep practices and SIDS risk-reduction strategies after an educational initiative compared to before the education?" The data showed that staff nurses do demonstrate improved nursing knowledge and role modeling of safe sleep practices and SIDS risk-reduction strategies after an educational initiative compared to before receiving the education. This lifesaving safe sleep role modeling and EBP education on infant safe sleep can prevent the possibility of preventable infant deaths in the future.

Limitations

The main limitation of this study was the small sample size. Both in the number of nursing staff and crib audits completed. This could indicate that the study may yield unreliable estimates, meaning the researcher cannot generalize findings to a broader population. Increasing the sample size could enhance the research quality and robustness of the results. The sample size of nurses was thirty-two survey results out of the sixty-five staff nurses surveyed. The brief period of three months for the initiative is a limitation for the retention of knowledge and role modeling of safe sleep. Ideally following up at quarterly intervals to gauge knowledge retention and role-modeling compliance with crib audits and annually with knowledge assessments.

Recommendations

Moving forward from this statistically significant QI project, recommendations for change can be made based on the results. This analysis highlights the efficacy of nurse training in improving knowledge and role modeling of infant safe sleep practices and SIDS risk-reduction strategies as a major contribution to the nursing practice. The theoretical foundation that this project was based on proved that King's Theory of Goal Attainment showed attainable goals with the new knowledge positively affecting safe sleep outcomes. Continuing research into the risk reduction strategies for SIDS is essential in decreasing the rates of SIDS across the world. A

recommendation of ongoing education regarding infant safe sleep should be annual competency to reinforce knowledge and crib audits at 100% accuracy. And finally, and possibly the most important recommendation based on the results of this QI Initiative would be the creation of a unit-based policy that is created to continue this Safe Sleep Initiative groundwork with quarterly crib audits done by RNs on each other at oncoming shifts to hold each other accountable.

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Appendices

Table 1

Scope of Evidence

Level of Evidence	**Number of Articles**
I Systematic Review or Meta-analysis	0
II Randomized, Controlled Trial	0
III Controlled Trial without Randomization	0
IV Case-control or Cohort Study	0
V Systematic Review of Descriptive Studies	3
VI Qualitative or Descriptive Study	26
VII Opinion or Consensus	2

Table 2

Logic Model Reference

Resources	**Activities**	**Outputs**	**Short/ Long Term Outcomes**	**Impact**
EBP recommendation from the AAP on Infant Safe Sleep Support of the nurse educators on the Women's and Infant Floor to provide education Charge Nurses involved in crib audits pre and post intervention	Developed a hospital wide infant safe sleep educational program for staff Develop a pre and posttest to assess knowledge of safe infant sleep recommendations prior to and after education for the nursing staff Nurses' role modeling correct safe sleep while in the hospital with compliance crib audit pre and post education	Evaluate improvement of nurse knowledge on safe sleep recommendations form post test scores Nurses' role implementing modeling correct safe sleep while in the hospital with compliance audit Improvement in nurse education for families prior to discharge	Immediate improvement found in post intervention knowledge assessment for staff Correct modeling of safe sleep for infants seen on crib audits	The National Action Partnership Organizations to Promote Safe Sleep (NAPPSS) will support Safe Sleep Initiatives in all Healthcare Organizations with a national action plan of caregiver modeling and EBP Infant Safe Sleep education as its benchmark

Table 3

Frequency distribution for the number of years that participants have been nurses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 (0–4 years)	4	.6	12.5	12.5
	2 (5-9 years)	9	1.3	28.1	40.6
	3 (10-14 years)	6	.9	18.8	59.4
	4 (15-19 years)	6	.9	18.8	78.1
	5 (>20 years)	7	1.0	21.9	100.0
	Total	32	4.7	100.0	
Missing	System	654	95.3		
Total		686	100.0		

Table 3

Frequency distribution for the number of years that participants have worked at the hospital

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 (< 1 year)	4	.6	12.5	12.5
	1 (1 year)	6	.9	18.8	31.3
	2 (2 years)	5	.7	15.6	46.9
	3 (3 years)	5	.7	15.6	62.5
	4 (4+ years)	12	1.7	37.5	100.0
	Total	32	4.7	100.0	
Missing	System	654	95.3		
Total		686	100.0		

Table 4

Frequency distribution for hours worked per week

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 (12 hours)	4	.6	12.5	12.5
	2 (24 hours)	9	1.3	28.1	40.6
	3 (36 hours)	18	2.6	56.3	96.9
	4 (48 hours)	1	.1	3.1	100.0
	Total	32	4.7	100.0	
Missing	System	654	95.3		
Total		686	100.0		

Table 5

Frequency distribution for age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 (20 -25)	2	.3	6.3	6.3
	2 (26 -30)	3	.4	9.4	15.6
	3 (31-35)	7	1.0	21.9	37.5
	4 (36 – 40)	10	1.5	31.3	68.8
	5 (41 – 45)	5	.7	15.6	84.4
	6 (46-50)	2	.3	6.3	90.6
	7 (> 51)	3	.4	9.4	100.0
	Total	32	4.7	100.0	
Missing	System	654	95.3		
Total		686	100.0		

Table 6

Frequency distribution for education attainment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 (Associate)	1	.1	3.1	3.1
	2 (Bachelors)	27	3.9	84.4	87.5
	3 (Masters)	4	.6	12.5	100.0
	Total	32	4.7	100.0	
Missing	System	654	95.3		
Total		686	100.0		

Table 7

Frequency distribution for the number of children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 (1-2)	5	.7	15.6	15.6
	2 (3-4)	21	3.1	65.6	81.3
	3 (5+)	6	.9	18.8	100.0
	Total	32	4.7	100.0	
Missing	System	654	95.3		
Total		686	100.0		

Table 8

Frequency distribution for the pre-intervention aggregate nurse survey scores

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	118	17.2	26.3	26.3
	2	330	48.1	73.7	100.0
	Total	448	65.3	100.0	
Missing	System	238	34.7		
Total		686	100.0		

Table 9

Frequency distribution for the post-intervention aggregate nurse survey scores

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	14	2.0	3.6	3.6
	2	376	54.8	96.4	100.0
	Total	390	56.9	100.0	
Missing	System	296	43.1		
Total		686	100.0		

Table 10

Wilcoxon Signed rank test statistics

	postedusurveyaggr - preedusurveynolikertaggr
Z	-8.102[b]
Asymp. Sig. (2-tailed)	<.001

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.

Table 11

Evaluation of sleep position and crib environment pre- and post-intervention

	Pre		Post	
	Correct, n (%)	Incorrect, n (%)	Correct, n (%)	Incorrect, n (%)
Aggregate	51.7%	48.3%	67.5%	32.5%
Sleep Location	49 (100%)	0 (0.00%)	42 (100%)	0 (0.00%)
Sleep Position	27 (71.05%)	12 (24.5%)	40 (95.24%)	2 (4.76%)
Head of the crib elevated	27 (65.85%)	14 (34.15%)	39 (92.86%)	3 (7.14%)
Elevation ordered by physician	37 (92.50%)	3 (7.50%)	42 (100%)	0 (0.00%)
Hat	31 (63.27%)	18 (36.79%)	34 (80.95%)	8 (19.05%)
Baby swaddled	49 (100%)	0 (0.00%)	42 (100%)	0 (0.00%)
Double swaddled	36 (73.47%)	13 (26.53%)	42 (100%)	0 (0.00%)
Items found in crib	0 (0%)	49 (100.00%)	0 (0%)	42 (100.00%)
Nesting or positioning devices	36 (73.47%)	13 (26.53%)	41 (97.62%)	1 (2.38%)
Blanked covering or draped over crib	49 (100%)	0 (0.00%)	42 (100%)	0 (0.00%)
Accessories	39 (79.6%)	10 (20.4%)	39 (92.9%)	3 (7.1%)
Crib card use	0 (0.00%)	49 (100%)	0 (0.00%)	42 (100%)
Infant sleep-safe materials provided	2 (4.08%)	47 (95.92%)	42 (100%)	0 (0.00%)

Table 12

Wilcoxon Signed rank test statistics

	postcribaggr - precribaggr
Z	-8.012[b]
Asymp. Sig. (2-tailed)	<.001

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.

Table 13

Cronbach's Alpha

Cronbach's Alpha	N of Items
.698	19

Figure 1

Bar chart showing the frequency distribution (percent) for nurse experience

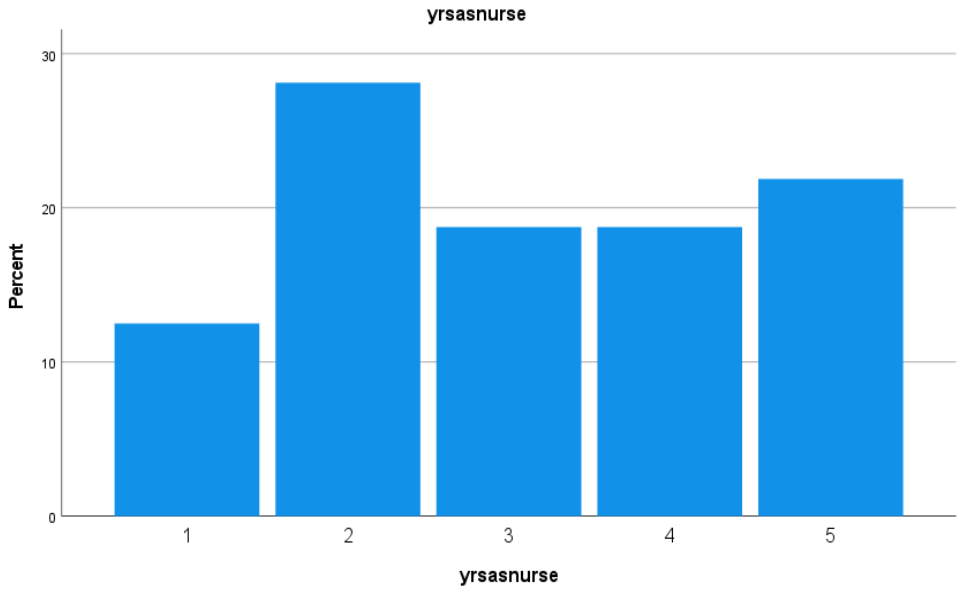


Figure 2

Bar chart showing the frequency distribution for the number of years that participants have worked at the hospital

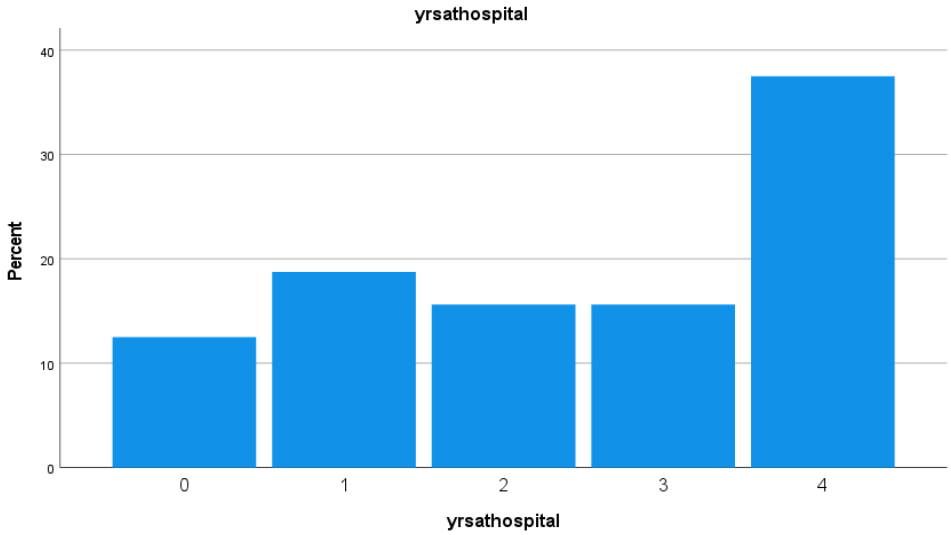


Figure 3

Bar chart showing the frequency distribution for hours worked per week

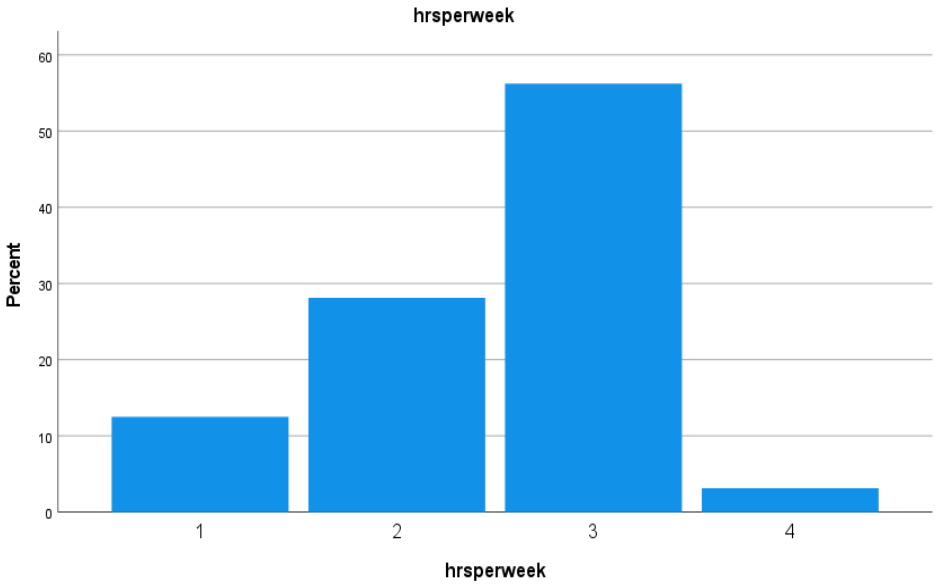


Figure 4

Bar chart showing the frequency distribution for age

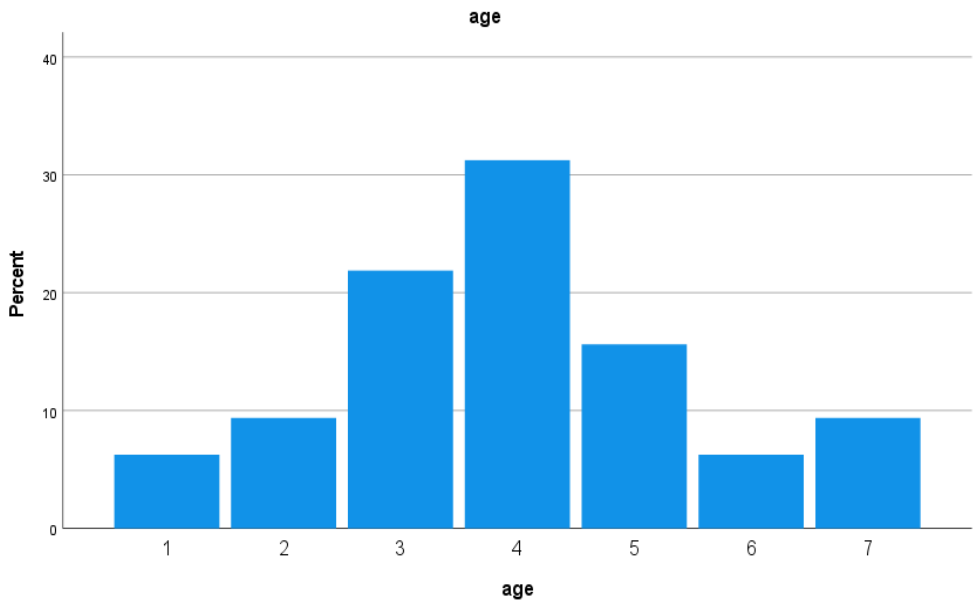


Figure 5

Bar chart showing the frequency distribution for education attainment

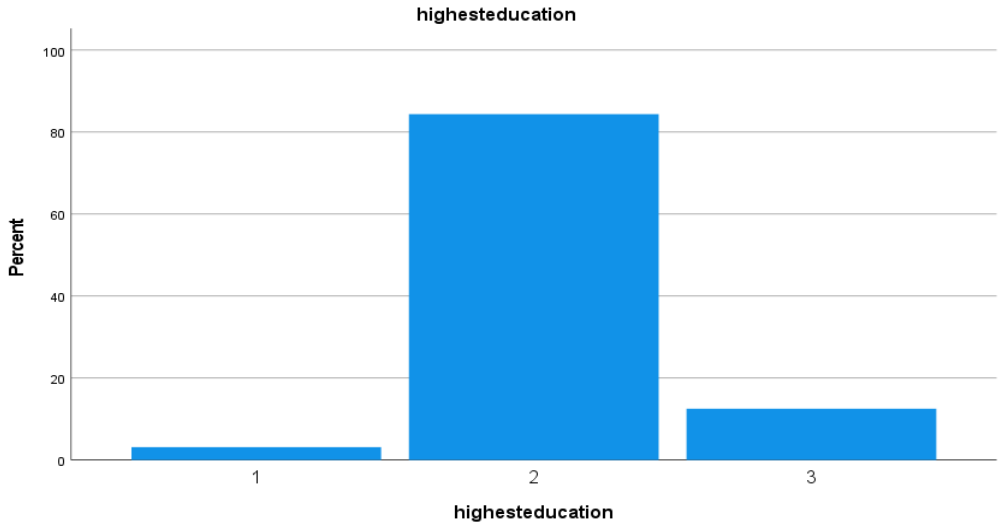


Figure 6

Bar chart showing the frequency distribution for the number of children

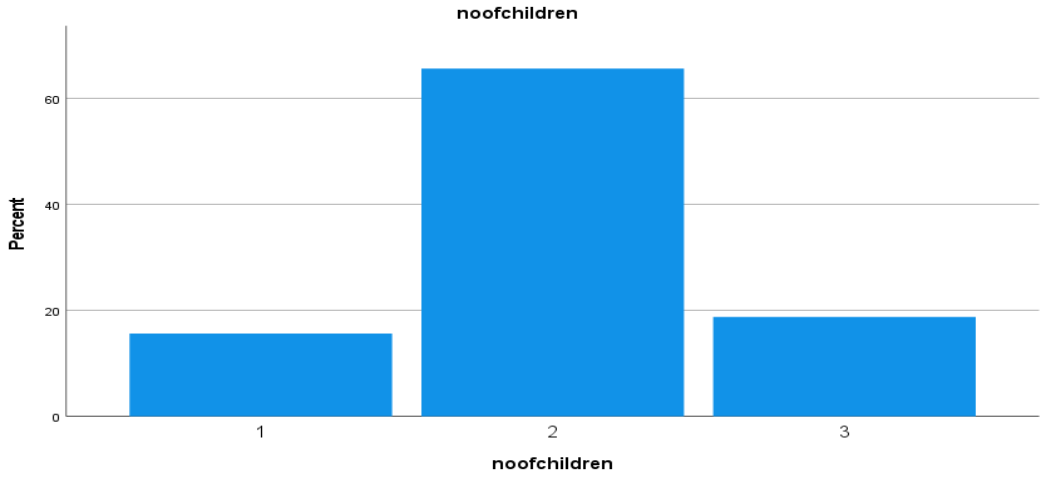
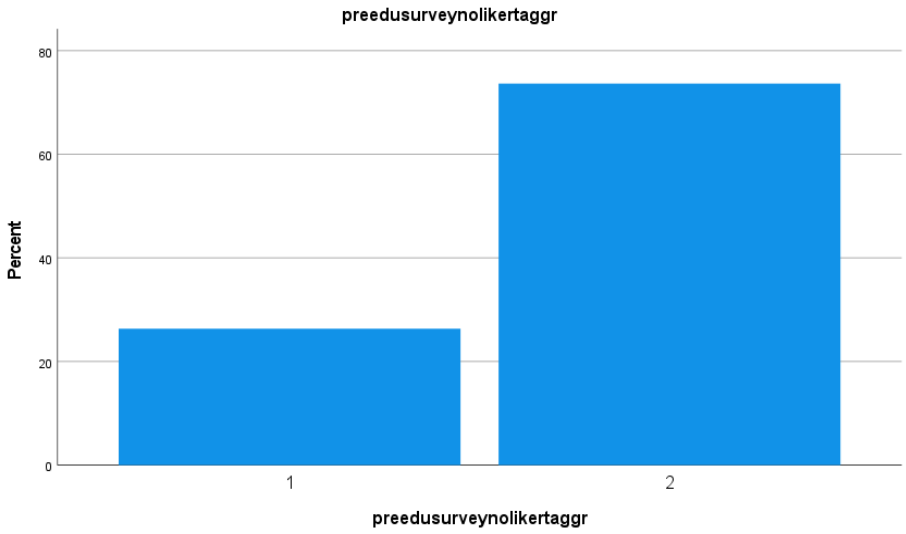


Figure 7

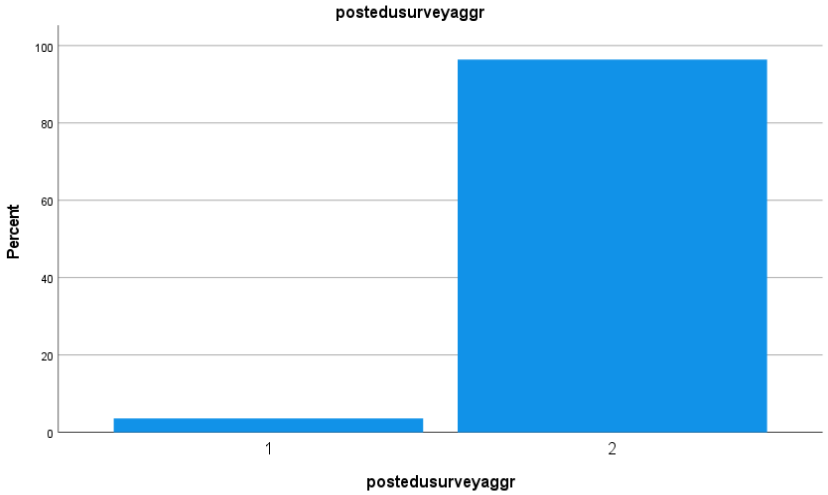
Bar chart showing the aggregate pre-intervention nurse survey scores



Note. 1 = Incorrect, 2 = correct

Figure 8*:*

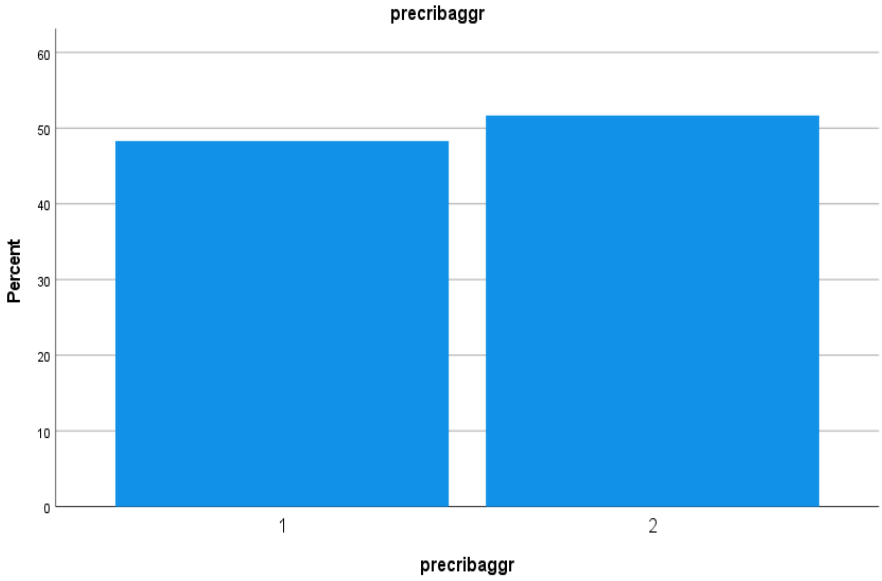
Bar chart showing the aggregate post-intervention nurse survey scores



Note. 1 = Incorrect, 2 = correct

Figure 9

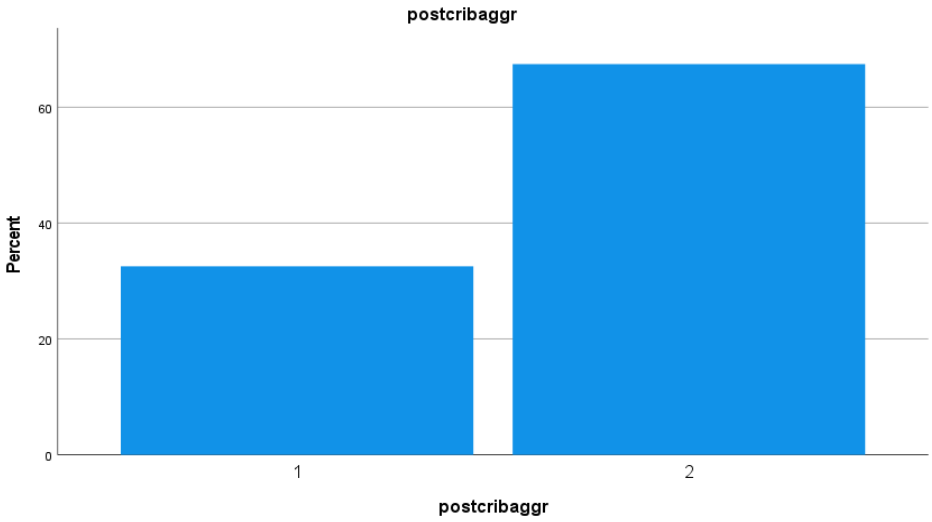
Evaluation of sleep position and crib environment pre -intervention



Note. 1 = Incorrect, 2 = correct

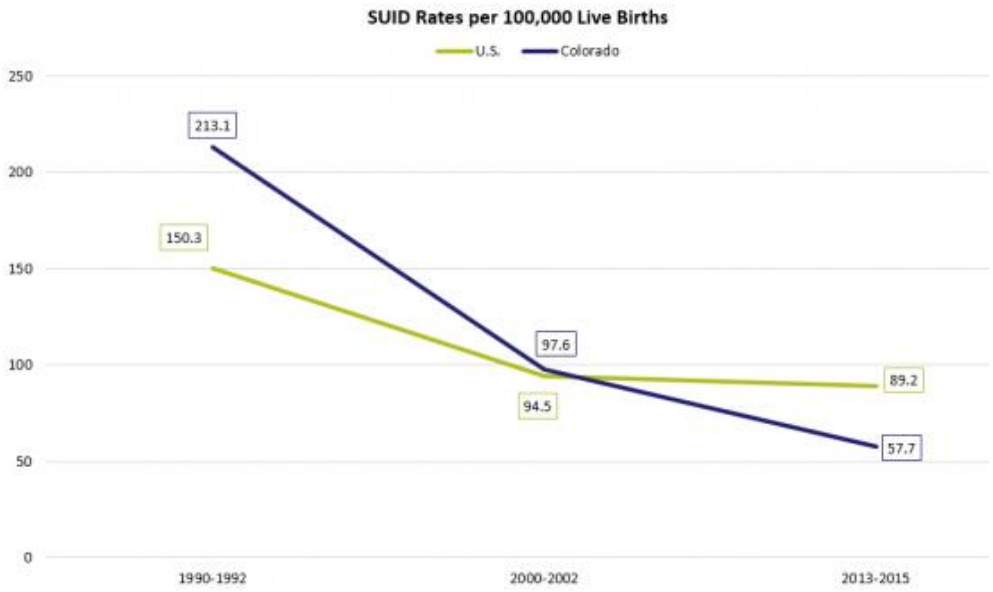
Figure 10

Evaluation of sleep position and crib environment post-intervention



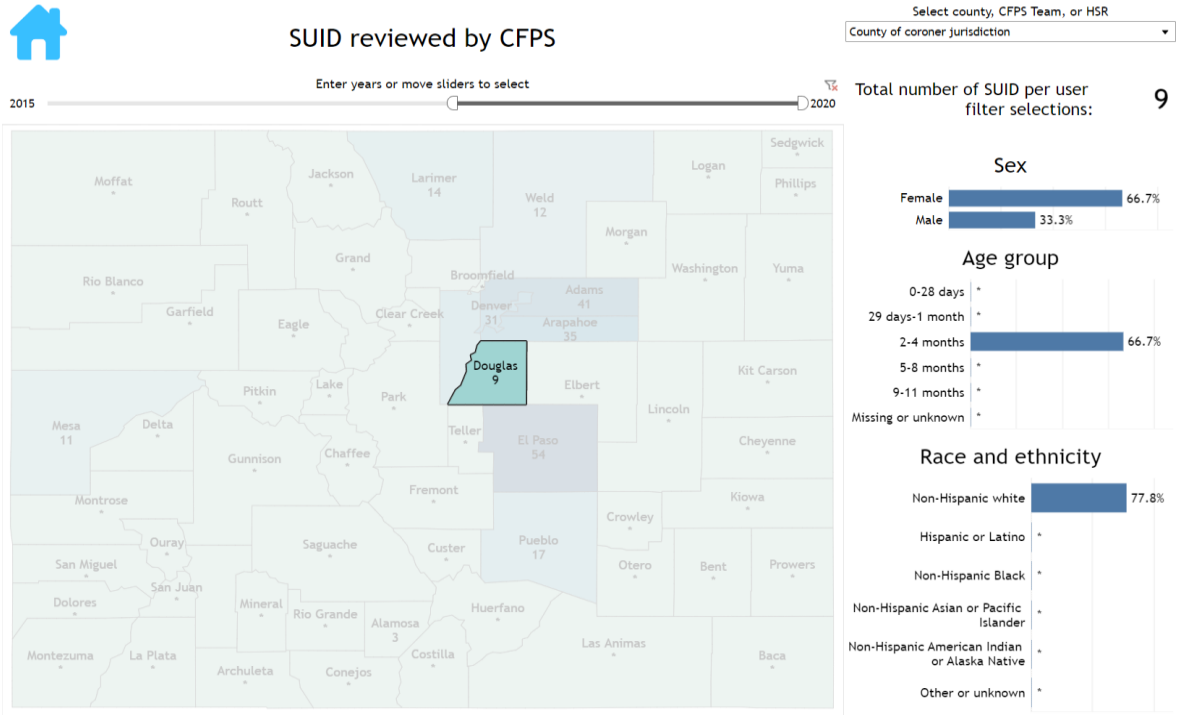
Note. 1 = Incorrect, 2 = correct

Appendix A



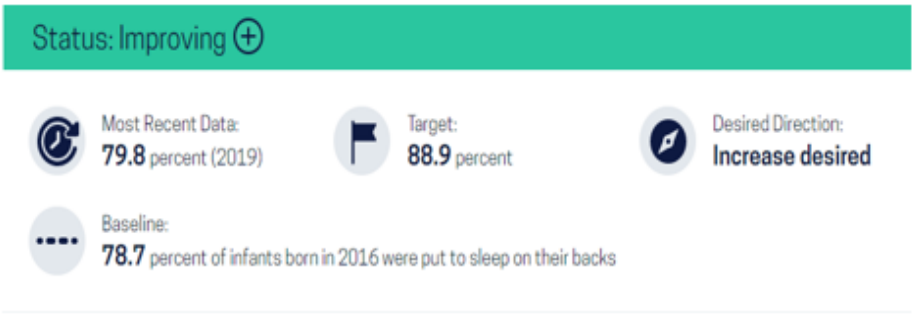
(Manoatl, 2018)

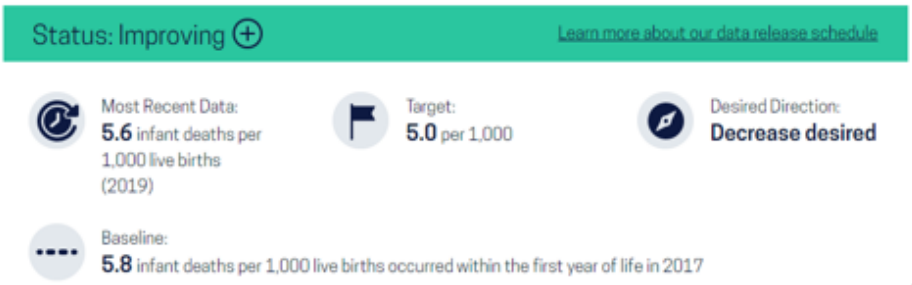
Douglas County, CO SIDS Rates



(cohealthvis.dphe.state.co.us, 2022)

Appendix B

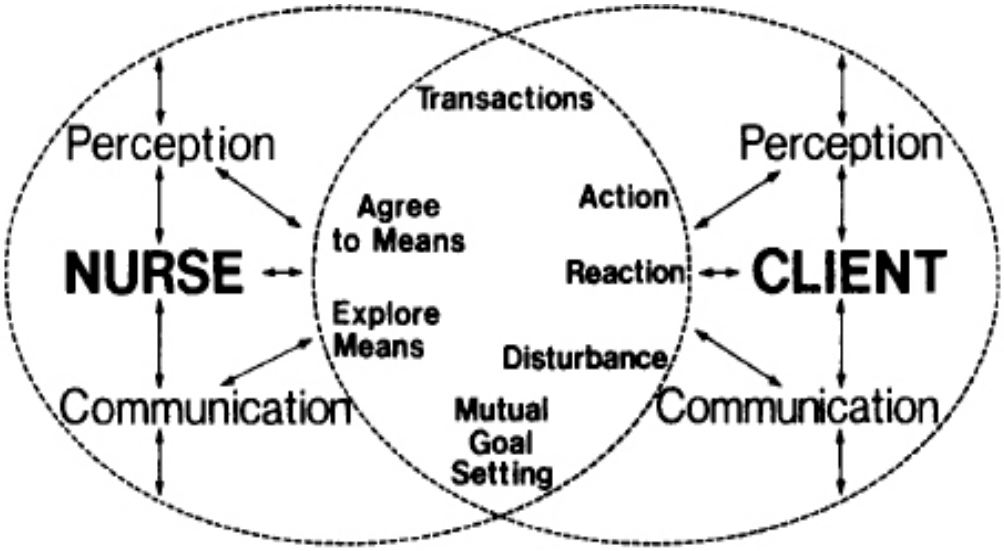




(Health.gov, 2022)

Appendix C

Conceptual Diagram

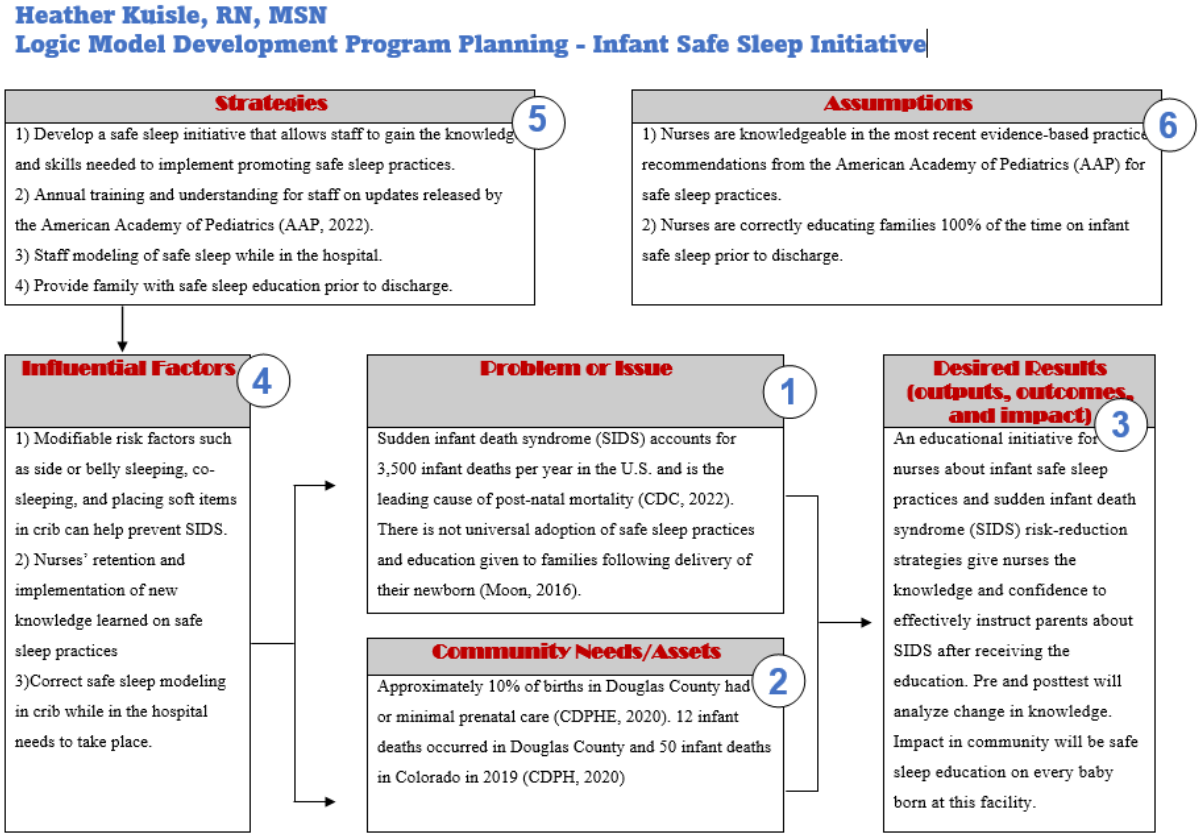


SOURCE: King, 1981, p. 157. Copyright 1981 by Delmar Publishers, Inc. Reprinted by permission.

(Abid-Hajbaghery, 2018)

Appendix D

Logic Model



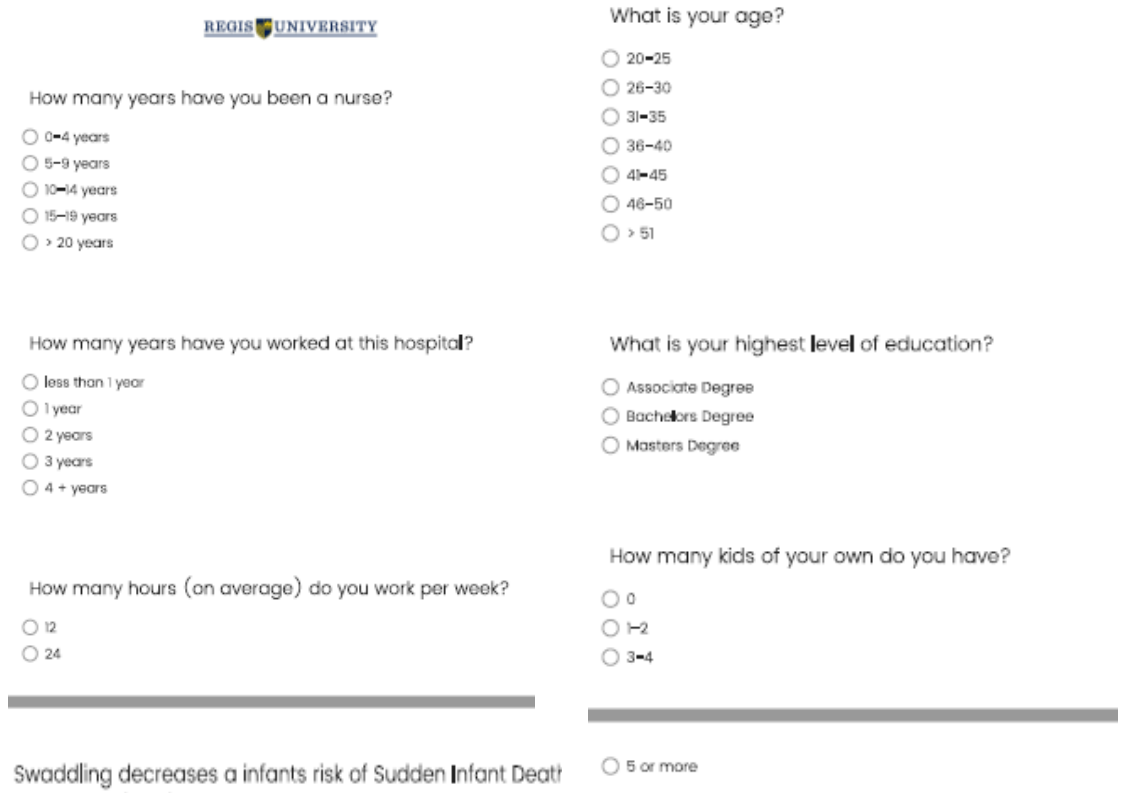
Appendix E

Scope of Evidence Table

Level of Evidence	Number of Articles
I Systematic Review or Meta analysis	0
II Randomized, Controlled Trial	0
III Controlled Trial without Randomization	0
IV Case-control or Cohort Study	0
V Systematic Review of Descriptive Studies	3
VI Qualitative or Descriptive Study	26
VII Opinion or Consensus	0

Appendix F

Pre Test Survey



REGIS UNIVERSITY

How many years have you been a nurse?

- 0-4 years
- 5-9 years
- 10-14 years
- 15-19 years
- > 20 years

What is your age?

- 20-25
- 26-30
- 31-35
- 36-40
- 41-45
- 46-50
- > 51

How many years have you worked at this hospital?

- less than 1 year
- 1 year
- 2 years
- 3 years
- 4 + years

What is your highest level of education?

- Associate Degree
- Bachelors Degree
- Masters Degree

How many hours (on average) do you work per week?

- 12
- 24

How many kids of your own do you have?

- 0
- 1-2
- 3-4
- 5 or more

Swaddling decreases a infants risk of Sudden Infant Death Syndrome (SIDS)?

- True
- Neither true nor false
- False

The number of deaths from SIDS peaks at what age?

- 0-1 months
- 1-4 months
- 5-8 months
- 9-12 months

Which environmental cause increases a babies risk of SIDS?

- Being too hot
- Being too cold

90% of SIDS cases occur before a baby reaches the age of ...?

- ○ 3 months
- ○ 6 months
- ○ 9 months
- ○ 12 months

If an infant falls asleep in the car seat it is acceptable to leave them in it after driving is finished for how long?

- ○ 0 minutes
- ○ 15–30 minutes
- ○ Up to 1 hour
- ○ Until they wake up

What items are approved by the American Academy of Pediatrics (AAP) for infant safe sleep environments?

- ☐ Bassinet
- ☐ Crib
- ☐ Portable crib (Pack n Play)
- ☐ Caregiver Bed
- ☐ I'm not sure

Items approved by the AAP for infant safe sleep

- ☐ Sleep positioning device
- ☐ Pacifier
- ☐ Sleep sack
- ☐ Safe sleep monitor (such as owlet or snooza)
- ☐ Fitted crib sheet

The risk of SIDS can be reduced?

- ○ True
- ○ False
- ○ Unsure

If you think a baby has reflux, how often do you elevate the head of the bed slightly?

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

Prenatal and/or postnatal cigarette smoke exposure increases SIDS risk?

- ○ True
- ○ False
- ○ Unsure

Breastfeeding reduces SIDS risk?

- ○ True
- ○ False
- ○ Unsure

What is the recommended sleep location for infants?

- ☐ Crib in their own room
- ☐ Bassinet in parents room
- ☐ Cosleeping if breastfeeding
- ☐ Swing or bouncy chair
- ☐ Carseat

Preterm or low birth weight infants are at a higher risk of SIDS

- ○ True
- ○ False
- ○ Unsure

At what adjusted age should preterm infants transition to safe sleep practices

- ○ 32
- ○ 34
- ○ 36
- ○ 38

Educating families on infant safe sleep should be done in the hospital.

- ○ Strongly Agree
- ○ Agree
- ○ Neither agree nor disagree
- ○ Somewhat disagree
- ○ Strongly disagree

How often do you educate families of SIDS risk factors and infant safe sleep practices?

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

When do you discuss infant safe sleep practices with families?

- ○ On admission
- ○ Throughout their stay
- ○ At discharge
- ○ Never

How often do you demonstrate proper infant safe sleep to families in the hospital?

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

How often do you correct a family if they are demonstrating unsafe infant sleep while in the hospital?

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

Appendix G

Post Test Survey

REGIS UNIVERSITY

Swaddling decreases a infants risk of Sudden Infant Death Syndrome (SIDS)?

- ○ True
- ○ Neither true nor false
- ○ False

90% of SIDS cases occur before a baby reaches the age of ...?

- ○ 3 months
- ○ 6 months
- ○ 9 months
- ○ 12 months

The number of deaths from SIDS peaks at what age?

- ○ 0-1 months
- ○ 1-4 months
- ○ 5-8 months
- ○ 9-12 months

What items are approved by the American Academy of Pediatrics (AAP) for infant safe sleep environments?

- ☐ Bassinet
- ☐ Crib
- ☐ Portable crib (Pack n Play)
- ☐ Caregiver Bed
- ☐ I'm not sure

Which environmental cause increases a babies risk of SIDS?

- ○ Being too hot
- ○ Being too cold

The risk of SIDS can be reduced?

- ○ True
- ○ False
- ○ Unsure

Prenatal and/or postnatal cigarette smoke exposure increases SIDS risk?

- ○ True
- ○ False
- ○ Unsure

Breastfeeding reduces SIDS risk?

- ○ True
- ○ False
- ○ Unsure

What is the recommended sleep location for infants?

- ☐ Crib in their own room
- ☐ Bassinet in parents room
- ☐ Cosleeping if breastfeeding
- ☐ Swing or bouncy chair
- ☐ Carseat

Preterm or low birth weight infants are at a higher risk of SIDS

- ○ True
- ○ False
- ○ Unsure

At what adjusted age should preterm infants transition to safe sleep practices

- ○ 32
- ○ 34
- ○ 36
- ○ Click to write Choice 4

When do you discuss infant safe sleep practices with families?

- ○ On admission
- ○ Throughout their stay
- ○ At discharge
- ○ Never

If an infant falls asleep in the car seat it is acceptable to leave them in it after driving is finished for how long?

- ○ 0 minutes
- ○ 15-30 minutes
- ○ Up to 1 hour
- ○ Until they wake up

Items approved by the AAP for infant safe sleep

- ☐ Sleep positioning device
- ☐ Pacifier
- ☐ Sleep sack
- ☐ Safe sleep monitor (such as owlet or snooza)
- ☐ Fitted crib sheet

If you think a baby has reflux, how often do you elevate the head of the bed slightly?

- ○ Always
- ○ Most of the time
- ○ About half the time
- ○ Sometimes
- ○ Never

Appendix H

Crib Audit Tool

Infant Safe Sleep Crib Audit Tool #2

Date:_____ **Time:**_____ **Room:**_____

Completed by:_____

If the baby is awake, DO NOT proceed with the audit, return when asleep to complete.

Sleep Location	**Sleep Position**	**Head of Crib Elevated** □ No
□ Crib/Bassinet	□ Back	□ Yes
□ Caregiver Bed*	□ Stomach □ Side	Ordered □Yes □ No
□ Held by Awake caregiver	Ordered	
□ Held by Asleep caregiver*	□Yes □ No	**Baby wearing Hat** □ No
□ Other:		□ Yes Needed for Thermoregulation □ Yes □ No
*** Notify RN**		
Items in Crib □ No		**Baby Swaddled** □Yes □ No
□ Yes **Items Found**		**Check that swaddle meets the following requirements:**
□ Burp cloths □ Diapers		□ Thin blanket used
□ Extra blankets □ Clothing		□ Loose at hips
□ Fluffy blankets □ Bulb suction		□ Blanket at shoulder level or below
□ Pillow □ Stuffed toys		□ Arms wrapped in flexion at the midline or wrapped with hands out
□ Other:		
□ Medical supplies/equipment □ in use □ not in use		
Nesting/Positioning Devices in use □ No		**Baby Double Swaddled** □ No
□ Yes Ordered □ Yes □ No		□ Yes Ordered □ Yes □ No
Blanket covering/draped over crib □Yes □ No		
Accessories worn: hair bows, headbands, jewelry, mittens □ No □ Yes		
Information for Parents		
Is a crib card being used to remind parents of infant's safe sleep status? (therapeutic or safe sleep practice) □ Yes □ No		
Are there safe sleep materials in the patient's room ? □ Yes □ No		

Developed by Michigan Department of Health and Human Services Infant Safe Sleep Program. (Michigan.gov)

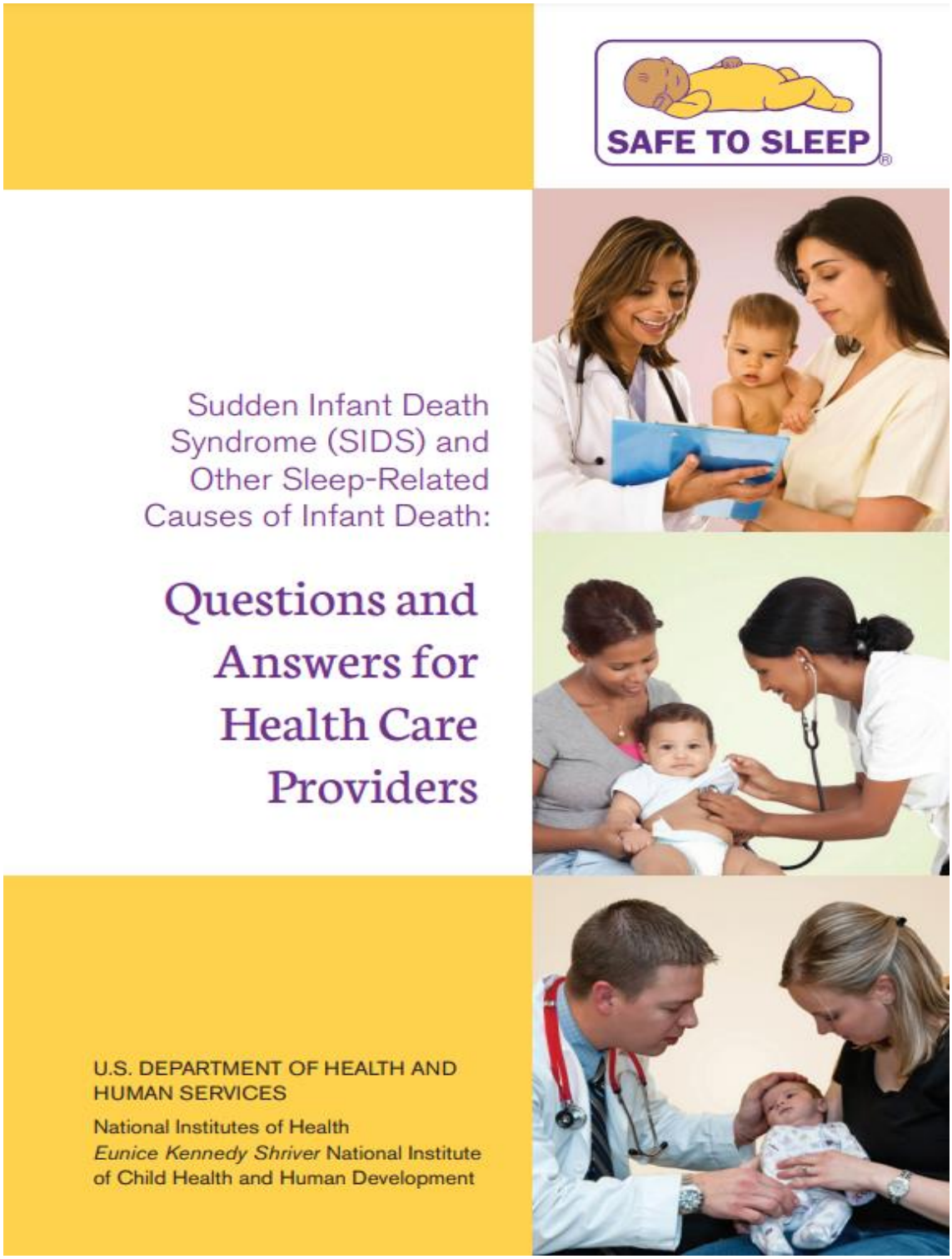
Appendix I

Crib Card

Appendix I (cont.)

Appendix J

Educational Initiative



Appendix K

IRB Approval Letters

REGIS UNIVERSITY

REGIS.EDU

Institutional Review Board

DATE:	December 20, 2022
TO:	Heather Kuisle, MSN
FROM:	Regis University Human Subjects IRB
PROJECT TITLE:	[1950604-2] Infant Safe Sleep Initiative
SUBMISSION TYPE:	Revision
ACTION:	ACKNOWLEDGED
EFFECTIVE DATE:	December 20, 2022

Thank you for submitting the Revision materials for this project. The Regis University Human Subjects IRB has ACKNOWLEDGED your submission. No further action on submission 1950604-2 is required at this time.

The following items are acknowledged in this submission:

- Training/Certification - CITI (UPDATED: 12/15/2022)

If you have any questions, please contact the Institutional Review Board at irb@regis.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Regis University Human Subjects IRB's records.

Appendix L

CITI Training Transcript

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:** Heather Kulsie (ID: 6934568)
- **Institution Affiliation:** Regis University (ID: 745)
- **Institution Email:** quiez@hotmail.com
- **Institution Unit:** Nursing
- **Phone:** 14802317240

- **Curriculum Group:** Human Research
- **Course Learner Group:** Social Behavioral Research Investigators
- **Stage:** Stage 1 - Basic Course

- **Record ID:** 39200127
- **Completion Date:** 13-Feb-2022
- **Expiration Date:** 12-Feb-2025
- **Minimum Passing:** 80
- **Reported Score*:** 100

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (ID: 14928)	12-Feb-2022	5/5 (100%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	12-Feb-2022	5/5 (100%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	12-Feb-2022	5/5 (100%)
History and Ethical Principles - SBE (ID: 490)	12-Feb-2022	5/5 (100%)
The Federal Regulations - SBE (ID: 502)	13-Feb-2022	5/5 (100%)
Assessing Risk - SBE (ID: 503)	13-Feb-2022	5/5 (100%)
Informed Consent - SBE (ID: 504)	13-Feb-2022	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	03-Feb-2018	5/5 (100%)
Defining Research with Human Subjects - SBE (ID: 491)	13-Feb-2022	5/5 (100%)
Informed Consent and Confidentiality in Public Health Research (ID: 17639)	13-Feb-2022	5/5 (100%)
Vulnerable Subjects - Research Involving Workers/Employees (ID: 483)	13-Feb-2022	4/4 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid independent Learner.

Verify at: www.citiprogram.org/verify/?k2c25b21e-dc7d-4acc-9509-ae9f98bf0e8d-39200127

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

Appendix L (cont.)

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 2 OF 2
COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Heather Kulsie (ID: 6934568)
- **Institution Affiliation:** Regis University (ID: 745)
- **Institution Email:** quiez@hotmail.com
- **Institution Unit:** Nursing
- **Phone:** 14802317240

- **Curriculum Group:** Human Research
- **Course Learner Group:** Social Behavioral Research Investigators
- **Stage:** Stage 1 - Basic Course

- **Record ID:** 39200127
- **Report Date:** 15-Dec-2022
- **Current Score**:** 100

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Defining Research with Human Subjects - SBE (ID: 491)	13-Feb-2022	5/5 (100%)
The Federal Regulations - SBE (ID: 502)	13-Feb-2022	5/5 (100%)
Assessing Risk - SBE (ID: 503)	13-Feb-2022	5/5 (100%)
Informed Consent - SBE (ID: 504)	13-Feb-2022	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	03-Feb-2018	5/5 (100%)
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research (ID: 14928)	12-Feb-2022	5/5 (100%)
History and Ethical Principles - SBE (ID: 490)	12-Feb-2022	5/5 (100%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	12-Feb-2022	5/5 (100%)
Vulnerable Subjects - Research Involving Workers/Employees (ID: 483)	13-Feb-2022	4/4 (100%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	12-Feb-2022	5/5 (100%)
Informed Consent and Confidentiality in Public Health Research (ID: 17639)	13-Feb-2022	5/5 (100%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid independent Learner.

Verify at: www.citiprogram.org/verify/?k2c25b21e-dc7d-4acc-9509-ae9f98bf0e8d-39200127

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

Appendix M

Agency Letter of Support

uchealth

UCHealth
Professional Development
12401 E. 17th Ave., MailStop 901
Leprino 638
Aurora, CO 80045

O 720.848.6646
F 720.848.7377
JoAnn.DelMonte@uchealth.org

uchealth.org

Letter of Agreement

September 6, 2022

To Regis University Institutional Review Board (IRB):

I am familiar with Heather Kuisle's quality improvement project entitled *Infant Safe Sleep Initiative*. I understand UCHealth's involvement to be allowing employees to have a pre and post assessment sent to them via email on both the Mom/Baby and NICU units, providing EBP data and education on infant safe sleep to staff via paper module at the charge nurse desk, and allowing safe sleep crib audits of proper role modeling to be done.

I understand that this quality improvement project will be carried out following sound ethical principles and provides confidentiality of project data, as described in the proposal.

Therefore, as a representative of UCHealth, I agree that Heather Kuisle's quality improvement project may be conducted at our agency/institution.

Sincerely,

JoAnn DelMonte, MSN, RN, NPD-BC, NEA-BC
Vice President – Professional Development & Practice
UCHealth

Appendix N

Timeline Review

Appendix O

Budget