Improving Knowledge of Infant Safe Sleep among Home Visit Nurses

Texas A&M University- Corpus Christi
Improving Knowledge of Infant Safe Sleep among Home Visit Nurses

**Significance**

In the United States, there are approximately 3,500 Sudden Unexpected Infant Deaths each year (Centers for Disease Control and Prevention, 2018a). This is the third leading cause of death for infants in the United States behind birth defects as the first and preterm or low birth weight as the second (Centers for Disease Control and Prevention, 2018b). Sudden Unexpected Infant Death, commonly known as SUID, is the label given to deaths of infants under one year of age with no discernably obvious cause, with Sudden Infant Death Syndrome (SIDS) also falling into this category (Centers for Disease Control and Prevention, 2018a).

In 1990, the United States SUID rate was 154.6 deaths per 100,000 live births, while the SUID rate in 2016 was 91.4 deaths per 100,000 live births (Centers for Disease Control and Prevention, 2018a). The decrease in SUID in the 1990s is associated with the release of the American Academy of Pediatrics safe sleep recommendations in 1992, the initiation of the Back to Sleep campaign in 1994 (Centers for Disease Control and Prevention, 2018a). Despite this overall improvement, declines in SUID have slowed since 1999 (Centers for Disease Control and Prevention, 2018a). Bartick and Reinhold (2009) estimate that the United States spends $10,560,000 each year on SIDS-related deaths.

Every five years, the American Academy of Pediatrics (AAP) Task Force on Sudden Infant Death Syndrome publishes updated recommendations for maintaining a safe sleep environment for infants to reduce risk for SIDS and sleep-related deaths (Moon, 2016). AAP recommendations include supine sleep position, use of a firm sleep surface, encouragement of breastfeeding, separate sleep space from parents, no loose objects in the infant’s sleep space, and many other recommendations supported by evidence from studies (SIDS and Other Sleep-
Related Infant Deaths, 2016).

Nurse-Family Partnership is a community health program aimed at improving the lives of soon-to-be mothers (Nurse-Family Partnership, n.d.). Nurse-Family Partnership (NFP) sends nurses to the homes of clients to provide care, support, advice, resources, and teaching to clients starting in early pregnancy and continuing for the first two years of the child’s life (Nurse-Family Partnership, n.d.). Programs like Nurse-Family Partnership offer a unique opportunity for nurses to provide in-depth and personalized teaching about infant sleep safety to their clients.

A more personalized approach to safe sleep education is important because research indicates that education of safe sleep does not necessarily mean that parents will adopt these practices (Caraballo et al., 2016; Cullen, Vodde, Williams, Stiffler & Luna, 2016). Lack of adherence to the AAP recommendations despite education is a problem because it further contributes to the lack of improvement in SUID rates since 1999.

The goal of this project is to implement an Infant Safe Sleep education session for the nurses of Nurse-Family Partnership in Nueces County, Texas and investigate among community-based home visit nurses, does Infant Safe Sleep education intervention impact nurses’ knowledge of the American Academy of Pediatrics 2016 Recommendations for a Safe Infant Sleeping?

Methods

Problem Identification

On September 18, 2018, I met with the nurses of Nurse-Family Partnership to discuss their experiences working in the Nueces County community. These NFP nurses identified problems such as lack of education, pregnancy complications, parenting struggles, and social issues as problems that impacted their clients. One issue the nurses brought up was unsafe sleep conditions for infants. Ultimately, I decided to pursue this problem because a major way to
impact infant safe sleep is through educational efforts, which is something I could do through research.

**Literature Review**

From November to December 2018, I conducted a search using the databases CINAHL and PubMed. The search used key terms and combinations of terms including: safe sleep, infant safe sleep, SIDS, Sudden Infant Death Syndrome, SUID, Sudden Unexpected Infant Death, education, assessment, teaching, and program. Publications from 2016-2018 were considered in order to focus on the most recent and up-to-date research available. Only articles published in English were included. Articles were first filtered for availability of full text and relevance to the topic of safe sleep. The articles included for consideration had to involve safe sleep assessment or education. Safe sleep education could focus on infant caregivers or nurses or both. Articles were excluded if the study was vague about what kind of education was provided, if the article focused more on physical interventions with only minimal education, and if the safe sleep program was not adaptable to a home visit setting. In the end, 14 articles were included for review in this study.

Four of the articles included in the review contained information about infant safe sleep education specifically for nurses. Sleutel, True, Gustus, Baldwin, and Early (2018) used an in-person in-service education session to teach nurses about current safe sleep recommendations and required the nurses to complete an online continuing education module titled “SIDS Risk Reduction” produced by the National Institute of Child Health and Human Development, or NICHD. This education for nurses resulted in a significant increase of correct answers from a pre-education test to a post-education test, which measured the nurses’ knowledge of 11 safe sleep recommendations (Sleutel et al., 2018). Similarly, Naugler and DiCarlo (2018) also
mentioned use of in-services and the NICHD online continuing education module as methods of nurse education in five studies from 2013 to 2016. Other methods for nurse safe sleep education included the use of simulation and/or role playing, mentioned in two studies included in the review. Rholdon, Lemoine, and Templet (2018) studied the use of simulation as a viable way to teaching student nurses about safe sleep. These researchers concluded that simulation with debriefing lead to a significant increase of safe sleep knowledge demonstrated by written test scores and simulation performance scores (Rholdon et al., 2018). While this study was conducted with student nurses in a university setting rather than professional nurses in a healthcare setting, this method was included because it could be adapted for professional nurses, similar to how methods used in in-patient settings could be adapted for use by home visit nurses in outpatient settings. Additionally, Whiteside-Mansell et al. (2017), also used simulation, as well as role play, to train nurses to assess infant sleep conditions both in person and over the phone using a surveying tool. This training was specifically for studying the reliability of safe sleep assessment tool rather than teaching nurses to educate clients, however, because it is training nurses about safe sleep, it is also considered a method used to teach nurses safe sleep with the potential of being applied to home visit nurses.

Eight of the fourteen studies in the review included methods for educating parents or caregivers of infants. These methods included in-person education, use of email and text to distribute educational materials, use of videos, posters, children’s books, handouts or other written material, and hands on activities. More than one of these methods were used at a time in many of these education programs. In-person education was mentioned by six of the eight studies (Dufer & Godfrey, 2017; Fuzzell et al., 2018; Hutton et al., 2017; Salm Ward, McClellen, Miller & Brown, 2018; Sleutel et al., 2018; Zachritz, Fulmer & Chaney, 2016). The other two
studies instead discussed mobile health interventions using email and text message and were conducted by the same core research team (Moon et al., 2017a; Moon et al., 2017b).

The first study by Moon et al. (2017a), compared mother-reported adherence to safe sleep guidelines after receiving mobile health messages containing videos and questions to mothers who received mobile health messages for a different topic, which was the control group. Mothers who received safe sleep mobile interventions reported higher adherence to the four safe sleep recommendations measured in this study compared to the control group (Moon et al., 2017a). The second study by Moon et al. (2017b), measured engagement with the mobile health messages rather than adherence to safe sleep recommendations and found that participant who opted to receive safe sleep education via text message rather than email had higher engagement rates.

Fuzzell et al. (2018) studied adherence to in-person teaching from the child’s healthcare provider to the parents about numerous health and safety topics including infant safe sleep. Providers varied in what information they provided and whether they provided information about safe sleep at all, leading to only 20.2% of parents reporting adherence to safe sleep recommendations (Fuzzell et al., 2017). Dufer and Godfrey (2017) implemented a safe sleep education program for parents of preterm infants in their hospital’s Neonatal Intensive Care Unit (NICU). The education method was in-person education facilitated by a handout with opportunity for the parents to ask questions and parents completed pre-education and post-education tests that indicated the parents’ knowledge of safe sleep recommendations increased after education (Dufer & Godfrey, 2017). These parents also reported a high adherence to safe sleep practices at home, but adherence was not compared to that of a control group (Dufer & Godfrey, 2017). Sleutel et al. (2018) used in-person education with use of posters and crib cards
with a safe sleep mnemonic on them. Parental knowledge of safe sleep improved after education and adherence to safe sleep within the hospital also improved but was not attributed solely to the parents since nurses also placed infants in their crib or bassinet to sleep (Sleutel et al., 2018). Like Dufer and Godfrey (2017), Zachritz, Fulmer, and Chaney (2016) also started a safe sleep program for parents of preterm infants in the NICU. Their education method for parents included in-person discussion lead by a nurse with a ten-minute video for the parents with infants about to be discharged from the NICU and hour-long group classes with presentations, discussions, and hands-on activities for any parents in the community (Zachritz et al., 2016). Parental knowledge and adherence after education was not evaluated in this study. Salm Ward, McClellen, Miller and Brown (2018) also created a community, group education program to teach safe sleep. The group education program, which also offered participants cribs and educational handouts about safe sleep, saw an increase in parental knowledge after the session as well as an increase in self-reported adherence to safe sleep guidelines (Salm Ward et al., 2018). Lastly, Hutton et al. (2017) studied the use of a children’s book in teaching safe sleep compared to the use of brochures. Home visitors provided parents safe sleep education in person and used either a brochure or children’s book to supplement their teaching (Hutton et a., 2017). While both groups had increased knowledge about safe sleep guidelines compared to pre-education, the children’s book group had higher rates of adherence to sleep-related practices observed by the home visitors (Hutton et a., 2017).

Five studies included in the review discussed potential barriers that keep parents from adhering to safe sleep recommendations (Caraballo, et al., 2016; Cullen, Vodde, Williams, Stiffler & Luna, 2016; Fuzzell et al., 2018; Hutton et al., 2017; Naugler & DiCarlo, 2018). Caraballo et al. (2016) interviewed adolescent mothers, a group with a higher risk for SUID, and
found that they thought the baby would be safer sharing a bed with them, the baby would sleep more or sleep better when co-sleeping, sharing a bed offered more bonding time, and it was more convenient, including convenience for breastfeeding. Also, these adolescent mothers believed the baby would be more comfortable and warmer with extra blankets and bedding, family members told the mothers to place the baby in a non-supine position, and the mothers thought their maternal instincts were the most important factor in making decisions (Caraballo et al., 2018). Cullen, Vodde, Williams, Stiffler and Luna (2016) also discovered convenience for breastfeeding, safety, more or better sleep, more comfortable for baby, bonding, maternal instinct and influence from family members as factors that prevented adherence, similar to Caraballo et al. (2018). Other findings Cullen et al. cited as factors of non-adherence to safe sleep recommendations included cultural norms, better able to comfort a fussy baby with co-bedding, fear of aspiration or choking in supine position, worried about head shape (plagiocephaly) from supine position, influence from friends, and inconsistent provider education. Fuzzell et al. (2018) also discussed influence of culture like Cullen et al., but also proposed that parents may not be aware of the risk of their actions or don’t believe the risk of SUID to apply to them. Naugler and DiCarlo (2018) talked about infant comfort, fear of aspiration or choking, and inconsistent provider teaching like the previous studies discussed. They also expressed that exhaustion, out-of-date hospital policies setting poor examples for parents, and continued use of position devices used only for premature infants once the infant is too old for the devices as possible reasons parents do not adhere to teaching (Naugler & DiCarlo, 2018). Raines (2018), cited many of the same reasons as the other studies but also added that some parents don’t receive any advice about sleep practices and images from sources like TV, books, the internet, and products show unsafe infant sleep that misleads parents into thinking these practices are normal and safe.
Five of the fourteen articles reviewed offered strategies for overcoming or minimizing factors that cause parents to practice unsafe infant sleep. Naugler and DiCarlo suggested that the barriers to adherence need to be identified and understood by the educator in order to make the appropriate suggestions to improve safe sleep practices. They also highlight that educating nurses is an important step in reducing unsafe sleep and SUID rates (Naugler & DiCarlo, 2018). Raines (2018) explained that safe sleep information needs to be communicated to anyone who cares for the infant, not just the parents in order to ensure the baby is sleeping safely for every sleep. Raines also promoted using evidence-based rationales to dispel common myths about infant sleep and applying the theory of planned behavior to safe sleep teaching. The theory of planned behavior proposes that human behavior consists of attitude, subjective norms, and perceived behavioral control (Raines, 2018). Cullen et al. (2016) recommended that providers try to understand the client’s perspective, consider the client’s cultural values and beliefs, and expose parents to safe sleep recommendations early, before the baby arrives. Fuzzell et al. (2018) emphasized the importance patient-provider relationships, along with use of emotional engagement and cultural sensitivity when teaching safe sleep. This study suggested that there is a correlation between adherence to teaching and trust in provider, ability to speak comfortably with the provider, client agreement with teaching provided, and self-efficacy (Fuzzell et al. 2018). Hutton et al. (2017) studied the use of a children’s book to teach safe sleep and found that the book lead to more adherence with safe sleep recommendations than teaching with a brochure did. Hutton et al. (2017) proposed that the book lead to more adherence because it was more emotionally engaging, it had a lower reading level, and it had rhymes that were catchy and more likely to be recalled easily.

The purpose of this review was to determine the best education for home visit nurses to
reduce their clients’ risk for SUID. The findings of the review were compiled into three categories which aid to answer the overall question of best education: methods of education for nurses and clients, barriers to adherence to safe sleep recommendations, and strategies to overcome non-adherence factors. These categories help to answer the overall question by identifying possible methods and providing evidence that the method can be used in a safe sleep education context. Recognizing possible barriers and how to overcome them also helps to answer the overall question because the goal is not just to teach clients, but to get them to adopt these practices to reduce their risk for SUID.

This review helps identify possible methods and how to promote adherence among clients but does not explore the content of safe sleep education. The AAP recommendations for infant safe sleep are the content of safe sleep education because these recommendations are evidence-based and allow for consistency among providers.

Determining the best method for educating nurses and the best method for educating parents is difficult because few methods have been compared against each other in the same study. Also, there may not be a single best choice. Multiple methods were tested and reported to improve knowledge and/or adherence. Additionally, more than one method can be implemented at the same time or in the same education program.

In-person education stood out as a viable method because six studies provided evidence that education involving in-person interaction resulted in some sort of improvement in knowledge or adherence (Dufer & Godfrey, 2017; Fuzzell et al., 2018; Hutton et al., 2017; Salm Ward, McClellen, Miller & Brown, 2018; Sleutel et al., 2018; Zachritz, Fulmer & Chaney, 2016). Also, some of the strategies researchers identified as ways to overcome non-adherence factors are best applied in a face-to-face setting such as research by Fuzzell et al. (2018) that
emphasized the importance of developing a patient-provider relationship. However, it should also be noted that in the same study, Fuzzell et al. (2018) identified that only 20.2% of patients adhered to safe sleep recommendations after in-person education from their provider. This suggests that use of in-person education does not automatically mean that the education provided is going to be effective. In-person education can vary widely from provider to provider. Consistent, thorough, and engaging education must be provided to clients no matter what method is used in order to affect adherence as well as knowledge. Use of additional methods in conjunction with in-person teaching is also supported by this literature. For example, Dufer and Godfrey (2017) used a combination of in-person education and a handout, Zachritz, Fulmer, and Chaney (2016) used in-person education with a video, and Hutton et al. (2017) used in-person education with a children’s book.

The non-adherence factors gathered from the literature are important to consider in an educational program because these factors tell researchers and educators why education is not working to affect adherence. Strategies to overcome barriers and increase adherence should be incorporated into every safe sleep education program. With better awareness of the problem of lack of adherence, programs should make it a goal to go beyond educating and focus more on changing behavior. Community health programs have a unique opportunity to provide more in-depth education with strategies that promote adherence. Compared to an in-patient setting, home visit nurses have more time with clients and a better opportunity to form a strong relationship with their clients.

**Research Compliance**

Because I planned to work with human subjects, the nurses of Nurse-Family Partnership, I had to obtain approval of my project from the Texas A&M University- Corpus Christi
Institutional Review Board (IRB). In April of 2019, I began the application process to obtain IRB approval. I first submitted my project on May 2, 2019 and after multiple rounds of revising, I finally got IRB approval on July 1, 2019, almost exactly two months after first applying. The process of filling out the application, compiling all necessary documents, and multiple revisions took much longer than anticipated, setting back my initial project timeline.

**Implementation of the Education Session**

On July 8, 2019, I went to the NFP facility to recruit participants for my project. All six nurses of the Nueces County NFP were recruited and consented to participate in the project. The goal of the project was to implement an education session about infant safe sleep and test its impact on the nurses’ knowledge of infant safe sleep. The project is designed in a pre-test and post-test format to test the change in knowledge of infant safe sleep prior to receiving the education session and two weeks after the education session. Before the education session, participants were given a 16-item questionnaire that assesses their knowledge of infant safe sleep recommendations made by the American Academy of Pediatrics. The test consisted of 2 open-ended questions and 14 true or false questions. The questions were derived from recommendations from *SIDS and Other Sleep-Related Infant Deaths: Updated 2016 Recommendations for a Safe Infant Sleeping Environment* and 10 of the questions were used before in a similar study. The participant filled out the questionnaire on July 15, 2019. On the same day, right after completing the questionnaire, the nurses participated in an infant safe sleep educational presentation. This presentation reviewed the AAP safe sleep recommendations in detail and then discussed barriers that cause people not to practice these recommendations and strategies to overcome these barriers. The information on barriers and overcoming the barriers was pulled directly from the literature review I conducted in the Fall 2018 semester. While the
questionnaires only tested the nurses’ knowledge of the recommendations, the information about barriers and strategies was given to help the nurses improve their ability to teach these recommendations to their clients.

On July 29, 2019, two weeks after the intervention, the participants will take the 16-item questionnaire again to determine if the education session intervention impacted their knowledge of AAP infant safe sleep recommendations. The participants will also receive an evaluation survey asking them for feedback about the experience. This information will also be considered when determining the impact of the intervention.

Results

At this time, my findings are limited because of the delays from the IRB approval process. While I am not able to assess the impact of the intervention yet, I was able to present the findings of my literature review to an audience that may be able to use the information in practice. As far as I know from reviewing other literature reviews on infant safe sleep, my literature review is the only recent attempt at compiling the different educational strategies, barriers to compliance, and strategies to overcome these barriers from multiple infant safe sleep educational programs. I also was able to connect Nurse-Family Partnership to a book donation program that gives copies of a children’s book that teaches infant safe sleep through pictures and rhyming verses. If they receive this grant, they will be able to distribute these books to their clients, benefiting the community. I am also sharing this book donation program with the nursing faculty in charge of pediatric clinical rotations at Texas A&M University- Corpus Christi as a possible way to further distribute infant safe sleep education to the Corpus Christi community through nursing students at pediatric clinical sites. Conclusion
Although my project is still in progress, I am confident that I will be able to finish it and write about my findings by the time of the Project of Excellence defense.
References


