Infant Safe Sleep in Ohio: Where Do Prenatal and Postnatal Healthcare Providers Fit In?

Dissertation

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By

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Abstract

**Introduction:** Sudden infant death syndrome (SIDS) and sleep-related sudden unexpected infant death (SUID) are among the leading causes of infant mortality in the United States (U.S.) and are associated with significant health disparity. Healthcare professionals can influence their patients’ infant safe sleep choices; however, little is known about the practices of prenatal and postnatal healthcare providers related to this topic. The purpose of this study was to assess the infant safe sleep knowledge, attitudes, and behaviors of lactation consultants, obstetric physicians, and certified nurse midwives (CNMs) in Ohio and identify barriers and enabling/reinforcing factors associated with providing infant safe sleep education in the obstetric environment.

**Methods:** A mixed-methods approach was used. Focus groups were held with certified lactation consultants in Ohio to discuss their role and the advice they provide to women about infant safe sleep and reducing the risk of SIDS and other causes of infant sleep-related death. Cross-sectional surveys were conducted with physicians and CNMs. Surveys were sent to a census of all licensed physicians in the registry of the State Medical Board of Ohio with “obstetrics,” “obstetrics and gynecology,” or “maternal and fetal medicine” as their first area of specialty (n=1,771) as well as all nurses included in the licensing registry of the Ohio Board of Nursing as a CNM (n=333).
**Results:** Four focus groups were held with certified lactation consultants (n=22). Major themes that emerged included: lactation consultants’ belief in the importance of bedsharing for supporting breastfeeding; frustration with policies that prohibit lactation consultants from discussing bedsharing with clients; and the impact of employer policies on the advice they provide while on the job. Preliminary findings from the focus groups were discussed and checked with a subgroup of participants to ensure the credibility of the findings. Response rates for the obstetric physician and CNM surveys were 30% and 55%, respectively. Most participants were relatively knowledgeable about the American Academy of Pediatrics’ (AAP) infant safe sleep recommendations. CNMs were more likely than physicians to express positive attitudes about providing infant safe sleep education and to report that they regularly discuss this topic with their patients. Greater knowledge, positive attitudes, and prior SIDS training were significant predictors of whether respondents provided infant safe sleep education to their patients. The majority of survey participants perceived barriers to providing infant safe sleep education in the obstetric environment, but many expressed interest in doing so.

**Discussion:** Prenatal and postnatal healthcare providers interact with expectant mothers and mothers of newborns at a critical time for infant safe sleep decision-making. This study reveals that mothers may not be receiving messages from lactation consultants that are consistent with the AAP’s infant safe sleep recommendations. Also, although many obstetric physicians and CNMs had knowledge about the topic, most are not regularly recommending infant safe sleep information to their patients. More should
be done to ensure that expectant mothers and mothers of newborns are receiving frequent infant safe sleep advice from their healthcare providers and that the information is consistent with the recommendations of the AAP.
Dedication

Dedicated to my grandmother, in honor of your strength, grace, and countless sacrifices;

to my mother, for your unwavering support;

and to my beloved daughters, you are my inspiration and greatest joy.
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Chapter 1: Introduction

The United States (U.S.) has one of the highest infant mortality rates among all developed nations (Centers for Disease Control and Prevention (CDC), 2013). In 2014, the overall infant mortality rate in the U.S. was 5.8 deaths per 1,000 live births (CDC National Center for Health Statistics (CDC NCHS), 2016). Sudden infant death syndrome (SIDS) and sleep-related sudden unexpected infant death (SUID) are significant contributors to the high infant mortality rate in the U.S. Of the estimated 3,500 SUID cases annually in the U.S., nearly half are attributable to SIDS and many more are sleep-related (CDC, 2016a). SIDS and sleep-related infant deaths are a source of significant health disparity in the U.S. Non-Hispanic African American and American Indian/Alaskan Native infants have SIDS and sleep-related SUID rates two to three times higher than non-Hispanic Caucasian infants.

Ohio has one of the highest infant mortality rates in the U.S. and ranks third among states with the highest infant mortality rates for African Americans (CDC NCHS, 2016). Nearly half of all deaths among Ohio infants one month to one year of age are sleep-related and many of these deaths occur in unsafe sleep environments and/or while an infant is sharing a sleep surface with another person (Ohio Department of Health & Ohio Children’s Trust Fund, 2015).
Despite the fact that SIDS and sleep-related SUID are well-recognized contributors to infant mortality in the U.S. and that substantial resources have been dedicated to addressing this concern from many perspectives, not all healthcare providers who work with pregnant women and mothers of newborns are prepared or inclined to address this issue with their patients. This study addresses three primary research questions:

1) What prenatal healthcare provider characteristics are associated with making infant safe sleep recommendations based on current best practice guidelines?;

2) Do prenatal and postnatal healthcare providers perceive that there are barriers to providing SIDS/infant safe sleep-related education in the obstetric environment? If so, what barriers do they perceive?; and

3) What key factors should be addressed to improve prenatal and postnatal healthcare provider initiated infant safe sleep education in Ohio?

Utilizing a mixed-methods approach that included a cross-sectional survey of Ohio obstetric physicians and certified nurse midwives as well as focus groups with certified lactation consultants, this study explores the research questions described above and provides baseline data on the knowledge, attitudes and behaviors of prenatal and postnatal healthcare providers. It also identifies barriers and enabling/reinforcing factors related to providing infant safe sleep education in the prenatal and postnatal healthcare environment. This evaluation of the practices of obstetric physicians, certified nurse midwives, and lactation consultants in Ohio will aid in the development
of future interventions to reduce the risk of SIDS and other causes of sleep-related infant death.
Defining Sudden Infant Death Syndrome and Sudden Unexpected Infant Death

Sudden infant death syndrome (SIDS) is the medical definition assigned to deaths among infants younger than 12 months of age for which no other cause can be determined. Prior to attributing a death to SIDS, an investigation must be conducted which includes a death scene investigation, autopsy, and a review of the infant’s clinical history (American Academy of Pediatrics (AAP), 2011a). SIDS is a subset of sudden unexpected infant death (SUID), which describes any death of an infant that is sudden and unexpected, regardless of whether the cause can be determined. There are an estimated 3,500 SUID cases annually in the U.S., and nearly half are attributable to SIDS (CDC, 2016a).

Included among the non-SIDS SUID cases are other infant deaths that occur during periods of sleep (AAP, 2011a; CDC, 2016a). These sleep-related SUID deaths are frequently labeled ASSB, or accidental suffocation and strangulation in bed. ASSB deaths can be caused by a variety of mechanisms, including suffocation by soft bedding, overlay by an adult or child, or entrapment between the mattress and headboard or wall. Despite decreases in injury-related death rates for most mechanisms of unintentional
childhood injury in the U.S. between 2000 and 2009, suffocation death rates among infants, most of which are sleep-related, increased 54% (CDC, 2012). ASSB death rates specifically have increased steadily over the past two decades, and reached a high of 21.4 deaths per 100,000 live births in 2014 (CDC, 2016b). However, these figures must be interpreted with caution, as evidence suggests that many deaths that would have previously been coded as SIDS are now being attributed to other causes, such as SUID or ASSB. (Malloy & MacDorman, 2005; Shapiro-Mendoza, Kimball, Tomashek, Anderson, & Blanding, 2006; Shapiro-Mendoza, Tomashek, Anderson, & Wingo, 2009; Cutz, 2016).

Both SIDS and sleep-related SUID deaths will be addressed by this proposed research, as the modifiable risk factors are nearly identical (Moon et al., 2012).

The cause of SIDS is unknown; however, one possible hypothesis that has gained increasing support in recent years is the Triple-Risk Model (Filiano & Kinney, 1994; AAP, 2011b). The Triple-Risk Model suggests that SIDS deaths are caused by a combination of three factors that converge to cause “a combination of progressive asphyxia, bradycardia, hypotension, metabolic acidosis, and ineffectual gasping, leading to death” (AAP, 2011b). The three risk factors included in this proposed model are:

1. Vulnerable infant: It is believed that infants who die from SIDS have an innate undetected brain or genetic abnormality or immaturity that causes vulnerability. This defect may impact the infant’s cardiorespiratory and/or arousal system (AAP, 2011b). There is physiological evidence to support the vulnerable infant hypothesis. Some post-mortem studies of infants who died of SIDS indicate central nervous system and/or
systematic abnormalities, including evidence of brainstem dysfunction which is responsible for coordination of respiratory, arousal, and autonomic functions (Filiano & Kinney, 1994; Patterson et al., 2006; AAP, 2011b). Such dysfunctions could impair sleep arousal reflexes that would normally protect an infant in the event of a sleep-related stressor (AAP, 2011b). The vulnerable infant hypothesis is supported by evidence of maternal and pregnancy-related risk factors that relate to increased SIDS risk. Risk factors such as prematurity, low birth weight, young maternal age, and maternal smoking, alcohol, or drug use indicate that the uterine environment, genetic abnormalities, and/or developmental delays may play a role in the development of the vulnerable infant (Filiano & Kinney, 1994, AAP, 2011b).

2. Critical development period: SIDS deaths have a distinct age distribution pattern, with 90% of deaths occurring within the first 6 months of life and the majority taking place between one and four months of age (AAP, 2011b). It is believed that the significant physiological changes occurring during this period of development play a role in SIDS deaths. Key physiological changes occurring during this time that may play a role in SIDS include changes in the “homeostatic systems regulated by the brain, notably autonomic control, ventilation, sleep-waking state organization, temperature regulation, and circadian rhythms” (Filiano & Kinney, 1994).

3. Outside stressor(s): Outside stressors may be the triggering factors that cause SIDS events among vulnerable infants (Trachtenberg, Haas, Kinney, Stanley, & Krous, 2012). Potential stressors in the environment include known risk factors for SIDS such as
exposure to tobacco smoke, overheating, and prone sleeping position, as well as recent respiratory or gastrointestinal illness or fever (AAP, 2011b; Trachtenberg et al., 2012).

The Triple-Risk Model demonstrates how infants who appear clinically “normal” can die of SIDS if their vulnerable homeostatic controls are overwhelmed by an outside stressor. It also gives a possible explanation for the variability in SIDS deaths. For example, it helps to explain why not all infants who die of SIDS have the same outside stressors present and why not all infants who sleep in the prone position die of SIDS (Filiano & Kinney, 1994).

Risk factors for SIDS are diverse and include both modifiable and non-modifiable elements. A retrospective review of 244 SIDS cases in New Jersey by Ostfeld, Esposito, Perl, and Hegyi (2010) found that at least one known risk factor for SIDS was found in 96% of the cases included in the study and 78% of cases had multiple risk factors. A similar study in San Diego, California found that 99% of SIDS cases had at least one risk factor, and 75% of cases had at least one intrinsic and one extrinsic risk factor (Trachtenberg et al., 2012). Table 1 highlights the most commonly identified risk factors for SIDS.
Sudden Infant Death Syndrome Risk Factors

- infant age ≤ 6 months
- exposure to tobacco smoke (in utero or postnatal)
- unsafe sleep environment (adult bed, couch, armchair)
- male gender
- overheating
- exposure to alcohol or illicit drugs
- inadequate prenatal care
- young maternal age
- non-supine sleep position
- African American or American Indian/Alaskan Native
- prematurity (< 37 gestational weeks) and/or low birth weight
- recent fever or illness
- bedsharing
- soft sleep surface; soft/loose bedding

Table 1. Common risk factors for sudden infant death syndrome (AAP, 2011b; Trachtenberg et al., 2012; Moon & Fu, 2012)

Infant Mortality and SIDS/Sleep-Related SUID in the United States and Ohio

Infant mortality is commonly viewed as one measure of the overall health of a society (CDC, 2013). Not only does infant mortality place a heavy emotional burden on families, but it also costs society in terms of years of potential life lost. The overall infant mortality rate in the United States has declined in recent years, from 6.9 per 1,000 live births in 2001 to 5.8 per 1,000 in 2014 (CDC NCHS, 2016). However, the infant mortality rate in the U.S. ranks among the worst when compared to other developed nations,
putting the country 32nd out of the 34 nations of the Organization for Economic Cooperation and Development (CDC, 2013). SIDS is one of the most common causes of infant mortality in the U.S. and the leading cause of death for infants one month to one year of age (CDC, 2016a; Moon & Fu, 2012). According to the latest data available, there were 1,545 infant deaths attributed to SIDS in the U.S. in 2014 (CDC, 2015).

When examining the infant mortality rate in Ohio, the state ranks 11th highest in the nation at 6.9 deaths per 1,000 live births (CDC NCHS, 2016). Furthermore, Ohio has the 3rd highest infant mortality rate in the U.S. for African American infants (14.3 per 1,000 live births) (CDC NCHS, 2016). Although the U.S. experienced a 13% decline in infant mortality rates between 2005 and 2012, rates in Ohio remained constant and only very recently have Ohio’s rates begun to slowly decrease (Mathews, MacDorman, & Thoma, 2015; Ohio Department of Health, 2013; Ohio Department of Health, 2015). It is estimated that 46% of all deaths among infants one month to one year of age in Ohio are sleep-related and approximately 56% of these deaths occur in adult beds or other unsafe sleep locations such as couches or chairs (Ohio Department of Health & Ohio Children’s Trust Fund, 2015). Half of Ohio’s infant sleep-related deaths occur while an infant is sharing a sleep surface with another person. (Ohio Department of Health & Ohio Children’s Trust Fund, 2015).

SIDS and sleep-related SUID are well-recognized problems in the U.S. and Healthy People 2020 includes multiple goals related to reducing their rates, including
(U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2010):

- **Maternal, Infant, and Child Health (MICH)-1.8**: Reduce the rate of infant deaths from sudden infant death syndrome.
  - Baseline: 0.55 infant deaths per 1,000 live births (2006)
  - Target: 0.50 infant deaths per 1,000 live births

- **MICH-1.9**: Reduce the rate of infant deaths from sudden unexpected infant deaths (includes SIDS, ASSB, unknown cause).
  - Baseline: 0.93 infant deaths per 1,000 live births (2006)
  - Target: 0.84 infant deaths per 1,000 live births

- **MICH-20**: Increase the proportion of infants who are put to sleep on their backs.
  - Baseline: 69% of infants were put to sleep on their backs in 2007
  - Target: 76% of infants put to sleep on their backs

- **Injury and Violence Prevention (IVP)-24.2**: Reduce unintentional suffocation deaths among infants 0 to 12 months.
  - Baseline: 23.1 deaths per 100,000 infants 0 to 12 months (2007)
  - Target: 20.8 deaths per 100,000 infants 0 to 12 months

**SIDS Health Disparity**

Certain populations in the U.S., namely non-Hispanic African American and American Indian/Alaskan Native infants, continue to have SIDS rates approximately
twice that of non-Hispanic Caucasian infants (99 and 112 vs. 55 per 100,000 live births, respectively) (AAP, 2011b). One study found that among African American infants, this disparity exists across all levels of the mother’s education, a common proxy for socioeconomic status (Hauck, Tanabe, & Moon, 2011). As with SIDS deaths, there is also a health disparity associated with ASSB deaths, with non-Hispanic African American and American Indian/Alaskan Native infants dying at two to three times the rate of non-Hispanic Caucasian infants (32.4 and 44.0 vs. 12.9 per 100,000 live births, respectively) (Moon & Fu, 2012). Although both African American and American Indian/Alaskan Natives experience higher rates of SIDS and sleep-related SUID deaths, research indicates that the causes of the disparities vary by population. Risk factors associated with the deaths appear to differ for African American versus American Indian/Alaskan Native populations and also to vary within the American Indian and Alaskan Native populations, depending on geographic region (Wong et al., 2014; Hauck et al., 2002; Bulterys, 1990).

Among African Americans, a significant contributing factor to SIDS disparity is that the population as a whole is less likely to adhere to safe infant sleep position and environment recommendations (Hauck, et al., 2002; Zachry & Kitzmann, 2010; Lahr, Rosenberg, & Lapidus, 2007; Willinger, Ko, Hoffman, Kessler, & Corwin, 2003; Flick, White, Vemulapalli, Stulac, & Kemp, 2001; National Infant Sleep Position Study, 2010). African American infants are more than twice as likely to be placed to sleep in the prone position, compared to White infants (28% versus 13%) (National Infant Sleep Position
Study, 2010). A case-control study of infants who died of SIDS (compared to control infants who did not die, but were matched on race, age, and birth weight) found rates of prone sleeping significantly higher among African American infants (Hauck et al., 2002). In addition, African American infants are more likely to be placed to sleep on an adult bed or other unsafe sleep environment (sofa, chair) and are more likely to be placed to sleep with soft bedding than non-African American infants (Lahr et al., 2007; Willinger et al., 2003; Flick et al., 2001).

It is not clearly understood why African American caregivers are less likely to practice recommended infant safe sleep behaviors; however, some factors that may account for these differences include lack of knowledge, negative attitudes about practicing infant safe sleep behaviors, personal beliefs, cultural influences, social norms, and lack of resources (Ray, Metcalf, Franco, & Mitchell, 1997; Colson et al., 2005; Lahr et al., 2007; Moon, Oden, Joyner, & Ajao, 2010; Salm Ward & Doering, 2014; Joyner, Oden, Ajao, & Moon, 2010). African American women may be less aware of safe sleep guidelines or there could be racial or cultural beliefs or barriers that make African American caregivers less likely to follow safe sleep recommendations (Moon et al., 2010; Zachry & Kitzmann, 2010; Salm Ward & Doering, 2014). One survey study examining the infant sleep positioning practices of African American families found no difference in practice by socioeconomic status among African American mothers (Robida & Moon, 2012). African American mothers may be less likely than other mothers to receive “Back to Sleep” messages from medical providers (Ray et al., 1997).
Further, some African American caregivers are less inclined to place infants to sleep in a crib because of misinformation about the cause of SIDS deaths (Colson et al., 2005). Others put infants to sleep in an adult bed (bedshare) to be protective of the child or because a crib is unavailable (Lahr et al., 2007; Colson et al., 2005; Joyner et al., 2010). Additionally, some African American caregivers feel that soft bedding is important for the comfort of their infant (Colson et al., 2005; Flick et al., 2001; Ajao, Oden, Joyner, & Moon, 2011). Furthermore, others believe that because the cause of SIDS is unknown, it is not preventable, and SIDS-related deaths are “God’s will” (Moon et al., 2010).

Considerably less research has been conducted to examine the prenatal and postnatal risk factors for SIDS among the American Indian and Alaskan Native populations. Significantly higher SIDS rates among American Indians living in the Northern regions of the U.S. compared to those living in the Southwest may be linked to a higher prevalence of maternal tobacco smoking among Northern Indians (Bulterys, 1990). Further study of Northern Plains Indians indicated that periconceptual drinking, first trimester binge drinking, and covering an infant with two or more layers of clothing were significantly associated with increased risk of SIDS, while at least one visit by a public health nurse, either before or after the birth, was found to be a protective factor (Iyasu et al., 2002). Among Alaskan Natives, Blabey and Gessner found that increased rates of prenatal alcohol or tobacco use, lower levels of education, and the lack of a father’s name on the birth certificate were associated with an increased risk of infant mortality when compared to non-Alaskan Natives in the state (2009).
American Academy of Pediatrics Infant Safe Sleep Recommendations

In 1994, the American Academy of Pediatrics (AAP) partnered with the National Institute of Child Health and Human Development, the Maternal and Child Health Bureau, and others to launch the national “Back to Sleep” campaign (AAP, 2005). Between 1992, when the AAP began recommending that infants be placed to sleep on their backs, and 2002, the incidence of parent-reported prone sleeping among infants decreased from 70% to 11%, and SIDS-related death rates declined by 50% (Willinger et al., 2003; AAP, 2011b; National Infant Sleep Position Study, 2010). Since 2001, the rate of SIDS-related deaths has remained stable, while the proportion of infant mortality attributed to sleep-related SUID deaths has increased (Malloy & MacDorman, 2005; Shapiro-Mendoza et al., 2009). The cause of this plateau in SIDS deaths is unknown, but may be associated with the rate of supine sleeping among infants, which has remained at 72-75% since 2001 (National Infant Sleep Position Study, 2010), or with increasing rates of bed sharing among infants and parents (Willinger et al., 2003). It is also likely that at least part of the shift from SIDS to SUID cases is due to changes in infant death coding (Malloy & McDorman, 2005; Shapiro-Mendoza et al., 2009; AAP, 2005; Goldstein, Trachtenberg, Sens, Harty, & Kinney, 2016; Cutz, 2016).

In 2011, the AAP released a revised policy statement and technical report on SIDS and sleep-related infant death to focus greater attention on the importance of safe
sleep environments for infants (AAP, 2011a; AAP, 2011b). Key recommendations include:

- supine only sleep positioning for infants
- firm sleep surface
- roomsharing without bedsharing
- avoidance of soft or loose objects and bedding, including crib bumpers
- regular prenatal care for expectant mothers
- avoidance of exposure to tobacco smoke, alcohol, and illicit drugs both during pregnancy and after birth
- breastfeeding
- use of a pacifier during sleep, after breastfeeding is established
- avoidance of overheating
- routine immunization
- avoidance of sleep positioning devices and home cardiorespiratory monitors
- supervised tummy time when the infant is awake
- endorsement of SIDS risk-reduction recommendations and modeling by healthcare professionals and child care providers
- safe sleep modeling by media and manufacturers
- expanded national educational campaign aimed at reducing risk factors, with a special emphasis on the sleep environment
• continued research and surveillance related to SIDS and other causes of sleep-
related infant death

It should be noted that there has been some resistance to certain elements of
the AAP’s revised policy statement. Among the most controversial of the AAP’s
recommendations for infant safe sleep is the suggestion that parents roomshare, but
not bedshare with their infant, meaning that the infant should be placed to sleep in a
separate sleep space, for example a crib or a bassinet, that is located in the same room
with the parent(s). This recommendation has been opposed by a number of
breastfeeding advocacy groups, including the La Leche League International (LLLI), the
Academy of Breastfeeding Medicine (ABM), and the International Lactation Consultant
Association (ILCA). Many proponents of bedsharing maintain that the practice is an
important component of successful breastfeeding and that it encourages bonding
between mothers and infants. The LLLI supports bedsharing and recommends that
mothers follow the “safe sleep seven” checklist on their website to “make your bed as
SIDS-safe as a crib” (LLLI, 2014). In a clinical protocol published by the ABM in 2008, the
organization suggests that “there is currently not enough evidence to support routine
recommendations against co-sleeping” (Academy of Breastfeeding Medicine, 2008). In
2005, the ILCA issued a response to the AAP’s (then recently-issued) policy statement
that declined to endorse the AAP’s recommendation against bedsharing and suggested
that lactation consultants “educate themselves about all the options for sleeping
arrangements for families...” (ILCA, 2005). Some proponents of Attachment Parenting
are also opposed to the AAP’s recommendation against bedsharing. Attachment Parenting International offers an infant safe sleep brochure that they suggest outlines how to co-sleep safely with your infant (Attachment Parenting International, 2010). The AAP maintains its position that bedsharing is not recommended in any environment, at home or in the hospital, due to safety concerns (AAP, 2011b).

**Overview of Current SIDS and Sleep-Related SUID Risk-Reduction Efforts in the U.S.**

Since the release of the AAP’s revised policy statement on SIDS and sleep-related infant death in 2011, there has been renewed interest in addressing the disparities and risk factors associated with this leading cause of infant death, with particular interest focused on the importance of the infant sleep environment. Much of the research on this topic to date has centered on the collection of surveillance data, utilizing infant mortality records to capture information on causes of death and examining rates and trends, collectively and by population subgroups. The Pregnancy Risk Assessment Monitoring System (PRAMS) database has also been used extensively to monitor the national and state-specific prevalence of risk factors for sleep-related infant death. The PRAMS survey collects data on key risk factors such as infant sleep positioning, bedsharing, breastfeeding and sleep environment (Adkins et al., 2012). There have also been multiple research studies conducted on this topic using qualitative methods. For example, qualitative studies have examined the SIDS-related beliefs, practices, and
decision making influences of African American mothers and other caregivers (Moon et al., 2010; Ajao et al., 2011).

There is less published peer-reviewed research available detailing the development, implementation, and evaluation of interventions to reduce SIDS/sleep-related SUID in the U.S. Few interventions have been found to significantly improve parental practices related to this topic (Barnes-Josiah et al, 2007; Rasinski et al, 2003; Moon, Oden, & Grady, 2004; Carlings & Collins, 2007; Hauck, Tanabe, McMurry, & Moon, 2015). Some intervention-based research studies have been limited by small sample sizes, convenience samples, and lack of a control group for comparison (Barnes-Josiah et al, 2007; Carlings & Collins, 2007). For example, an intervention study in which 320 parents were provided with a crib and SIDS educational materials resulted in no known SIDS-related deaths among the infants studied, but this study was limited by lack of a control group and self-selected participants (Carlings & Collins, 2007). A hospital-based intervention that distributed infant t-shirts with the logo “this side up” on the front was not associated with an increase in supine sleep positioning (Barnes-Josiah et al., 2007). Other interventions have had mixed results. One study utilizing a brief educational session with small groups of parents at a Women, Infants, and Children clinic showed some effectiveness (Moon et al., 2004). A more recent intervention study that investigated the impact of providing infant safe sleep education along with a free crib to a large sample of high-risk families found improvements in parental knowledge and safe sleep practices, but may not be generalizable to similar programs. Also, the infant safe
sleep behaviors of interest were self-reported and may have been influenced by social desirability bias (Hauck et al., 2015).

Healthcare provider advice and modeling of infant safe sleep practices have been found to have a positive influence on parental behaviors related to this topic (Colson et al., 2006; Zachry & Kitzmann, 2010; Gelfer, Cameron, Masters, & Kennedy, 2013; Vernacchio et al., 2003; Colson & Joslin, 2002; Shaefer, Herman, Frank, Adkins, & Terhaar, 2010; Smith et al., 2016; Willinger et al., 2003). A recent national survey found a dose-response relationship between the number of times a mother received advice to roomshare without bedsharing from healthcare providers or others and the likelihood of her adhering to that advice (Smith et al., 2016). A hospital-based neonatal intensive care unit quality improvement project that included the development of safe sleep practice guidelines for neonates, a crib reference tool to guide sleep positioning recommendations, a crib audit tool, education for nurses and parents, and post-discharge reminder calls significantly improved infant safe sleep compliance both within the unit and after discharge (Gelfer et al., 2013). Another study developed and pilot tested a toolkit for use by physicians that included an infant safe sleep checklist to gauge caregiver compliance with current recommendations (Ahlers-Schmidt, Kuhlmann S, Kuhlmann Z, Schunn, & Rosell, 2014). The toolkit also provided physicians with sample messages to share with parents that aligned with checklist responses. (Ahlers-Schmidt et al., 2014). Ahlers-Schmidt et al. found that physicians in the study reported discussing most checklist-identified unsafe sleep practices with caregivers, however, due to the
study design they could not determine if the checklist improved physician communication practices (2014).

Efforts have been made in the U.S. in recent years to address infant safe sleep at the policy level. Many states have laws providing guidance to coroners, medical examiners, and others related to the processing and reporting of SIDS/SUID deaths and some states also regulate the conduct of mandatory review of such deaths (National Conference of State Legislatures, 2013). At least a quarter of all states require SIDS training and education for child care providers, firefighters, EMTs, and/or police officers (National Conference of State Legislatures, 2013). Some states and municipalities also have laws regulating safe sleep environments for infants in childcare centers and others require education for new mothers at birthing hospitals (National Conference of State Legislatures, 2013). In April 2012, Chicago, Illinois became the first municipality in the U.S. to ban the sale of crib bumpers, due to the risk they pose to infants (City of Chicago, 2012). Later that year, the state of Maryland passed a similar law (Maryland Department of Health and Mental Hygiene, 2013).

In December 2014, the Sudden Unexpected Death Data Enhancement and Awareness Act was signed into law by President Barack Obama. The legislation requires that the U.S. Department of Health and Human Services increase efforts to improve the quality and consistency of data collection and standardize protocols related to the examination and reporting of stillbirths, SUIDS, and sudden unexplained deaths in childhood at both the state and national levels. It also requires the agency to provide...
education to the public, healthcare providers, and stakeholders on these causes of pediatric death. This legislation has the potential to significantly improve the quality of the nation’s infant and child fatality data (Sudden Unexpected Death Data Enhancement and Awareness Act, 2014).

**Overview of Current SIDS and Sleep-Related SUID Risk-Reduction Efforts in Ohio**

In response to Ohio’s high rate of infant mortality from all causes, in February 2014, Ohio Senators Shannon Jones and Charleta Tavares introduced five bills to address the problem of infant mortality in the state, including two pieces of legislation directly related to infant safe sleep reporting and education. Senate Bill 278, which was enacted in June 2014, requires that coroners and others responsible for investigating the sudden, unexpected death of a child one year of age or younger complete a sudden unexpected infant death investigation (SUIDI) reporting form and that the completed forms be shared with the appropriate local or regional child fatality review board (Ohio Legislature, Senate Bill 278, 2014). This will improve and standardize the infant death data that is collected throughout the state and ensure that the parties responsible for tracking and reviewing these deaths have access to the information they need to conduct adequate surveillance and make appropriate prevention recommendations.

Senate Bill 276 was introduced in February 2014, signed into law in December 2014, and went into effect in May 2015. The law requires the Ohio Department of Health (ODH) to do the following: develop educational materials on infant safe sleep;
create a screening tool for hospitals to use to identify expectant and new parents who are in need of a safe sleep environment for their infant; and develop model policies and parent/caregiver education teaching points that can be used by child care centers, hospitals, and others. It also requires that certain entities distribute the infant safe sleep educational materials to expectant parents and parents or guardians of infants. These entities include obstetricians’ and pediatricians’ offices, child birth educators, freestanding birthing centers, some hospitals, Help Me Grow programs, and public children’s services agencies. Child care centers are also required to distribute the information to their employees. The law requires that if any of these entities regularly have infants sleeping at their facilities they must adopt an infant safe sleep policy based on the model policy created by ODH. In addition, hospitals with a maternity license and children’s hospitals must screen infants at discharge for the presence of a safe infant sleep environment in the home. Families who report that they do not have an appropriate environment for their infant to sleep in (crib, portable play yard, etc.) are to be given a crib at no cost from the hospital’s resources or referred to an ODH community partner agency who is able to provide a safe sleep space for the child at no charge, within certain restrictions and while supplies are available (Ohio Legislature, Senate Bill 276, 2014).

Over the past several years, ODH has invested substantial resources into a multi-year marketing campaign to increase public awareness of infant safe sleep recommendations. The campaign utilized a variety of channels to reach parents and
caregivers throughout the state with their infant safe sleep messages, including public service announcements on television and the radio, as well as billboards, bus ads, movie theater ads, and printed educational materials. The agency also established a contract with the nonprofit agency Cribs for Kids to purchase thousands of portable crib “survival packs” to distribute to Ohio families in need.

**The Role of Physicians and Nurses in SIDS/Sleep-Related SUID Risk Reduction**

Physicians and nurses are vitally important when it comes to educating parents and caregivers about the importance of adhering to infant safe sleep recommendations. When asked who they trust most for advice on infant safe sleep, 60% of mothers interviewed as part of a study conducted at Women, Infants and Children (WIC) centers indicated physicians and nurses (Colson et al., 2006). Another study of caregivers (primarily mothers) in Tennessee found that African American and very low income individuals were more likely than European American and higher income individuals to report that hospital staff were their primary source of information about infant safe sleep positioning (versus pediatricians, printed materials, friends/family, media, nurse, or other) (Zachry & Kitzmann, 2010). A national survey of pediatricians and family physicians in the U.S. found that 61% of pediatricians and 46% of family physicians reported discussing infant safe sleep positioning with families at every well child visit (when age appropriate) (Moon, Kington, Oden, Iglesias, & Hauck, 2007). However, other research has indicated that some patient populations may be less likely to receive infant
safe sleep education from their physician. A 1997 study by Ray et al. found that low-income primarily African American mothers whose infants were treated at an urban pediatric clinic were less likely to report receiving appropriate infant safe sleep information from their physician than a higher-income group of predominantly Caucasian women whose infants were treated at a private pediatric practice (48% vs. 72%, respectively). This study also found that African American mothers were as likely as Caucasian mothers to adhere to the AAP recommendations when they were given.

A survey of nurses working in neonatal intensive care units (NICUs) found that 85% of respondents were able to identify the AAP’s infant safe sleep recommendations and 73% provided verbal infant safe sleep education to parents at discharge (Grazel, Phalen, & Polomano, 2010). However, another study found that when nurses were asked what infant sleep position they recommended to parents upon hospital discharge, only 52% advised placing the infant in the supine position (Aris et al., 2006). Little is known about the knowledge and infant sleep-related educational practices of nurses in other specialties that work with expectant and new mothers, such as obstetrics, midwifery, and pediatrics. Much of the research that has been conducted on the topic of SIDS knowledge among nurses has been done with the purpose of examining and improving infant safe sleep practices within birthing hospitals, hospital nurseries and NICUs (Price, Hillman, Gardner, Schenk, & Warren, 2008; McMullen, Lipke, & LeMura, 2009; Carrier, 2009; Gelfer et al., 2013).
Prior studies have reported that the majority of pediatricians and family physicians are knowledgeable about infant safe sleep recommendations. A 2005 survey found that 82% of pediatricians and 70% of family physicians were aware of the AAP’s recommendation to place infants in a supine sleeping position, however, only 74% and 62%, respectively, recommended that position to parents (Moon et al., 2007). Although a great deal of work has been done to educate pediatricians and, to a lesser degree, family physicians, about SIDS/sleep-related SUID prevention since the AAP began recommending that infants be placed to sleep in a non-prone position in 1992, very little is known about the infant safe sleep-related knowledge and practices of obstetricians. A 2002 study by Moon, Gingras, and Erwin surveyed physicians from a variety of specialties about their infant safe sleep-related knowledge and behaviors and found that among a subgroup of 56 obstetricians located in Washington, DC, only 18% regularly discussed SIDS with their patients. A similar study conducted in New York state determined that of the 60 obstetricians-gynecologists surveyed, 48% reported that they, or someone in their office, routinely discussed SIDS with their patients (Eron et al., 2011).

A 2012 commentary in the journal *Obstetrics and Gynecology* by Tracy, Haas, and Lauria argues that obstetricians are uniquely positioned to provide patient education related to infant safety issues, particularly infant safe sleep, but that the topic is rarely published in the leading journals familiar to obstetricians and is not a requirement in obstetrics residency training. As the authors point out, unless an expectant mother
attends a childbirth education class she is often not exposed to infant safety information until after the infant is born, at which point many decisions about caregiving and nursery arrangements have already been made and the mother may be too exhausted by her new responsibilities to be receptive to the delayed messaging (Tracy, Haas, & Luaria, 2012). In addition, a separate study found that women who are African American and those with low socioeconomic status may be less likely to attend childbirth classes (Lu et al., 2003).

Obstetricians, obstetric nurses, and certified nurse midwives (CNMs) may be an expectant mother’s primary source of information about her infant as she plans for her baby’s arrival. Frequently, obstetric offices and clinics provide guidance on accessing breastfeeding assistance, infant care classes, and other resources for new mothers. Indeed, one study found that 70% of senior medical residents in obstetrics/gynecology reported having counseled an expectant mother regarding infant feeding choice at least five times during their residency, similar to the percentage of pediatric residents reporting the same (67%) (Freed et al., 1995). Pediatricians often have very limited contact with expectant mothers until the arrival of the infant, and at that point many important decisions about SIDS/SUID risk factors, such as the infant sleep environment (location, bedding, bedsharing), have already been made. In addition, pediatricians may not enter the picture until the infant has already entered the high-risk period for SIDS and sleep-related infant death. One study found that only 37% of infants had an outpatient visit with a pediatrician during the first 6 days of life and that another 35%
were not seen until after they were more than 10 days old (Profit, Cambric-Hargrove, Tittle, Pietz, & Stark, 2009). Another retrospective study of 2,405 infants receiving care at a large family practice residency program in Missouri between 2002 and 2008 found that 19% of infants had bedshared at least once between the time of discharge and the first well-child visit (Norton & Grellner, 2011).

The Role of Lactation Consultants in SIDS/Sleep-Related SUID Risk Reduction

When considering other potential providers of infant safe sleep education and advice during the prenatal and postnatal periods, it is also important to consider the role of lactation consultants. Lactation consultants frequently interact with expectant women and new mothers during a critical time for SIDS/sleep-related SUID prevention, during the final trimester of pregnancy and the early months of an infant’s life. Lactation consultants provide breastfeeding classes to expectant and new mothers as well as one-on-one education and consultation with women in hospitals, clinics, and homes. It is unknown what percentage of mothers have contact with a lactation consultant during pregnancy or postpartum.

In 2011, an estimated 79% of infants in the U.S. were breastfed at any time, and 49% were still breastfeeding at 6 months of age; in Ohio, significantly fewer infants were breastfed, 70% and 42%, respectively (CDC, 2014a). Non-Hispanic African American women are less likely than any other racial or ethnic group in the U.S. to breastfeed their infants and this disparity holds true across socioeconomic status levels (McDowell,
Lower rates of breastfeeding among African American women may be due to a variety of causes, including lack of partner support (Furman, Banks, & North, 2013; Alexander, Dowling, & Furman, 2010), lack of privacy in shared living environments (Kaufman, Deenadayalan, & Karpati, 2010), difficulties reconciling breastfeeding with returning to work or school (Alexander et al., 2010; Murimi, Dodge, Pope, & Erickson, 2010), lack of support from healthcare providers (Robinson & VandeVusse, 2009; Kaufman et al., 2010), and cultural beliefs (Reeves & Woods-Giscombe, 2014).

Ohio has a higher rate of lactation consultants than the national average, with 5.2 Certified Lactation Counselors per 1,000 live births and 3.7 International Board Certified Lactation Consultants per 1,000 live births (compared to national averages of 3.8 and 3.5, respectively) (CDC, 2014a). In 2015, there were 561 Internationally Board Certified Lactation Consultants in Ohio (International Board of Lactation Consultant Examiners, 2016).

Breastfeeding is associated with a reduction in SIDS risk of up to 73%; however, breastfeeding mothers are three times more likely to bedshare with their infant than mothers who do not breastfeed (Hauck, Thompson, Tanabe, Moon, & Vennemann, 2011; AAP, 2011b; McCoy et al., 2004). Given that an estimated 69% of sleep-related infant deaths are associated with bedsharing, it is important to ensure that new mothers are aware of both the benefits of breastfeeding and the risks associated with bedsharing (Colvin, Collie-Akers, Schunn, & Monn, 2014). There is no known research to
date exploring the infant safe sleep-related knowledge, attitudes and behaviors of lactation consultants. However, as described previously, there is some controversy surrounding the AAP’s SIDS prevention recommendations, in particular the advice that infants roomshare but not bedshare. Many of the leading organizations in the U.S. that advocate for women to breastfeed also endorse bedsharing as a safe option for families. When addressing the issue of infant safe sleep in Ohio and identifying potential key partners for prenatal and postnatal intervention, it is important to understand the beliefs and practices of certified lactation consultants.

**Social Ecological Model**

Ecological models are frequently used in the field of public health to provide a framework to depict the multiple layers of influence that impact health behaviors. They differ from earlier public health models by looking beyond the traditional intrapersonal and interpersonal influences on behavior to include factors at the organizational, community, social, and public policy levels (Sallis, Owen, & Fisher, 2008). Such models also consider the significance of reciprocal causation, in which the environment influences the individual and in turn the individual influences the environment (McLeroy, Bibeau, Steckler, & Glanz, 1988). Not only do ecological models aid in increasing our understanding of the determinants of health, but interventions that are implemented at multiple ecological levels are typically more effective at changing behavior (Sallis et al., 2008). However, ecological models are not without their
limitations and have been criticized for their overwhelming complexity and inability to pinpoint which influences are most important or how influences operate and interact (Green, Richard, & Potvin, 1996; Sallis et al., 2008).

The Social Ecological Model (SEM) is one popular framework for examining complex issues and behaviors in public health. Developed by McLeroy and colleagues, the SEM is modeled after the works of Brofffenbrenner, Belsky, and Steuart, and includes five levels of influence on behavior (the outcome of interest): intrapersonal factors, interpersonal processes and primary groups, institutional factors, community factors, and public policy (McLeroy et al., 1988). McLeroy et al. suggest that each of the levels of the SEM influences health behavior, and as a result, each level is potentially an appropriate place for intervention (1988).

Only recently has the field of infant safe sleep moved beyond factors specific to the infant and family and begun to examine the influence of broader social factors (Salm Ward & Doering, 2014). A variation on the SEM will be used in this study to provide a broad overview of the multilevel factors that have been identified as being associated with SIDS and sleep-related SUID among infants. Although the purpose of this study is to conduct a needs assessment to identify the infant safe sleep-related knowledge, attitudes, and behaviors of prenatal healthcare providers and lactation consultants, it is helpful to anchor the research within the broader framework of an ecological model. McLeroy et al. support the convention of not necessarily addressing all levels of an ecological model in a single study and assert that “the importance of an ecological
perspective is that it broadens our outlook to include environmental interventions that may support the behavior change process” (1988). The ecological model used for this study will also provide a foundation for future intervention development that may arise as a result of the current research.

The ecological model that will provide the framework for this study is based on the work of Broffenbrenner and the SEM, as well as more recent work by Alio et al. (2010) and Salm Ward and Doering (2014). Alio et al. proposed the inclusion of the historical context of racism into a model of the ecological framework for perinatal deaths among African American infants to represent the influence of racism on the health disparities associated with infant mortality among that population. Alio et al. suggest that the pervasive history of racism in the U.S. is the root cause of racial disparities and has influenced infant mortality through the mechanisms of institutionalized and internalized racism, as well as other factors including maternal stress, intimate partner violence, access to quality healthcare, socioeconomic status, and neighborhood characteristics (2010). Although the current study is not specific to African Americans, the concept of the influence of race is included as an important reminder of the significant health disparities associated with this topic. The proposed model is also influenced by the work of Salm Ward and Doering, who adapted the ecological model created by Alio et al. to examine ecological factors associated with bedsharing between mothers and infants (2014).
The socioecological model displayed here (Figure 1) illustrates factors known to be associated with SIDS and sleep-related SUID, categorized by ecological level of influence and placed into the context of racism suggested by Alio et al. (AAP, 2011a; AAP, 2011b; Trachtenberg et al., 2012; Moon & Fu, 2012; Alio et al., 2010; Salm Ward & Doering, 2014). The infant is included as the first level of influence in the model to acknowledge the role of infant characteristics in sleep-related infant death.

**Figure 1. A socioecological model of factors influencing SIDS/sleep-related SUID risk** (adapted from: AAP 2011a; AAP 2011b; Trachtenberg et al., 2012; Moon & Fu, 2012; Alio et al., 2010; Salm Ward & Doering, 2014)
PRECEDE-PROCEED Planning Model

Green and Kreuter’s PRECEDE-PROCEED Model serves as the conceptual framework for this research (2005). Designed as a planning tool to guide the systematic development and evaluation of health behavior interventions, PRECEDE-PROCEED has been used extensively in the field of health promotion for more than 30 years (Gielen, McDonald, Gary, & Bone, 2008). When used in combination with causal theories, the PRECEDE-PROCEED Model provides a complete planning framework or logic model (Gielen et al., 2008). Further, the model also emphasizes the importance of including the target community or population in the needs assessment, planning, and implementation of the intervention and the authors encourage stakeholder participation throughout the process (Green & Kreuter, 2005).

The first part of the model, known as PRECEDE, or Predisposing, Reinforcing, and Enabling Constructs in Educational/Environmental Diagnosis, and Evaluation, was created with the intention of providing practitioners with a systematic way to review the existing needs of a population prior to developing an intervention. The PROCEED portion of the framework, which was added more than a decade after the development of the original model, considers the environmental factors related to health behaviors and social determinants of health (Gielen et al., 2008). PROCEED stands for Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development (Gielen et al., 2008). In 2005, the PRECEDE-PROCEED model was revised
once more to simplify the model for improved ease of use and to include the role of genetics (Gielen et al., 2008). The revised model also allows for omitting phases when sufficient evidence has already been collected (Green & Kreuter, 2005).

As illustrated in Figure 2, the most recent version of the PRECEDE-PROCEED model consists of eight sequential phases that guide the user through four phases of assessment and planning, one phase of implementation, and three evaluation phases (Green & Kreuter, 2005). Although the PRECEDE-PROCEED model’s extensive framework is designed to allow researchers to plan a full intervention project, beginning with a social assessment and following through to the evaluation phase, the complete process is beyond the scope of this study. The proposed research study is concerned primarily with the needs assessment processes identified in Phase 1: Social Assessment, Phase 2: Epidemiological Assessment, and Phase 3: Educational and Ecological Assessment. PRECEDE-PROCEED phases 4-8 concern administrative and policy assessment, program implementation, and evaluation and could be addressed in a future study.
Figure 2: PRECEDE-PROCEED model modified for the current study (adapted from Green & Kreuter, 2005).

Briefly, phases 1-3 of the PRECEDE-PROCEED model include the following elements:

Phase 1: Social assessment. In this phase, researchers may use qualitative and quantitative methods to increase their understanding of the population that they intend to study. The goal of this phase is to become familiar with the community and their wants and needs while also identifying potential strengths and challenges (Green &
Kreuter, 2005; Gielen et al., 2008). The social assessment portion of this project used a mixed methods approach. A quantitative cross-sectional survey was conducted with obstetric physicians and certified nurse midwives to gauge their knowledge, attitudes, and behaviors related to SIDS and other causes of sleep-related infant death as well as barriers and enabling/reinforcing factors related to providing infant safe sleep education in the obstetric clinic environment. In addition, qualitative focus groups were conducted to learn about certified lactation consultants and counselors in Ohio, their role in working with expectant mothers and mothers of newborns, and their views on infant safe sleep recommendations and policies. The researcher consulted local experts for advice on engaging these populations of healthcare professionals.

Phase 2: Epidemiological, behavioral and environmental assessments. The purpose of this phase is to identify the health problems or issues to be addressed, as well as the behavioral and environmental determinants of those issues. Potential sources of data for this phase may include vital statistics, health surveys, medical records, and literature reviews (Green & Kreuter, 2005; Gielen et al., 2008). The researcher conducted an extensive literature review on SIDS/sleep-related SUID throughout this dissertation research project, with a particular focus on studies related to providing infant safe sleep education in the obstetric clinic environment.

Phase 3: Educational and ecological assessment. Phase 3 guides the researcher in identifying the factors that influence the behavior of interest. The three types of factors identified in the model are predisposing, enabling, and reinforcing. (Green & Kreuter,
2005; Burglehaus, Smith, Sheps, & Green, 1997; Gielen et al., 2008). Predisposing factors are antecedents to a behavior that “provide the rationale or motivation for the behavior” (Green & Kreuter, 2005). Examples of predisposing factors include knowledge, attitudes, beliefs, skills, and self-efficacy (Green & Kreuter, 2005; Burglehaus et al., 1997; Gielen et al., 2008). Enabling factors are behavioral antecedents that allow a motivation to be realized, such as programs and resources (Green & Kreuter, 2005; Burglehaus et al., 1997; Gielen et al., 2008). Reinforcing factors occur after a behavior and provide a reward or incentive for the continuation of the behavior, such as positive feedback or social support (Green & Kreuter, 2005; Burglehaus et al., 1997; Gielen et al., 2008). For this research, the following predisposing, enabling, and reinforcing factors were explored among obstetric physicians, certified nurse midwives, and lactation consultants:

1. Predisposing factors: infant safe sleep-related knowledge, attitudes, beliefs, and self-efficacy (related to speaking to patients about infant safe sleep);

2. Enabling factors: resources or policies that encourage or discourage the practice of providing infant safe sleep education; and

3. Reinforcing factors: incentives for continuing to provide or not provide infant safe sleep education, such as social norms.

Additional information outlining which survey questions addressed the predisposing, enabling, and reinforcing factors above can be found in the survey codebook under the heading “Framework Link” (Appendix A).
There is currently strong political support and increased monetary resources available for expanding infant safe sleep education in the state of Ohio, but little information is available about the baseline knowledge and practices of a potentially key group of prenatal and postnatal healthcare providers—obstetric physicians, certified nurse midwives, and lactation consultants. The PRECEDE-PROCEED Model is an appropriate conceptual framework for this research because it allows the researcher to systematically identify the factors that will be the most appropriate targets for a future intervention project on this topic. Further, although the model is most typically used during the development of health behavior interventions for lay audiences, PRECEDE-PROCEED has also been used to guide the development of interventions targeted at healthcare providers around similar topics, such as breastfeeding promotion (Burglehaus et al., 1997).

SPECIFIC AIMS

In the midst of increased attention to the importance of SIDS/sleep-related SUID prevention in Ohio and nationally, very little has been done to involve prenatal and postnatal healthcare providers in these efforts. This study is well-timed to identify baseline data on the knowledge, attitudes and behaviors of obstetric care providers and certified lactation consultants as well as gather information on influential factors that can inform future efforts and help guide resource allocation.
The long-term goal of this research is to reduce the rate of SIDS and sleep-related SUID among infants. This study addresses gaps in research and practice related to this leading cause of infant death by identifying and increasing understanding of factors that influence the infant safe sleep-related educational practices of obstetric physicians, certified nurse midwives, and certified lactation consultants in Ohio.

**Primary Research Questions**: 1) What prenatal healthcare provider characteristics are associated with making infant safe sleep recommendations based on current best practice guidelines? 2) Do prenatal and postnatal healthcare providers perceive that there are barriers to providing SIDS/infant safe sleep-related education in the obstetric environment? If so, what barriers do they perceive? 3) What key factors should be addressed to improve prenatal and postnatal healthcare provider initiated infant safe sleep education in Ohio?

**Specific Aim # 1.** Describe the SIDS/infant safe sleep-related predisposing factors (knowledge, attitudes, and behaviors) of obstetricians, obstetric nurses, and certified nurse midwives in Ohio.

**Research Question 1**: What are the infant safe sleep-related knowledge, attitudes, and behaviors of obstetricians, obstetric nurses, and certified nurse midwives? Do infant safe sleep-related knowledge, attitudes, and behaviors vary among these occupations?

**Hypothesis RQ1**: Infant safe sleep-related knowledge, knowledge, attitudes, and behaviors will vary by occupation, with nurses being more likely to display knowledge, attitudes, and behaviors that are consistent with the AAP’s recommendations.
Note: Although this study proposed to survey obstetric nurses, the mailing list that the researcher intended to use was not appropriate for identifying the population of interest and a suitable replacement could not be identified. Therefore, surveys were conducted with obstetric physicians and certified nurse midwives only.

REVISED Specific Aim # 1. Describe the SIDS/infant safe sleep-related predisposing factors (knowledge, attitudes, and behaviors) of obstetricians and certified nurse midwives in Ohio.

REVISED Research Question 1: What are the infant safe sleep-related knowledge, attitudes, and behaviors of obstetricians and certified nurse midwives? Do infant safe sleep-related knowledge, attitudes, and behaviors vary among these occupations?

REVISED Hypothesis RQ1: Infant safe sleep-related knowledge, knowledge, attitudes, and behaviors will vary by occupation, with certified nurse midwives being more likely to display knowledge, attitudes, and behaviors that are consistent with the AAP’s recommendations.

Research Question 2: What prenatal healthcare provider characteristics are associated with making infant safe sleep recommendations to obstetric patients?

Hypothesis RQ2: Prenatal healthcare providers who have greater knowledge and more positive attitudes about infant safe sleep education will be more likely to make infant safe sleep recommendations to obstetric patients, as well as providers who have received formal training on SIDS/infant safe sleep within the past 4 years.
Specific Aim #2. Identify healthcare providers’ perceived barriers and enabling/reinforcing factors related to providing infant safe sleep education in an obstetric clinic environment.

Research Question 3: What do prenatal healthcare providers perceive are the barriers to providing infant safe sleep education in an obstetric clinic environment?

Hypothesis RQ3: Perceived barriers to providing infant safe sleep education in an obstetric clinic environment will include time constraints, staff knowledge/training, and perceptions of infant safe sleep education as being outside the role of obstetric care providers.

Research Question 4: What do prenatal healthcare providers perceive are the enabling and reinforcing factors related to providing infant safe sleep education in an obstetric clinic environment?

Hypothesis RQ4: Prenatal healthcare providers will report that office policies, education reminders built into the electronic medical record, endorsement by professional societies, and material resources will increase the likelihood of infant safe sleep education being provided in an obstetric clinic environment.

Specific Aim #3. Explore the infant safe sleep-related beliefs and occupational practices of certified lactation consultants and counselors in Ohio. Identify potential strengths and challenges related to having certified lactation consultants and counselors provide infant safe sleep education to their clients.
Research Question 5: How do certified lactation consultants and counselors view their role in providing infant safe sleep education to clients?

Research Question 6: Do certified lactation consultants and counselors provide advice to their clients that is consistent with the AAP’s infant safe sleep recommendations? Why or why not?

Research Question 7: What are the barriers to certified lactation consultants and counselors providing infant safe sleep education to their clients? How can these barriers be addressed?

METHODS

This study utilized a mixed-methods approach, including focus groups comprised of certified lactation consultants and a cross-sectional survey of obstetric physicians and certified nurse midwives. Detailed descriptions of the target populations and research methodologies can be found in Chapter 3: Lactation Consultant Views on Infant Safe Sleep for the focus groups and in Chapter 4: Survey Methodology for the surveys.
Chapter 3: Lactation Consultant Views on Infant Safe Sleep

ABSTRACT

Objectives: The purpose of this qualitative study was to explore the infant safe sleep-related beliefs and occupational practices of lactation consultants.

Methods: Focus groups were conducted with certified lactation consultants in one Midwestern state. Participants discussed the role of lactation consultants and the advice they provide to women related to infant safe sleep and reducing the risk of sudden infant death syndrome and other causes of infant sleep-related death. Furthermore, participants provided their views on infant safe sleep policies, the impact of such policies, and perceived benefits and barriers associated with providing infant safe sleep education during breastfeeding consultations that is consistent with the recommendations of the American Academy of Pediatrics.

Results: Four focus groups were held with 22 certified lactation consultants. Major themes that emerged from the discussions included: lactation consultants’ belief in the importance of bedsharing for supporting breastfeeding; frustration with infant safe sleep policies that restrict lactation consultants’ ability to discuss bedsharing with their
clients; and how those policies impact their work and the advice they give while on the job. Preliminary findings from the focus groups were discussed with a subgroup of participants to ensure the credibility of the findings.

Conclusions: Lactation consultants interact with mothers of newborns at a critical time for infant safe sleep-related decision-making and may influence a mother’s decision about whether or not to bedshare. This study reveals that mothers may not be receiving messages from lactation consultants that are consistent with the infant safe sleep recommendations of the American Academy of Pediatrics.
BACKGROUND

Sudden infant death syndrome (SIDS) is the leading cause of mortality among infants between the ages of one month and one year in the United States (U.S.) (CDC NCHS, 2015). Although SIDS rates in the U.S. decreased by more than 50% in the decade following the introduction of the “Back to Sleep” Campaign in 1994, rates have remained steady since 2001 (AAP, 2011b). In 2013, there were 1,561 infant deaths attributed to SIDS in the U.S. (Mathews et al., 2015). Simultaneous to this decrease and plateau in SIDS rates, there has been an increase in the proportion of infant deaths attributed to sleep-related sudden unexpected infant death (SUID). Sudden unexpected infant deaths labeled as accidental suffocation and strangulation in bed (ASSB) have increased steadily since the late 1990s, reaching a peak of 21.4 deaths per 100,000 live births in 2014 (CDC, 2016b). It is likely that at least part of the shift from SIDS to SUID cases is due to changes in infant death coding (Malloy & McDorman, 2005; Shapiro-Mendoza et al., 2009; AAP, 2005; Goldstein et al., 2016; Cutz, 2016). Sleep-related infant deaths are associated with significant health disparity, with non-Hispanic African American and American Indian/Alaskan Native infants experiencing death rates two to three times higher than non-Hispanic Caucasian infants (AAP, 2011b; Hauck et al., 2002; Moon & Fu, 2012). Sleep-related infant deaths contribute significantly to the nation’s overall infant mortality rate. Healthy People 2020 includes multiple goals related to SIDS and sleep-related SUID (U.S. Department of Health and Human Services, 2010).
Ohio’s overall infant mortality rate is 11th highest in the nation at 6.9 deaths per 1,000 live births and third highest for African American infants at 14.3 per 1,000 live births (CDC NCHS, 2016). It is estimated that 46% of deaths among infants one month to one year of age in Ohio are sleep-related and approximately 56% of these deaths occur in adult beds or on couches or chairs (Ohio Department of Health & Ohio Children’s Trust Fund, 2015). One-half of Ohio’s infant sleep-related deaths occur while the infant is sharing a sleep surface with another person (Ohio Department of Health & Ohio Children’s Trust Fund, 2015).

In 2011, the American Academy of Pediatrics (AAP) released a revised policy statement and technical report on SIDS and other sleep-related infant deaths to focus greater attention on the importance of safe sleep environments for infants (AAP, 2011a; AAP, 2011b). Among the key recommendations are several that relate directly to infant sleep positioning and environment including: supine only sleep positioning; firm sleep surface; avoidance of soft or loose objects and bedding, including crib bumpers; and infants sleeping in the same room with parents, but not in the same bed (roomsharing without bedsharing). Other policy recommendations include breastfeeding, routine immunizations, regular prenatal care, and avoiding exposure to tobacco smoke, alcohol, and illicit drugs both during pregnancy and after birth.

Perhaps the most controversial of the AAP’s recommendations for infant safe sleep is the suggestion that parents roomshare, but not bedshare with their infant. The AAP policy statement advises that infants be placed in a separate sleep space without
any other humans or pets, such as in a crib or bassinet, rather than in the parents’ bed. This recommendation has been opposed by a number of breastfeeding advocacy groups, including the La Leche League International, the Academy of Breastfeeding Medicine, and the International Lactation Consultant Association. Many supporters of bedsharing practices argue that this behavior facilitates breastfeeding and encourages mother-infant bonding and that the practice of exclusively breastfeeding infants provides protection against SIDS and other causes of infant sleep-related death. To date, the AAP maintains its position that bedsharing is not recommended due to the increased risk of sleep-related infant death (AAP, 2011b). Although breastfeeding is associated with a reduction in SIDS risk of up to 73%, breastfeeding mothers are three times more likely to bedshare with their infant than mothers who do not breastfeed (Hauck et al., 2011; AAP, 2011b; McCoy et al., 2004).

Infant sleep-related deaths have received increasing attention in Ohio over the past several years and a combination of state-wide interventions, marketing campaigns, and legislative efforts have been launched in an attempt to prevent infant mortality from all causes. In 2012, the Ohio Department of Health (ODH) implemented a policy requiring that all ODH programs and subgrantees adhere to the infant safe sleep standards established by the 2011 AAP policy statement. The ODH policy specifies that “under no circumstances shall ODH programs indicate that it is acceptable to share a sleep surface with an infant; to place an infant on his or her stomach or side to sleep; or to use any other sleep surface besides a safety-approved crib or bassinet” (ODH, 2012).
When considering the infant safe sleep advice that parents receive, it is important to consider all healthcare professionals who may provide parents with recommendations on this topic. Studies have shown that other healthcare professionals, such as physicians and nurses, are important sources of information on infant safe sleep and can influence their patients’ behaviors (Colson et al., 2006; Zachry & Kitzmann, 2010; Gelfer et al., 2013; Vernacchio et al., 2003; Colson & Joslin, 2002; Shaefer et al., 2010; Willinger et al., 2003). A recent national survey found that advice mothers received from healthcare providers and others to roomshare without bedsharing had a dose response relationship with practicing that behavior; the odds of roomsharing without bedsharing increased with the number of sources who provided advice in favor of the practice (Smith et al., 2016).

Lactation consultants are a group of healthcare professionals that frequently interact with new mothers during the first six months of an infant’s life, when infants are at highest risk for SIDS and sleep-related SUID (AAP, 2011b). Lactation consultants provide breastfeeding classes to expectant women and new mothers as well as one-on-one education and consultation with women in hospitals, clinics, and homes. Although it has been shown that lactations consultants can positively impact breastfeeding initiation and duration among their patients, there is no known research to date about whether that effect extends to infant safe sleep behaviors (Brent, Redd, Dworetz, D’Amico, & Greenberg, 1995; Patel & Patel, 2015). With many of the leading organizations that advocate for breastfeeding in the U.S. endorsing bedsharing as a safe
option for families, it is important to consider the perspectives of this group of healthcare professionals regarding their beliefs and occupational practices about infant safe sleep.

The purpose of the current qualitative study was to explore the infant safe sleep-related beliefs and occupational practices of lactation consultants and to identify any barriers to lactation consultants providing infant safe sleep education to their clients that is consistent with the AAP’s recommendations.

**METHODS**

**Study Design**

Four focus groups were conducted with a convenience sample of certified lactation consultants from September through November 2015. The first three focus groups were held in Columbus, Ohio. Although data saturation was reached after the first three focus groups, an additional focus group was held in Stow, Ohio, (approximately 135 miles northeast of Columbus, Ohio) to explore any potential geographic variation among lactation consultants. In February 2016, a final member-checking session was held in Columbus, Ohio, with a sample of participants from the first three focus groups to ensure the credibility of the preliminary findings (Creswell & Miller, 2000).

Focus groups were moderated by an experienced member of the research team (NLH) who used a focus group guide containing both broad, open-ended questions and
more specific probes to guide the discussion and request clarification when needed (Appendix B). Each focus group lasted approximately 90 minutes, including introductions. The focus groups were digitally audio recorded and one to three graduate research assistants were present at each session to capture field notes and group dynamics. Focus group and member-checking participants received a $50 grocery store gift card in compensation for their time for each session they participated in and refreshments were served (see Appendix C for participant gift card receipt). The Institutional Review Board (IRB) at The Ohio State University (OSU) approved this study, including the focus group guide, demographic questionnaires, and recruitment materials. All study-related materials (recordings, transcripts, questionnaires, field notes) are kept in a secure location and will be destroyed according to OSU’s IRB policy.

Participants

Participation in this study was open to individuals who were Internationally Board Certified Lactation Consultants (IBCLCs) or Certified Lactation Counselors (CLCs). Both IBCLC and CLC certifications offer multiple pathways for completion and require a specified number of hours of educational instruction as well as passage of a comprehensive exam. Depending upon the certification pathway chosen, IBCLCs are also required to provide documentation of 300-1,000 hours of lactation specific clinical experience prior to taking the certification exam (International Board of Lactation Consultant Examiners, n.d.; Academy of Lactation Policy and Practice, n.d.). Lactation consultants are important to include in this current study since in 2011, an estimated
79% of infants in the U.S. were breastfed at any time, and 49% of infants were still breastfeeding at six months of age (CDC, 2014).

English-speaking individuals 18 years or older who were Internationally Board Certified Lactation Consultants (IBCLCs) or Certified Lactation Counselors (CLCs) working in Ohio were eligible to participate in the study. (To simplify the reporting of study results, all participants will be referred to simply as “lactation consultants” in this chapter). Participants were recruited by emailing flyers to lactation consultants working in Ohio using publicly available lists, such as online listings of members of the La Leche League of Ohio, the Ohio Lactation Consultant Association, and the International Lactation Consultant Association. Recruitment flyers were also distributed via local health departments, hospitals, and other organizations employing or serving lactation consultants. (Focus group recruitment materials can be found in Appendices D and E.)

Individuals who were interested in participating in the study were asked to call the research team for eligibility screening and scheduling. Potential participants participated in a brief (< 5 minute) screening call and interested and eligible individuals were scheduled for a 90-minute focus group session (see Appendix F for telephone screening tool). The three Columbus-based focus groups divided participants as follows: 1) nurses only; 2) non-nurse lactation consultants with less than 10 years of experience; and 3) non-nurse lactation consultants with 10 years or more of experience. The focus group conducted in Stow contained a mix of the three participant categories. Upon arrival and prior to initiating the focus group discussion, written informed consent was
obtained from all participants and each participant completed a brief demographic questionnaire (see Appendices G and H).

**Measures**

The lactation consultant demographic questionnaire included: a) the number of years worked as a lactation consultant (0-4 years, 5-9 years, 10-14 years, 15-19 years, 20 years or more); b) the number of mothers seen in a typical week while working as a lactation consultant; c) if the participant was currently employed as a nurse (yes or no); d) information about lactation certification (Internationally Board Certified Lactation Consultant, Certified Lactation Counselor, or other); e) principal place of employment (federally-qualified health center, hospital-based clinic, physician’s office, public health department clinic, self-employed, or other); f) gender (female or male); g) age (in years); h) ethnicity (Hispanic or Latino or not); and i) race (White or Caucasian, Black or African American, Asian or Pacific Islander, American Indian or Alaska Native, or other). Participants were also asked to estimate the racial and ethnic composition of their clients using the categories above and to estimate what percentage of their clients have the following types of medical insurance: private insurance, public insurance, military/government insurance or not insured.

Prior to study recruitment, a focus group guide was developed by the lead researcher (NLH) and reviewed by the research team. Feedback was provided by two infant safe sleep experts at the Ohio Department of Health (ODH) and five members of the Ohio Injury Prevention Partnership’s infant safe sleep subcommittee. The focus
group guide was revised based on the suggestions received and the updated version was used to facilitate each group (see Appendix B). Each focus group began with a discussion of the role of lactation consultants, the topics that they discuss with mothers, and whether they give advice on topics that are not directly related to breastfeeding. The discussion was then guided to the topic of infant sleep and the advice that lactation consultants provide to women about the subject. Next, participants were asked about their thoughts regarding infant safe sleep, the AAP’s infant safe sleep policy, and the impact of infant safe sleep policies on breastfeeding and the actual advice that they give to clients. Benefits, detriments, and barriers associated with providing infant safe sleep education that is consistent with the AAP’s recommendations were also discussed.

### Data Analysis

Descriptive statistics were used to summarize the demographic data collected from the participant questionnaires. Each focus group was transcribed verbatim by a graduate student research assistant and all participants’ names were excluded from the transcriptions during this process. The transcripts were reviewed in their entirety for accuracy by a second research assistant and the lead researcher. The field notes collected during the focus group sessions were limited in nature (e.g., head nodding, laughter), and were excluded as they did not add significantly to the transcribed focus group discussions. The findings are supported by representative quotations, however, the participant’s name or the focus group session are not documented in this report.
After reading all of the transcripts the lead researcher developed codes and organized them into a codebook for use during the initial phase of analysis. In qualitative data analysis, codes are words or phrases that are attached to units of data, in this case transcription files, to highlight an important concept from the data (Salazar, Crosby, & DiClemente, 2006). All units of data relating to the same topic are given the same code so they can be retrieved and grouped accordingly (Eng et al., 2005). Key concepts that were included in the codebook were: the role of lactation consultants; how lactation consultants discuss infant sleep and bedsharing with mothers; whether lactation consultants recommend bedsharing and why; attitudes about infant safe sleep policies; and possible areas of consensus between lactation consultants and the AAP. Each key concept had multiple corresponding codes assigned to it to represent possible participant responses or discussion points.

ATLAS.ti qualitative data analysis software was used to facilitate the coding process (version 7.5.10, ATLAS.ti GmbH). Two members of the research team (NLH and a trained graduate student research assistant) independently coded the first transcript, reviewed differences, and reach a consensus. A revised codebook was used to code the remaining transcripts; new codes were added and existing codes were refined as needed throughout the process to reflect new concepts or clarify ambiguous definitions. The coders then compared the coded transcripts line-by-line to identify areas of discrepancy. In cases of disagreement between the coders, the data were discussed.
until consensus was reached. The final version of the codebook can be found in Appendix I.

RESULTS

Participant characteristics

A total of thirty-two lactation consultants contacted the research team, completed the screening process, and were deemed eligible to participate in the study. Six individuals were unable to attend the focus groups at the scheduled times and were added to a waitlist to be utilized if additional focus groups were deemed necessary. Twenty-six individuals were scheduled for a focus group, however four individuals either canceled or did not attend the focus groups. Twenty-two female lactation consultants participated in the focus groups (Table 2).

The mean age of the women who participated was 42 years (SD=10, range 26-60 years). Participants were primarily Caucasian (95%) and no participants identified as being Hispanic. There were nearly equal numbers of IBCLCs and CLCs (55% vs. 45%, respectively) and most (60%) had been certified as lactation consultants for less than ten years. Six participants were currently employed as nurses. The number of mothers the lactation consultants provided care for each week varied widely and ranged from 1 to 100 (mean=22, SD=24). The lactation consultants were employed by public health departments and/or Women, Infant, and Children programs (45%), hospitals (36%), self-
<table>
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<tr>
<td>Gender</td>
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</tr>
<tr>
<td>Male</td>
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</tr>
<tr>
<td>Race/ethnicity</td>
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<tr>
<td>Caucasian, non-Hispanic</td>
<td>21 (95)</td>
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<tr>
<td>African American, non-Hispanic</td>
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<tr>
<td>Lactation certification</td>
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<tr>
<td>IBCLC&lt;sup&gt;a&lt;/sup&gt;</td>
<td>12 (55)</td>
</tr>
<tr>
<td>CLC&lt;sup&gt;b&lt;/sup&gt;</td>
<td>10 (45)</td>
</tr>
<tr>
<td>Years worked as lactation consultant</td>
<td></td>
</tr>
<tr>
<td>0-4 years</td>
<td>9 (41)</td>
</tr>
<tr>
<td>5-9 years</td>
<td>4 (18)</td>
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<tr>
<td>10-14 years</td>
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<td>15-19 years</td>
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<tr>
<td>20 years or more</td>
<td>1 (5)</td>
</tr>
<tr>
<td>Employed as a nurse</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6 (27)</td>
</tr>
<tr>
<td>No</td>
<td>16 (73)</td>
</tr>
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<tr>
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<tr>
<td>Public health department or WIC&lt;sup&gt;c&lt;/sup&gt;</td>
<td>10 (45)</td>
</tr>
<tr>
<td>Self-employed</td>
<td>2 (9)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (9)</td>
</tr>
</tbody>
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Note: Percentages may not total 100% due to rounding.
<sup>a</sup>=Internationally Board Certified Lactation Consultant; <sup>b</sup>=Certified Lactation Counselor; <sup>c</sup>= Women, Infants, and Children

Table 2. Lactation consultant characteristics (n=22)
employed (9%), milk bank (5%) and other (participant marked “other” without further details given) (5%). Most lactation consultants reported serving racially and ethnically diverse populations. On average, participants described 10% of their clients as Hispanic (range 0-35, SD=10), 74% as White (range 33-100, SD=18), 20% as Black (range 0-60, SD=15), 3% as Asian (range 0-15, SD=4) and 2% as American Indian or Alaskan Native (range 0-15, SD=3). More than two-thirds of participants (68%) indicated that at least 50% of their clients had public insurance. Focus group sizes ranged from three to eight participants. Eight lactation consultants from the initial round of focus groups conducted in Columbus, Ohio, participated in the final member-checking session.

Discussion topics

Major topics that were discussed in each focus group included: 1) the role of lactation consultants; 2) beliefs about breastfeeding and bedsharing; 3) attitudes about infant safe sleep policies; and 4) policy restriction-related work behaviors. Representative comments from participants are included to support the themes that emerged from the focus group discussions.

Role of lactation consultants

When asked to describe the role of lactation consultants, the three primary tasks that were identified by participants were 1) providing education, 2) giving mothers encouragement and/or support, and 3) serving as a resource. During the discussions in all groups, participants indicated that although they educate mothers on a variety of
breastfeeding-specific topics, they also provide instruction related to other issues, such as newborn care and infant development. One lactation consultant said:

...breastfeeding is one part of it, but it’s...we have to understand birth, and we have to understand attachment, we have to understand so many different aspects, that you could be talking about a whole slew of things from parenting and even, gosh, don’t you think sometimes understanding, um, social issues?

The theme of lactation consultants providing support and/or encouragement was discussed in each focus group and several of the groups also discussed the importance of empowering mothers to make their own decisions regarding their child. Finally, participants talked about serving as a resource for mothers, helping them gain access to breast pumps, specialized lactation assistance, and referrals to other services. One participant remarked “...I feel my most important job is to listen to what they say and how they feel. And try to work with them to get them information that is going to speak to them.”

**Breastfeeding and bedsharing beliefs**

Each of the focus groups discussed extensively the role of bedsharing in supporting and reinforcing breastfeeding and many women spoke passionately about this topic. Numerous mentions were made of the belief that mothers bedsharing with infants is an evidence-based and biologically normal behavior. One lactation consultant remarked “I figure from a lactation standpoint I can discuss with you about what I know...
in the research...I look at the research, and I quote the research, because I’m evidenced-based. That is what I am supposed to be.” Another participant said:

...It’s a mom’s instinct to have her baby close to her. We’re mammals, all mammals have their babies close to them when they sleep... Get back to nature. That’s how it’s meant to be, it’s not meant for them to be in a separate area, uns-waddled, arms you know, on their back, looking at the lights, it just, it makes no sense. How have we gotten to this point?

Frequent mention was made of local and national bedsharing advocates and their publications were referred to in support of these arguments. In each of the focus groups there was discussion of bedsharing as being necessary for successful breastfeeding and that this behavior is the norm among breastfeeding mothers. One lactation consultant described it this way: “I would say any breastfeeding mom, again, I don’t have a number on this, if you’re breastfeeding, you’re sleeping with baby. If you say you don’t, you’re probably lying.” Participants offered anecdotes about their personal experiences with bedsharing and discussed how sharing those stories helped them to support and bond with their clients. They also talked about bedsharing as something that should be a mother’s choice.

Participants emphasized the safety of bedsharing by explaining that breastfeeding is protective against SIDS and sleep-related SUID. One participant reported that “The exclusive breastfeeding moms who are sleeping with their babies
have virtually, I think it’s very low suffocation risk, very low, almost like zero.” Many of
the lactation consultants shared the belief that co-sleeping in bed with an infant can be
done safely and can be safer than other alternatives, such as falling asleep unexpectedly
in a recliner or on a sofa. One participant described her beliefs about bedsharing this
way:

I have had moms tell me I would get up every time, I would get up and sit in the
chair and the baby was up every hour and a half, two hours. I would get up, I was
falling asleep in the rocking chair, and so finally I was like screw this and I
brought the baby to bed and we were all happy. And when you have moms who
deliberately choose to co-sleep, versus accidentally co-sleeping, that’s when I
think you have the safest situation.

Another participant said:

...we don’t tell them how to do it safely, everybody is so adamant about separate
bed, back, the whole thing, that we don’t acknowledge the fact that they are
probably going to co-sleep at some point in time. So why aren’t we teaching
them to do it safely?

Reasons that an family should not bedshare were also discussed including
parental risk factors (e.g., smoking, drug abuse, excessive tiredness) and infant risk
factors (e.g., congenital anomalies), but overall participants seemed to agree that
mother infant dyads who are exclusively breastfeeding are at very low risk for
SIDS/sleep-related SUID while bedsharing. In each group at least some of the participants expressed skepticism about the SIDS/sleep-related SUID fatality data and said they believed that the statistics were inaccurately reported or that the deaths had other causes. One lactation consultant remarked “...when we look at this, I do think that the sleep related deaths are inflated.” Another participant said “They just kind of like, yeah, well the baby died while asleep, that’s a sleep-related death. Doesn’t matter dad rolled over on the baby when he was high on drugs. Nope, it’s a sleep-related death.”

**Attitudes about infant safe sleep policies**

There was a general feeling of frustration among the participants about the AAP’s recommendation that mothers and infants not bedshare. Many lactation consultants indicated that as a result of the AAP’s infant safe sleep policy and the subsequent adoption of that policy by the Ohio Department of Health and many health departments and hospitals in the state, they were no longer allowed to talk to mothers about ways to safely co-sleep with their infant. For example, “It’s a real frustration...it’s been pretty well documented that breastfeeding and sleeping near your baby or with your baby are mutually reinforcing. So, it puts everyone in a really difficult position that works under an agency that has got that.” Overall, the women felt that the policy was not evidence-based and that it went against their beliefs and the education and training they received as lactation consultants. One lactation consultant described her feelings about the policy this way:
I understand it’s ODH’s policy and it’s the AAP recommendations but I don’t think it’s fact based. I don’t think it’s fact based or research based; I think they’ve ignored a lot of research because there’s this big concern about the infant mortality.

Participants talked about the policy as being a “gag order” preventing them from educating mothers on how to safely bedshare while breastfeeding. One lactation consultant remarked “...in terms of the whole safe sleep thing, I just feel stifled, I mean there is just absolutely nothing I can do until the AAP hopefully changes something.”

And another said “[we]...have to tell mothers, never ever co-sleeping [sic], always on a flat surface. My personal opinion, and what I might say outside of my duties, is completely [emphasis added] different, because I don’t think you can work and breastfeed and not co-sleep.”

When asked to share their thoughts about the AAP’s infant safe sleep recommendations, the focus group participants described extensively the ways that they felt the policies were too restrictive and unrealistic for mothers to follow. Many of these discussions reflected the arguments described previously about bedsharing being necessary and normal for successful breastfeeding. A participant said “...roomsharing without bedsharing, I mean there’s no...moms and babies are sleepy...and with these recommendations it’s hard to find how to feed while sleepy.” Another said “It’s not realistic, it’s not going to happen no matter what kind of guidelines there are, you need
to look at real world and educate safely on this stuff, otherwise the numbers aren’t
going to go down...” And a third participant said simply “Bed sharing is gonna happen!”

Although some of the participants said that they believed the policies of the AAP
and ODH were developed with good intentions or described other aspects of the
policies that might be beneficial (placing infants on their back to sleep, avoiding
exposure to tobacco smoke), most said that they felt the policies were unsupportive of
breastfeeding and some questioned whether infant formula companies or crib
manufacturers were involved in developing the policies. One participant said “I think a
lot of, all of these policies come from formula companies because anyone that’s
following all this stuff is probably not going to be successful for breastfeeding...” In
another session someone remarked “…if they don’t sleep in the bed we’re not going to
breastfeed as well. If we don’t breastfeed as well we are going to be more inclined to
give formula.”

The participants also expressed the belief that infant safe sleep educational
campaigns to discourage bedsharing were not beneficial to infants and caused mothers
undue fear and stress. One participant commented “…I feel this is very restrictive, I feel
that this is going to decrease our breastfeeding rates. I feel not only are we going to
potentially harm newborns and infants and children, but we’re also going to harm their
moms as well...I’ve heard this from multiple moms, I’m going to kill my baby if I sleep
with her, or him.” And another remarked “So when I have a mom who has done
everything right, who is exclusively breastfeeding, who is not smoking, who is doing everything by the book, why are we scaring these moms that her baby’s gonna die?”

**Policy restriction-related work behaviors**

Some participants reported that they were allowed to discuss bedsharing with their clients, either because they were self-employed or they worked for an agency or organization that permitted them to do so, but most indicated that they were under restrictions from their employer that kept them from talking to mothers about bedsharing. When asked how they reconcile their personal beliefs with their work requirements, responses varied significantly. Some participants reported that they avoided talking about bedsharing or discouraged the practice as required by their employer, while others described ways that they discuss or hint at bedsharing despite work polices. A participant said:

…I will give them all that safe sleep information that we have to give them in a hospital, but I will tell you...if I know that a mom plans to co-sleep I have told her, you need to make sure you’re doing it safely. Because I think it’s worse to keep them in the dark about what safe co-sleeping is and not just ignoring the fact that they’re going to do it.

And another remarked:
Yes, I still tell them, [...] WIC’s policy is absolutely no co-sleeping, no bedsharing, no co-sleeping. But, as a mom who has breastfed, I understand it’s probably going to happen at some point in time, so there’s things you need to know to keep your baby safe.

And a number of other participants said that they encourage mothers to “Google it,” read a book on bedsharing, or attend a La Leche League meeting. Participants also discussed the possibility of losing one’s job for discussing bedsharing. A lactation consultant said “…that’s so wrong, for us, as a professional, to say, I have to go against what I know as evidenced-based, because my boss says so and I don’t want to lose my job.”

**Member-Checking**

In February 2016, a member-checking session was held to present the preliminary findings to the study participants and gather their feedback. Eight individuals who had participated in the Columbus focus groups attended the member-checking meeting and each of the three Columbus sessions was represented by at least two individuals. The lead researcher presented the participants with a 15-minute summary of the initial findings and emerging themes and then facilitated a discussion with the group. Participants were asked for their impressions of the findings as well as a number of follow up questions to clarify or expand on topics that were discussed in the initial round of focus groups (e.g., work restrictions, fatality data accuracy, etc.). All
participants indicated that they felt the findings were an accurate summary of the focus
groups that they attended. One participant said “I feel like you’ve got a good picture of
who we are and what we believe and yeah, I don’t think there was anything I disagreed
with.”

**DISCUSSION**

This is the first known research study in the U.S. to explore the infant safe sleep-
related attitudes and behaviors of lactation consultants. Participants in this study
described the important role that lactation consultants play in educating and supporting
pregnant women and mothers of newborns. In addition to providing instruction specific
to breastfeeding, lactation consultants also serve as a resource and offer advice on a
variety of infant care topics. The emphasis that the participants placed on the support
and encouragement that lactation consultants provide to mothers of newborns
indicates that the influence that these healthcare professionals have and the
relationships that they form with mothers should be considered when developing infant
safe sleep interventions.

This study also revealed that participants not only strongly disagree with the AAP
and state health department’s policies on bedsharing, but that there is also considerable
distrust of both the motivation behind the policies and the infant fatality data on which
the policies are based. Participants indicated that they felt frustration with what they
perceive as a “gag order” preventing them from discussing “safe” bedsharing with mothers. Numerous participants spoke of their obligation as lactation consultants to provide information to their clients that is evidence-based, a criteria that they did not feel was met by the AAP’s 2011 policy statement.

It is important to consider that the participants in this study were not uneducated on the topic of bedsharing, but referenced a different set of research than what has been endorsed by the AAP and ODH. Many lactation consultants quoted from a nearly identical but limited sample of experts and publications to support their views (Wiessinger, West, Smith, & Pitman, 2014; McKenna, 2007). They seemed confident in their arguments and expressed exasperation over what they felt was the AAP’s disregard for the studies they trusted. The bedsharing proponent who was mention most frequently during the focus groups was anthropologist James McKenna. McKenna, a professor and researcher at the University of Notre Dame, is a well-known advocate of breastfeeding and bedsharing and is frequently featured in the national media. Like many of the participants in this current study, he claims that bedsharing between mothers and infants is normal from a biological and evolutionary standpoint and can be essential for successful breastfeeding (McKenna & McDade, 2005). Much of McKenna’s published primary research on breastfeeding and bedsharing is based on the results of laboratory sleep studies with very small sample sizes ranging from 3 to 35 mother-infant dyads (Mosko, Richard, & McKenna, 1997; Mosko, Richard, McKenna & Drummond, 1996; Mosko, McKenna, Dickel, & Hunt, 1993). Based on the results of these studies and
other similar research, McKenna and colleagues determined that mother-infant bedsharing increases the number and duration of nighttime breastfeeding sessions and that when mothers and breastfeeding infants bedshare, the mothers are more likely to wake when the infant arouses, which they suggest can increase a mother’s chances of intervening if the infant is in medical distress.

In contrast to the recommendations of the AAP, McKenna and colleagues as well as the authors of the book *Sweet Sleep: Nighttime and Naptime Strategies for the Breastfeeding Family* (also mentioned by a number of participants in this current study), suggest that bedsharing can be carried out safely by breastfeeding mothers and infants (McKenna & McDade, 2005; Wiessinger et al., 2014; McKenna, 2007). McKenna and McDade posit that this practice may be safer among more affluent, White mothers who have higher breastfeeding rates than among African American women with lower breastfeeding rates and/or mothers who are living in high risk urban environments (2005). Wiessinger and colleagues suggest that bedsharing is safe if the following criteria are met: a) mother is a non-smoker; b) mother is sober and unimpaired (no excessive alcohol consumption, medications that may cause drowsiness, and not overly tired); c) exclusively or mostly breastfeeding; d) infant is healthy and was born full-term; e) infant is placed on the back to sleep (unless the infant is sleeping on an adult’s chest with his head higher than his bottom); f) infant is lightly dressed; g) mother and infant are sleeping on a safe sleep surface (firm sleep surface, no spaces where an infant could get stuck, mother between infant and other humans or pets in the bed, no heavy covers or
extra pillows beyond those under the parent(s) head, not too much distance to the floor, and no sharp edges on the sleep surface (Wiessinger et al., 2014). In addition to recommending similar guidelines, McKenna also adds the following: mothers with long hair should tie back their hair at night to avoid infant strangulation; extremely obese persons should not bedshare with infants; and parents should consider the unlikely possibility that the infant may die while bedsharing and think about whether they would be able to attribute the death to SIDS rather than assuming the infant died as a result of bedsharing or suffocation in bed (McKenna, 2016). Presumably this last point is to free the parents of any feelings of guilt or self-blame if their infant were to die while bedsharing.

Although a few of these recommendations are consistent with the AAP’s guidelines (e.g., no infant exposure to smoking, avoidance of alcohol, supine sleeping position for infants, firm sleep surface), the overall recommendation to bedshare and many other suggestions are not. Frequently the recommendations that bedsharing supporters offer to mothers regarding infant sleep are based on studies with small sample sizes, research conducted exclusively in controlled laboratory environments, or is anecdotal in nature. Also, much of the literature endorsing the safety of bedsharing primarily focuses on the author’s argument that bedsharing among breastfeeding mothers and infants reduces or does not increase the risk of SIDS; significantly less attention is directed at the threat of accidental suffocation and strangulation in bed (ASSB) and other causes of sleep-related SUID, even though SIDS rates are decreasing
while ASSB rates continue to increase. For example, even though the *Sweet Sleep* book argues that only a small proportion of infants are at risk for SIDS and that bedsharing is not associated with SIDS unless there is exposure to smoking as well, the book devotes 13 pages of the chapter “Suffocation and SIDS: Reality and Risks” to discussing the risk of SIDS and two pages to ASSB, despite the fact that ASSB is more clearly understood and highly preventable through the practice of infant safe sleep behaviors (Wiessinger et al., 2014). To prevent ASSB, the authors refer the reader back to the bedsharing guidelines discussed above and claim that a breastfeeding mother’s instinct to curl around her infant in the bed and her heightened awareness of the infant will “make it almost impossible for her to roll onto her baby” (Wiessinger et al., 2014).

A number of participants indicated that they either avoid discussing infant sleep with clients or they provide advice that is consistent with the recommendations provided by the AAP and endorsed by ODH. However, the results of this study indicate that a not all lactation consultants in Ohio are adhering to those guidelines. Therefore, it is possible that the policies are not being fully executed as they were intended. Despite the lactation consultants’ convictions that they are doing the right thing, the end result is that mothers in Ohio may be receiving mixed messages or inadequate education on the topic of infant safe sleep. Lactation consultants undoubtedly are not the only ones who are giving advice that contradicts or fails to reinforce the AAP’s infant safe sleep guidelines; prior research has identified this concern among nurses and physicians as well (Hitchcock, 2013; Eisenberg et al., 2015; Colson et al., 2013). Future intervention
development related to this topic may benefit from the inclusion of organizational change theories. Such theories suggest that implementation of particular methods may increase the likelihood that organizations will adopt and maintain specific health policies (Butterfoss, Kegler, & Francisco, 2008). Many of the lactation consultants in this study expressed frustration over the infant safe sleep policies that were instituted in their organizations and the way those policies were implemented. Organizational change theories can facilitate understanding of the workplace policy issues highlighted in this chapter and provide guidance for future interventions.

A strength of this research is that it is the first known study to examine the infant safe sleep-related attitudes and behaviors of lactation consultants in the U.S., and it was conducted in a state with one of the highest infant mortality rates in the nation. The study was conducted with scientific rigor, including the use of an experienced focus group moderator, research assistants to gather field notes during each focus group, and coding by multiple analysts. The inter-coder reliability kappa, as calculated by the Coding Analysis Toolkit, was 0.74 (including overlap) (Qualitative Data Analysis Program (QDAP), University of Pittsburgh & QDAP-UMass, University of Massachusetts Amherst). In addition, the study included a member-checking session to ensure that the findings expressed from the primary investigator accurately reflected the focus group discussions. The participants of the member-checking session found the study conclusions to fit their views of what was discussed during the group sessions. Although data saturation was reached, this study had a small sample size and was conducted in a
small geographic region. This limits the data generalizability and the study findings may not reflect the broader population of lactation consultants or lactation consultants practicing in other geographic areas of the U.S. There was little racial or ethnic diversity among the study participants, however, this may be a reflection of the population of IBCLCs and CLCs in the state of Ohio. In future research, it may be worthwhile to explore the bedsharing advice that is provided by more racially and ethnically diverse lactation consultants or by lay health advisors not certified in lactation. Also, lactation consultants who volunteered to participate in this study may be different from other lactation consultants in meaningful ways. In addition, focus group participants may be hesitant to express their viewpoints if they differ from the opinions being expressed by the majority of participants. Although these limitations should be considered, careful attention to data collection and analysis procedures was employed to ensure the quality of the study findings.

Given that the risk for SIDS is highest during an infant’s first six months of life, lactation consultants are interacting with mothers of newborns at a critical time for infant sleep-related decision-making. As a source of education and support for mothers, lactation consultants may influence a mother’s decision to bedshare, so it is important to increase our understanding of what they are recommending and why. Mothers need to be aware of both the benefits of breastfeeding and the risks of bedsharing. However, this study has revealed that mothers of newborns may not be receiving messages that are consistent with the recommendations of the AAP and ODH. Although each side is no
doubt acting with good intent, the inconsistency places parents in a stressful and uncertain situation and may increase the risk of infant sleep-related deaths. This exploratory research was conducted with a novel but important population of healthcare professionals and can be used to guide future research, practice, and intervention development.
Chapter 4: Survey Methodology

STUDY DESIGN

This cross-sectional survey study of obstetric physicians and CNMs was conducted from October 2015 to February 2016. An overview of the study is in Figure 3.

Survey development

The survey instrument was developed by the lead researcher based on a review of the scientific literature, and with input from two infant safe sleep experts at ODH. With permission, the researcher included survey items from a previously administered survey on this topic (unpublished) developed by Rachel Moon and colleagues (R. Moon, personal correspondence, December 11, 2012).
The developed survey was reviewed for content validity by five members of the Ohio Injury Prevention Partnership’s (OIPP) infant safe sleep subcommittee prior to pretesting. The OIPP is a statewide coalition of professionals representing a broad range of agencies and organizations concerned with building Ohio’s capacity to address the prevention of injury. The group is coordinated by ODH with funds from the Centers for Disease Control and Prevention. Infant safe sleep is a priority area for the OIPP and the subcommittee includes more than 85 individuals working on this topic throughout the state.

All survey and recruitment materials were approved by the Institutional Review Board (IRB) at The Ohio State University (OSU) prior to pretesting. The survey was revised after pretesting and the final survey instrument used in the study was also approved by the OSU IRB.

Survey pretesting

In order to pretest the survey instrument, the survey was mailed to five obstetricians and six CNMs who work in nearby states. Pretest participants were identified through recommendations from members of the OIPP infant safe sleep subcommittee and the lead researcher’s professional networks. Information about the pretest opportunity was also emailed to several department chairs at medical schools and nursing schools in neighboring states with the request that they forward the
information to colleagues who might be willing to participate. Interested individuals were asked to contact the researcher to volunteer.

Pretest participants were mailed a copy of the survey and asked to complete it as though they were participating in the main study. They were asked to provide feedback on the survey instrument and to identify any difficulties they had in completing the items, particularly any questions that were unclear or confusing. Pretest participants were also asked to report how long the survey took to complete.

Three of the five physicians and all six of the CNMs who volunteered to participate completed the pretest survey and provided feedback on the survey draft. These participants were contacted by the researcher by telephone to discuss any identified areas of concern. Minor revisions to the survey were suggested and as a result several edits were made before the survey was finalized. Two of the recommended changes were grammatical in nature, two were made to improve clarity and incorporate more inclusive language, and one was made to add a response option to differentiate an individual’s lack of time from limited staff time as a potential barrier to providing safe sleep education. The pretest participants indicated that the survey took ten minutes to complete, on average. Pretest participants received a $25 Amazon gift card in appreciation of their time. Pretest recruitment and reviewer materials can be found in Appendices J-M.
Participants

The population of interest for this study was physicians and CNMs who provide prenatal healthcare to obstetric patients in the state of Ohio. Details regarding how potential participants were selected can be found in Chapter 5: Infant Safe Sleep: Knowledge, Attitudes, and Behaviors of Obstetric Physicians and Chapter 6: Infant Safe Sleep: Beliefs and Practices of Certified Nurse Midwives.

Data collection

Surveys were sent via first-class mail. Each initial survey mailing contained the following: a) a personalized cover letter on Ohio State University College of Public Health letterhead that included an IRB-approved statement of implied consent; b) the survey; c) a self-addressed stamped envelope (SASE) for returning the survey; and d) a $2 bill as a token of appreciation. Small cash incentives, and in particular $2 bills, have been shown to be effective in producing response rates among healthcare professionals that are similar to or greater than many alternatives such as larger sums of money upfront, lotteries for cash prizes, non-monetary tokens of appreciation (e.g., pens, pencils, candy), and no incentive (VanGeest, Johnson, & Welch, 2007; Doody et al., 2003; Tamayo-Sarver & Baker, 2004; Ulrich et al., 2005). In order to reduce unnecessary contact with participants and limit study expenses, each survey was labeled with a unique identification number so follow up correspondence could be directed only at those potential participants who had not responded. The list linking potential
participant identities and survey identification numbers was used only to facilitate survey mailings and was stored in a separate password protected electronic file from the de-identified survey response data.

Two weeks after the initial surveys were mailed, an email reminder was sent to each potential participant who had not returned their survey. This mixed-mode approach has been shown to help minimize survey error and reduce costs (Dillman, Smyth, & Christian, 2014). Email addresses were available for 99% of the physicians and nurses on the recruitment lists. If an email address was not available, or if the email was returned as undeliverable, a reminder postcard was sent to that potential participant.

A second mailing was sent to all non-responders four weeks after the initial mailing and included: a) a personalized reminder letter which included the statement of implied consent; b) the survey; and c) a SASE. Eight weeks after the initial survey mailing, a final request for responses was sent to all potential participants who had not returned their survey. The final contact was made via email or postcard in the manner described previously.

Mailings that were returned with address corrections or forwarding address information were resent to the new address as quickly as possible. The initial mailing dates were recorded and the dates of future contacts adjusted accordingly. When mailings were returned as undeliverable by the postal service or returned with a
message that the addressee was retired or no longer practicing, the potential participant was recorded as ineligible and excluded from future correspondence.

All participant correspondence materials can be found in Appendices N-Q.

MEASURES

The complete survey instruments used in this study can be found in Appendices R and S.

Eligibility Screening

The survey began with three eligibility screening questions. First, participants were asked “Is Ohio your primary practice location?” (yes or no). Participants who indicated that Ohio is not their primary location of employment were asked to stop and return the survey and were categorized as ineligible. Second, participants were asked to identify their medical specialty or occupation. For physicians, the options were obstetrics and/or gynecology, maternal and fetal medicine, and/or other, and multiple responses were permitted. For nurses, the choices were “LPN,” “RN,” “nurse practitioner,” “certified nurse midwife,” “clinical nurse specialist,” and/or “other.” Third, participants were asked “Approximately how many obstetric patients do you see in a typical clinic work day?” (fewer than 25, 25 or more, or I do not see obstetric patients). Survey respondents who indicated that they do not see obstetric patients were asked to stop and return the survey and were marked as ineligible and excluded from analysis.
Behaviors

Participants were asked a series of questions to document their current behaviors related to providing infant safe sleep education in the obstetric environment. The first survey question in this section asked which educational topics participants regularly discuss with obstetric patients. Options included bedsharing (parent and infant sharing a sleep surface), breastfeeding, car seat selection/use, childproofing/home safety, infant sleep environment (bedding, mattress, items in crib), infant sleep position, pacifier use, roomsharing (infant and parent(s) sleeping in the same room, but not sharing a sleep surface), routine immunizations for infants, and tobacco smoking cessation. The list of topics included eight items from the AAP’s most recent infant safe sleep recommendations, and two distractor items (car seat selection/use and childproofing/home safety). Respondents were asked to mark all that apply.

Next on the survey were three multiple-choice questions related to physician/CNM behavior:

1. “What do you recommend to obstetric patients regarding how they should place their infant for sleep?” (Response options: I do not make recommendations to patients on this topic, on the back, on the side, on the stomach, back or side, stomach or side, back or stomach, sleep position does not matter, or other);

2. “Which do you recommend to obstetric patients as acceptable places for an infant to sleep?” (Response options: I do not make recommendations to patients on this topic, in
a crib or bassinet, in a co-sleeper (baby sleep surface that can be placed in the parent’s bed or attached to the side), in the parent’s bed, no preference, or other); and

3. “Which do you recommend to obstetric patients as the best room for an infant to sleep in?” (Response options: I do not make recommendations to patients on this topic, in a separate room from the parent(s), in the same room as the parent(s), no preference, or other).

Participants were then asked “Do you discuss sudden infant death syndrome (SIDS) risk reduction and/or infant safe sleep with obstetric patients during the course of their prenatal care?” Responses were captured using a 4-point Likert scale with the following response options: “all of the time,” “most of the time,” “some of the time,” or “never.” Participants who replied “never” were asked to skip the next question.

Finally, current practices were identified by asking “How do you make SIDS/infant safe sleep recommendations to your obstetric patients?” Respondents were asked to respond yes or no to four statements suggesting ways that obstetric care physicians and CNMs might make infant safe sleep recommendations to patients:

- I initiate discussion of SIDS/infant safe sleep-related topics with my obstetric patients.
- I answer SIDS/infant safe sleep-related questions that my patients bring up.
- I provide printed materials to my obstetric patients about SIDS/infant safe sleep.
• I show a video to my obstetric patients about SIDS/infant safe sleep.

• Other: _________________________________________

Knowledge

Seven questions were used to assess participants’ knowledge of risk factors for SIDS/infant sleep-related death and the AAP’s current infant safe sleep recommendations (Table 3). Three multiple choice questions gauged their awareness of infant safe sleep recommendations related to infant sleep positioning and environment and four true or false questions evaluated respondents’ knowledge of risk factors for SIDS.
<table>
<thead>
<tr>
<th>Knowledge Questions</th>
<th>Response Options</th>
</tr>
</thead>
</table>
| According to current recommendations from the American Academy of Pediatrics (AAP), which of the following is/are the safest sleep position(s) for most infants? | - on the back  
- on the side  
- on the stomach  
- back or side is equally safe  
- stomach or side is equally safe  
- back or stomach is equally safe  
- sleep position doesn’t matter  
- I don’t know                                                                                                                                         |
| According to the AAP, which of the following environments are recommended for routine infant sleep?                                                                                                          | - armchair or recliner  
- bassinet or cradle  
- car seat  
- co-sleeper (baby sleep surface that can be placed in the parent’s bed or attached to the side)  
- couch or sofa  
- crib  
- crib with a drop side  
- infant swing  
- parent's bed  
- portable crib / play yard (Pack-and-Play or similar)  
- I don’t know                                                                                                                                 |
| According to the AAP, which of the following are acceptable items to include in an infant’s sleep environment?                                                                                              | - bumpers  
- comforter  
- fitted crib sheet  
- pacifier  
- pillow  
- quilt  
- sheepskin  
- sleep positioning device (i.e., wedge)  
- stuffed animal  
- I don’t know                                                                                                                                          |
| The risk of SIDS can be reduced.                                                                                                                                                                                    | - true  
- false  
- I don’t know                                                                                                                                                    |
| Prenatal and/or postnatal exposure to cigarette smoke increases SIDS risk.                                                                                                                                       | - true  
- false  
- I don’t know                                                                                                                                               |
| Infants are more likely to aspirate when placed on their back to sleep.                                                                                                                                            | - true  
- false  
- I don’t know                                                                                                                                               |
| It is safe for mothers and infants to bedshare if the infant is exclusively breastfed and the mother is not obese or under the influence of drugs or alcohol.                                                        | - true  
- false  
- I don’t know                                                                                                                                               |

Table 3. Survey questions—knowledge
Attitudes

Information about physician and CNM attitudes, outcome expectations, and self-efficacy related to providing SIDS/infant safe sleep education in the obstetric environment were gathered using five statements measured on a 5-point Likert scale with 1=“strongly agree,” 2=“agree,” 3=“neutral,” 4=“disagree,” and 5=“strongly disagree” (Table 4).

<table>
<thead>
<tr>
<th>Attitude Statement</th>
<th>Concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is important for obstetricians/nurses to discuss SIDS/infant safe sleep with prenatal patients.</td>
<td>attitude</td>
</tr>
<tr>
<td>2. SIDS/infant safe sleep education is an important part of prenatal care.</td>
<td>attitude</td>
</tr>
<tr>
<td>3. It is difficult to provide SIDS/infant safe sleep education in the prenatal clinic/office.</td>
<td>attitude</td>
</tr>
<tr>
<td>4. I can influence my patients’ decisions related to SIDS/infant safe sleep.</td>
<td>outcome expectation</td>
</tr>
<tr>
<td>5. I am confident in my ability to provide guidance to patients on SIDS/infant safe sleep.</td>
<td>self-efficacy</td>
</tr>
</tbody>
</table>

Table 4. Survey questions—attitudes

Barriers and Enabling/Reinforcing Factors

The survey also included items to explore perceived barriers and enabling/reinforcing factors related to providing infant safe sleep education in the obstetric environment. Information on barriers was collected by asking “Do you perceive any barriers to providing SIDS/infant safe sleep education in the prenatal...
Physicians and CNMs who responded “no” were asked to skip the next question. Those who responded “yes” were asked a follow up question: “What barriers do you perceive to providing SIDS/infant safe sleep education in the prenatal clinic/office?” Participants were then asked to mark “yes” or “no” in response to ten statements about potential barriers (Table 5). Enabling and reinforcing factors were identified by first asking “Are you interested in providing SIDS/infant safe sleep education to your obstetric patients?” Physicians and CNMs who responded “no” were asked to skip the next question. Individuals who marked “yes” were then asked “What would help or support you in providing SIDS/infant safe sleep education to your obstetric patients?” Participants were then asked to mark “yes” or “no” in response to nine statements describing possible enabling and reinforcing factors (Table 5).
<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Response Options</th>
</tr>
</thead>
</table>
| What barriers do you perceive to providing SIDS/infant safe sleep education in the prenatal clinic/office? | • I do not have enough time to address this topic with my patients.  
• Not enough resources (limited staff time, materials, etc.) to devote to this topic.  
• Inadequate reimbursement for prevention counseling.  
• Obstetricians and nurses are not educated on this topic.  
• Patients are not interested in receiving education on this topic.  
• The prenatal clinic/office is not the appropriate place for this education.  
• Most obstetric offices do not provide education on this topic.  
• SIDS/Infant safe sleep is not addressed in residency training for OB/GYNS / nursing degree programs.  
• Providing education on this topic is not the norm in my practice/clinic.  
• Disagreement with the AAP’s SIDS/infant safe sleep recommendations.  
• Other: ____________ |
| What would help or support you in providing SIDS/infant safe sleep education to your obstetric patients? | • Printed materials (handouts, brochures, etc.) to distribute to my patients.  
• Educational videos to share with my patients.  
• Increased reimbursement for prevention counseling.  
• SIDS/infant safe sleep education or training for myself.  
• SIDS/infant safe sleep education or training for other office staff.  
• Patient education reminders built into the electronic medical record.  
• Support from colleagues.  
• Endorsement by the American Congress of Obstetricians and Gynecologists (ACOG) / the Association of Women’s Health, Obstetric, and Neonatal Nurses (AWHONN) or other professional societies.  
• Office policies encouraging SIDS/infant safe sleep education.  
• Other: ____________ |

Table 5. Survey questions—barriers and enabling/reinforcing factors
Demographics

Participant’s demographic characteristics were the focus of the last section of the survey. Items included: a) the number of years they have been practicing as a physician or nurse (0-9 years, 10-19 years, 20-29 years, 30 years or more, or I am currently in residency training); b) ethnicity (Hispanic or Latino or not); c) race (White or Caucasian, Black or African American, Asian or Pacific Islander, American Indian or Alaska Native and/or Other); d) gender (female or male); and e) age (in years).

Additional information collected was: a) principal place of employment (Federally-Qualified Health Center (FQHC), hospital-based clinic, private practice, public health department clinic, or other); b) location of principal place of employment (rural, suburban, or urban); c) the racial and ethnic composition of their patient population (by estimated percent, using the categories listed above); d) the estimated percentage of their patients that have specific types of medical insurance (private, public, government/military, or not insured); and e) if participants had ever received formal training on SIDS/infant safe sleep, and if so, whether they have received such training within the past four years. The four year cut-off was chosen because the AAP released its revised policy statement on SIDS/infant safe sleep four years prior to the launch of the survey.
At the end of the survey there was space for the participant to write in any additional comments, a thank you message, and a reminder to return the completed survey in the postage-paid envelope.

DATA ANALYSIS

Prior to survey distribution, a survey codebook was created (Appendix A). Using the codes described in the codebook, the surveys were manually keyed into EpiData Entry (Version 3.1; Lauritsen & Bruus, 2008) by the lead researcher and trained graduate student assistants who were part of the study team. The double entry method was used, with the data from each survey being entered twice and then compared in EpiData to identify and correct any discrepancies. Comments provided by participants that were not direct responses to the survey questions (e.g., remarks written in the box provided for additional comments) were entered into a Microsoft Excel (Microsoft Office Professional Plus 2013, version 15.0.4815.1001) spreadsheet verbatim. Data from EpiData were exported into IBM SPSS Statistics software (version 21) for analysis.

All returned surveys that had at least 80% of the questions completed were included in the data analysis. Missing data for individual questions and items with inappropriate responses (i.e., two responses marked when only one was allowed) were coded as item non-response. Item non-response/missing data was addressed by using pairwise deletion for most analyses when the missing data appeared to be missing at
random, and when the percentage of missing data was low. Using pairwise deletion, cases with missing values are omitted on an analysis-by-analysis basis when the variables being used in a particular analysis have item non-response (Polit, 2010). For logistic regression analysis, listwise deletion was used, meaning that the entire survey was excluded if there was missing data for any of the variables included in the model. Survey response rates were calculated according to the guidelines developed by the American Association for Public Opinion (AAPOR) (AAPOR, 2015).

Descriptive statistics, including demographic and professional characteristics, are reported. Categorical and binary results are described using frequencies and percentages and continuous variables are reported using the mean and standard deviation. To assess physician and CNM knowledge, each of the seven knowledge questions was scored dichotomously as either “correct” or “incorrect,” based on the desired responses detailed in the codebook. Responses of “I don’t know” were scored as incorrect. For the multiple choice question on infant sleep environments (survey question number 11), participants were asked to “mark all that apply.” If respondents identified at least one of the three recommended sleep environments included on the list and did not choose any unsafe sleep environments, the question was scored as correct. Similarly, for the question on safe items to include in an infant’s sleep environment (survey question number 12), the question was marked correct if the participant did not select any unsafe items as being acceptable, even if they did not correctly identify “fitted crib sheet” and “pacifier.” The number of knowledge questions
answered correctly by each physician or CNM were totaled to create a knowledge score. Questions pertaining to healthcare providers’ attitudes and behaviors related to providing infant safe sleep education in the prenatal care environment were analyzed using descriptive statistics as well. Behavior questions asking participants about the infant safe sleep-related recommendations they make to their patients were scored as “recommended” or “not recommended,” based on whether the advice they give is in agreement with the recommendations of the AAP. Responses to questions regarding barriers to providing SIDS/infant safe sleep education and enabling/reinforcing factors are also described.

Logistic regression analyses were conducted to determine if prenatal physicians’ and CNMs knowledge or attitudes were associated with making infant safe sleep recommendations to obstetric patients. The dependent (outcome) variable of interest was participants’ responses to the behavior question “Do you discuss sudden infant death syndrome (SIDS) risk reduction and/or infant safe sleep with obstetric patients during the course of their prenatal care?” Because the clinical outcome of interest for the regression analyses was whether or not physicians and CNMs discuss SIDS/infant safe sleep with patients and ordinal logistic regression results are difficult to interpret and apply to practice, responses were dichotomized with “all of the time,” “most of the time,” and “some of the time” combined into one group and “never” used as the comparison group.
The independent (predictor) variables of interest for these analyses were participant responses to the survey questions related to knowledge and attitudes. The number of correct responses to the knowledge questions was determined for each survey participant. Respondents who answered at least six of the seven questions correctly were categorized as having sufficient knowledge of the topic. Participants who gave incorrect or “I don’t know” responses to two or more questions were categorized as having insufficient knowledge related to SIDS/infant safe sleep. For the logistic regression analysis, the dichotomized variable of sufficient/insufficient knowledge was used.

A dichotomized independent variable based on responses to the attitude questions was also created for use in the regression analysis. The survey included five attitude statements, each presented with a 5-point Likert scale of “strongly agree,” “agree,” “neutral,” “disagree,” and “strongly disagree.” Responses from each participant were scored with one point given for each “strongly agree” or “agree” response and zero points for “neutral,” “disagree,” or “strongly disagree.” (The statement “It is difficult to provide SIDS/infant safe sleep education in the prenatal clinic/office” was reverse coded, with “strongly disagree” and “disagree” responses receiving one point and the remaining responses receiving zero points.) Positive attitudes about infant safe sleep education in the obstetric environment are considered desirable for this research study. For the purposes of this analysis, participants who received at least four out of five possible points were categorized as having positive attitudes about infant safe sleep.
education and those receiving less than four points were categorized as having negative attitudes. This dichotomized variable (positive/negative attitudes) was used in the regression analysis.

Potential demographic covariates were also considered based on plausible theoretical or empirical evidence that they may be associated with provider decisions on whether to make infant safe sleep recommendations or provider knowledge and attitudes related to infant safe sleep. Covariates considered for inclusion in the model included participant age, gender, race and ethnicity, prior SIDS/infant safe sleep training, patient race, and patient insurance status. These independent variables were operationalized as follows: age (in years), gender (female or male), race and ethnicity (Hispanic, Non-Hispanic White, and Non-Hispanic Non-White), SIDS training (yes or no), patient race (percentage of patients who are Black), and patient insurance status (total percentage of patients with public insurance or no insurance).

Potential multicollinearity among the independent variables was tested prior to running the regression analysis. Univariate analyses were also conducted individually with each of the independent variables described above and the outcome variable. Variables that were determined to be associated with discussing SIDS/infant safe sleep with obstetric patients at a statistically significant level (p value < 0.20) were included in the initial model, along with those variables that were considered likely to be important based on the findings of prior research studies.
Chapter 5: Infant Safe Sleep: Knowledge, Attitudes, and Behaviors of Obstetric Physicians

ABSTRACT

Objectives: Little is known about the SIDS and infant safe sleep-related knowledge, attitudes, and behaviors of obstetric physicians, even though they are a trusted and influential resource for expectant mothers as they plan for their infant’s arrival. The purpose of this study was to address this gap in the research by exploring the perspectives of obstetric physicians in one Midwestern state, while also gauging potential barriers and enabling/reinforcing factors associated with providing SIDS/infant safe sleep education in the prenatal care environment.

Methods: The target population for this cross-sectional survey study was obstetricians and other physicians who provide prenatal healthcare to women in Ohio. Surveys were sent to a census of all licensed physicians included in the registry of the State Medical Board of Ohio with “obstetrics,” “obstetrics and gynecology,” or “maternal and fetal medicine” as their first area of specialty (n=1,771).
Results: The response rate for this survey was 30%. Of the 418 eligible physicians who completed the survey, most were relatively knowledgeable about the infant safe sleep recommendations endorsed by the American Academy of Pediatrics related to infant sleep positioning and environment. However, when asked whether it was important for obstetric physicians to discuss SIDS/infant safe sleep with prenatal patients, participants were divided, with 55% indicating that they “agree” or “strongly agree.” The majority (70%) perceived that there were barriers to providing infant safe sleep education in the obstetric office environment, but most participants (82%) indicated that they were interested in providing SIDS/infant safe sleep education to their patients. Physicians’ knowledge and attitudes were found to be significant predictors of whether they discuss SIDS risk reduction and/or infant safe sleep with prenatal patients.

Conclusions: Although most physicians were generally knowledgeable about infant safe sleep recommendations, improving attitudes on this topic, removing barriers to providing infant safe sleep in the prenatal care healthcare environment, and supporting physicians’ desires to provide this education to their patients can help to ensure that women are receiving consistent safe sleep messaging throughout the prenatal period.
BACKGROUND

Ohio is located in the Midwestern United States (U.S.) and is the 7th most populous state in the nation. Ohio has the 3rd highest African American infant mortality rate in the U.S. and is ranked 11th for its overall infant mortality rate (CDC NCHS, 2016). Although the U.S. experienced a 13% decline in infant mortality rates between 2005 and 2012, rates in Ohio remained constant and have only begun to decrease very recently (Mathews et al., 2015; ODH, 2013; ODH, 2015). In the U.S., sudden infant death syndrome (SIDS) is the leading cause of mortality among infants one month to one year of age (CDC NCHS, 2015). There were 1,545 infant deaths attributed to SIDS in the U.S. in 2014 (CDC, 2015). Over the past two decades the U.S. has seen an increase in non-SIDS sleep-related sudden unexpected infant deaths (SUID). In 2014, the rate of SUID deaths attributed to accidental suffocation and strangulation in bed reached a high of 21.4 deaths per 100,000 live births (CDC, 2016b). In the U.S., non-Hispanic African American and American Indian/Alaskan Native infants have infant sleep-related death rates two to three times higher than non-Hispanic Caucasian infants (AAP, 2011b; Hauck et al., 2002; Moon & Fu, 2012). Nearly half (46%) of all deaths among infants one month to one year of age in Ohio are sleep-related and approximately 56% of these deaths occur in adult beds or other unsafe sleep locations such as couches or chairs (ODH & Ohio Children’s Trust Fund, 2015). Half of Ohio’s infant sleep-related deaths occur while an infant is sharing a sleep surface with another person. (ODH & Ohio Children’s Trust Fund, 2015).
In 2011, the American Academy of Pediatrics (AAP) released a revised policy statement on SIDS and other causes of sleep-related infant death to focus greater attention on the importance of safe sleep environments for infants (AAP, 2011a; AAP, 2011b). Among the recommendations for infants are the following: supine only sleep positioning; firm sleep surface; avoidance of soft or loose objects and bedding in the sleep environment, including crib bumpers; infants sleeping in the same room with parents, but not in the same bed (roomsharing without bedsharing); breastfeeding; routine immunizations; avoidance of overheating; pacifier use at naptime and bedtime (after breastfeeding is established); and avoidance of exposure to tobacco smoke. Pregnant women are advised to receive regular prenatal care and to abstain from smoking and exposure to secondhand tobacco smoke both during pregnancy and after the infant’s birth (AAP, 2011a; AAP, 2011b). Alcohol and illicit drugs should also be avoided during pregnancy and after the birth of the infant. Exposure to alcohol or illicit drugs in utero is associated with an increased risk of SIDS (AAP, 2011a; AAP, 2011b). Some studies have also found an increased risk of sleep-related infant death among infants who bedshare with an adult who has been drinking alcohol (Carpenter et al., 2004; James, Klenka, & Manning, 2003).

Physicians have an important role when it comes to educating parents and caregivers about the importance of adhering to infant safe sleep recommendations. Prior studies have demonstrated that healthcare professionals, including physicians, are important sources of infant safe sleep information and can influence their patients’
behaviors related to this topic (Zachry & Kitzmann, 2010; Gelfer et al., 2013; Vernacchio et al., 2003; Willinger et al., 2003). One study of 671 mothers conducted at Women, Infants, and Children (WIC) programs found that 60% of those interviewed said they trusted physicians and nurses most when receiving advice on infant safe sleep (Colson et al., 2006). A national survey of pediatricians and family physicians in the U.S. (n=783) found that 61% of pediatricians and 46% of family physicians reported discussing infant safe sleep positioning with families at every well child visit (when age appropriate) (Moon et al., 2007). However, another study involving the parents of 100 infants in Kentucky found that low income African American mothers may be less likely to receive infant safe sleep education from their physician than higher-income Caucasian women, but that they were as likely to follow the advice when it was provided (Ray et al., 2007).

Despite the increased attention and resources that have been directed toward SIDS and sleep-related SUID prevention in recent years, both in Ohio and nationally, rarely have prenatal care providers been included in these efforts. Obstetricians and other physicians who provide prenatal care to women are frequently an expectant mother’s primary professional source of information about her infant and a trusted resource as she plans for the baby’s arrival. However, little is known about infant safe sleep-related knowledge, attitudes and behaviors of these healthcare providers. The purpose of this study is to address gaps in research related to this leading cause of infant death by exploring the perspectives and behaviors of obstetric physicians in one Midwestern state. The study will also identify potential individual and environmental
barriers to providing SIDS/infant safe sleep-related education to patients in the obstetric clinic environment as well as key factors that could be addressed to improve the delivery of prenatal infant safe sleep education.

METHODS

A detailed description of survey measures and analyses can be found in Chapter 4: Survey Methodology.

Survey Participants

The population of interest for this study was obstetricians and other physicians who provide prenatal healthcare to obstetric patients in the state of Ohio. All licensed physicians who were included in the registry of the State Medical Board of Ohio (SMBO) in June 2015 with “obstetrics,” “obstetrics and gynecology,” “gynecology,” or “maternal and fetal medicine” listed as their first area of specialty were identified as potential study participants. The SMBO records are updated monthly and are believed to be the most comprehensive and up-to-date contact list publicly available for the population of interest. From the list of potential participants (N=1774), two physicians with mailing addresses outside of the U.S. were excluded, as was one physician with an incomplete mailing address (only street address provided). Four hundred and five physicians with mailing addresses listed as non-Ohio U.S. states were kept on the list because many of the addresses were in states immediately adjacent to Ohio and it was possible that the
physician’s mailing address represented their home address, rather than their primary location of employment. Because published response rates for physicians have been as low as 20-25% in recent years, a decision was made to send the survey to a census of all potential participants, rather than selecting a sample (Eron et al., 2011; Moon et al., 2007; VanGeest, Johnson, & Welch, 2007).

Eligibility criteria for the study included: a) inclusion on the SMBO registry with a specialty area of interest for this study b) being a physician who provides medical care to obstetric patients; and c) practicing medicine primarily in the state of Ohio. Eligibility for the study was determined by responses to the screening questions included at the beginning of the survey.

RESULTS

Surveys were mailed to each potential participant on the recruitment list (n=1771) and a total of 783 individuals responded. Of the 783 responses, 418 completed surveys were returned by eligible participants and are included in the analysis. Returned surveys submitted by respondents who did not meet the eligibility criteria (n=364) were excluded from the response rate calculation (192 reported Ohio is not their primary practice location; 139 did not see obstetric (OB) patients; and 33 were retired). One survey was returned with no responses marked. In addition, 41 surveys were returned by the U.S. Postal Service as undeliverable and 947 potential participants did not return
a survey. The response rate, calculated according to the guidelines published by the AAPOR, was 30% \(\frac{418}{418+1+41+947}\) (AAPOR, 2015) (Figure 4).

Figure 4. Survey participant flow chart
Participant characteristics

Physician participants had a mean age of 50.2 years (SD=11.7, range 28-82 years) (Table 6). Slightly more females than males participated (53% vs. 47%, respectively). Most participants did not identify as being Hispanic (97%) and reported their race as White (82%). Nearly all participants identified obstetrics as an area of medical specialty (91%). Slightly more than three-quarters (78%) of respondents reported seeing fewer than 25 obstetric patients in a typical clinic work day. Participants were split nearly equally based on years in practice, with 49% reporting 0-19 years of experience and 51% having 20 years of more. More than one-half of physicians in the survey reported that their principal place of employment was private practice (56%) and slightly more than one-third (35%) worked primarily in hospital-based clinics. Most reported that their location of employment was in a suburban area (58%). When asked to describe their patient population, on average participants estimated that 26% were Black (SD=19) and 9% were Hispanic (SD=9). Most participants (69%, n=289) estimated that at least 15% of their patient population was Black. When asked to describe the type of medical insurance held by their patients, 36% of respondents (n=152) estimated that 50% or more of their patients had public insurance. The mean percentage of patients estimated by the participants to have no insurance was 4% (SD=9). Only 13% (n=48) of participants indicated that they had ever received formal training on SIDS/infant safe sleep. Of those participants who had received training, most (65%, n=28) reported that they had been educated in the time since the AAP’s revised policy statement was released in 2011.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>221</td>
<td>53.1</td>
</tr>
<tr>
<td>Male</td>
<td>195</td>
<td>46.9</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>13</td>
<td>3.2</td>
</tr>
<tr>
<td>non-Hispanic</td>
<td>388</td>
<td>96.8</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>339</td>
<td>82.1</td>
</tr>
<tr>
<td>Black</td>
<td>29</td>
<td>7.0</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>36</td>
<td>8.7</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>2.4</td>
</tr>
<tr>
<td>Medical Specialty—Physicians</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstetrics</td>
<td>381</td>
<td>91.1</td>
</tr>
<tr>
<td>Maternal and fetal medicine</td>
<td>44</td>
<td>10.5</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>2.4</td>
</tr>
<tr>
<td>Number of obstetric patients seen on a typical clinic day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fewer than 25</td>
<td>325</td>
<td>77.8</td>
</tr>
<tr>
<td>25 or more</td>
<td>93</td>
<td>22.2</td>
</tr>
<tr>
<td>Years in practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-9 years</td>
<td>102</td>
<td>24.7</td>
</tr>
<tr>
<td>10-19 years</td>
<td>102</td>
<td>24.7</td>
</tr>
<tr>
<td>20-29 years</td>
<td>132</td>
<td>32.0</td>
</tr>
<tr>
<td>30 years or more</td>
<td>77</td>
<td>18.6</td>
</tr>
<tr>
<td>Principal place of employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federally Qualified Health Center</td>
<td>9</td>
<td>2.2</td>
</tr>
<tr>
<td>Hospital-based clinic</td>
<td>145</td>
<td>34.9</td>
</tr>
<tr>
<td>Private practice</td>
<td>232</td>
<td>55.8</td>
</tr>
<tr>
<td>Other</td>
<td>30</td>
<td>7.2</td>
</tr>
<tr>
<td>Employer location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>41</td>
<td>10.0</td>
</tr>
<tr>
<td>Suburban</td>
<td>240</td>
<td>58.3</td>
</tr>
<tr>
<td>Urban</td>
<td>131</td>
<td>31.8</td>
</tr>
</tbody>
</table>

Note: Percentages may not total 100% due to rounding, multiple responses, or item non-response.
Item non-response: a=2, b=17, c=5, d=5, e=2, f=6

Table 6. Demographic characteristics of obstetric physicians (n=418)
Behavior

When asked to identify from a given list which topics they regularly discuss with obstetric patients, an overwhelming majority of physicians chose tobacco smoking cessation and breastfeeding (96% (n=402) and 93% (n=390), respectively). For infant safe sleep-related topics including infant sleep position, environment, and location, the percentages were much lower and ranged from 12-28% (n=48-116). In response to the next question about what recommendations they make to obstetric patients related to infant sleep positioning, 89% (n=253) of participants who indicated that they provide guidance on this topic reported recommending that infants be placed on their back. Many participants indicated that they do not make recommendations related to infant sleep environment (42%, n=174). However, among participants who reported that they do make recommendations on this topic, 97% (n=236) were able to identify a crib or bassinet as acceptable places for infants to sleep. Some participants (19%, n=47) reported recommending co-sleepers, and a very small proportion (1%, n=2) advised that infants sleep in the parent’s bed. Participants were also asked which room they recommend infants sleep in. Sixty-two percent (n=256) responded that they do not make recommendations on this topic, 16% (n=68) indicated in a separate room from the parent(s), and 7% (n=28) suggested that infants sleep in the same room as the parent(s).

When asked if they discuss SIDS and/or infant safe sleep with obstetric patients during the course of their prenatal care, participants responded as follows: “all of the time” (7%, n=29), “most of the time” (14%, n=60), “some of the time” (41%, n=173) and
“never” (37%, n=155). Physicians who gave a response other than “never” were then asked which methods they use to make SIDS/infant safe sleep recommendations to their patients. Among these participants, 47% (n=113) said they initiate discussions with their patients, 97% (n=245) answer questions that their patients bring up, 32% (n=76) provide printed materials on the topic, and 2% (n=5) show a video.

**Knowledge**

When asked to identify the safest sleep position for most infants, as recommended by the AAP, 88% of physicians correctly chose “on the back” (Table 7). When asked which environments are recommended by the AAP for routine infant sleep, 12% of physicians correctly selected all three of the appropriate environments from the list provided (bassinet or cradle, crib, and portable crib), without including any unsafe environments in their selections. However, 66% were able to identify at least one safe infant sleep environment without choosing any options designated by the AAP as unsafe. Sixty percent of participants correctly responded to a question about acceptable items to allow in an infant’s sleep environment by not selecting any unsafe items from the list provided as being acceptable to include in an infant’s crib.

The final four knowledge questions were presented in a true or false response format. Most participants correctly agreed that the risk of SIDS can be reduced (94%) and a similar percentage (93%) knew that exposure to cigarette smoke increases SIDS risk. When presented with the statement “Infants are more likely to aspirate when
Knowledge Questions | n | %
--- | --- | ---
According to current recommendations from the AAP, which of the following is/are the safest sleep positions(s) for most infants?<sup>b</sup>
On the back<sup>a</sup> | 364 | 87.7
Back or side is equally safe | 21 | 5.1
I don't know | 15 | 3.6
Other | 15 | 3.6

According to the AAP, which of the following environments are recommended for routine infant sleep? (Mark all that apply)
Crib<sup>a</sup> | 316 | 75.6
Bassinet or cradle<sup>a</sup> | 219 | 52.4
Portable crib / play yard<sup>a</sup> | 114 | 27.3
Co-sleeper | 48 | 11.5
Crib with a drop side | 25 | 6.0
Car seat | 22 | 5.3
Infant swing | 8 | 1.9
Armchair or recliner | 0 | N/A
Parent's bed | 0 | N/A
I don't know | 52 | 12.4

According to the AAP, which of the following are acceptable items to include in an infant's sleep environment? (Mark all that apply)
Fitted crib sheet<sup>a</sup> | 299 | 71.5
Pacifier<sup>a</sup> | 112 | 26.8
Sleep positioning device (i.e., wedge) | 48 | 11.5
Bumpers | 41 | 9.8
Quilt | 17 | 4.1
Comforter | 14 | 3.3
Sheepskin | 1 | 0.2
Stuffed animal | 1 | 0.2
Pillow | 0 | N/A
I don't know | 62 | 14.8

True or False (Correct Answer is Listed):

<table>
<thead>
<tr>
<th></th>
<th>Correct, n(%)</th>
<th>Incorrect, n(%)</th>
</tr>
</thead>
</table>
The risk of SIDS can be reduced. (True)<sup>c</sup> | 389 (94.2) | 24 (5.8) |
Prenatal and/or postnatal exposure to cigarette smoke increases SIDS risk. (True)<sup>d</sup> | 385 (93.0) | 29 (7.0) |
Infants are more likely to aspirate when placed on their back to sleep. (False)<sup>e</sup> | 346 (84.2) | 65 (15.8) |
It is safe for mothers and infants to bedshare if the infant is exclusively breastfed and the mother is not obese or under the influence of drugs or alcohol. (False)<sup>f</sup> | 347 (84.0) | 66 (16.0) |

<sup>a</sup>=correct response; Note: Percentages may not add up to 100% due to rounding and item non-response. Item non-response: b=3, c=5, d=4, e=7, f=5

Table 7. Physicians’ infant safe sleep knowledge
placed on their backs to sleep,” 16% of participant incorrectly marked “true” or responded “I don’t know.” And 16% of physicians incorrectly indicated that it is safe for mothers and infants to bedshare if the infant is exclusively breastfed and the mother is not obese or under the influence of drugs or alcohol or responded “I don’t know” to this question. A knowledge score was calculated for each participant by summing the total number of correct responses. The mean knowledge score was 5.7 (range 0-7, SD=1.4) and 64% of participants had a score of 6 or greater.

Attitudes

Participants were asked to answer five attitude questions with responses on a five point Likert scale. Slightly more than half of participants (55%) indicated that they agreed or strongly agreed that it is important for obstetricians to discuss SIDS/infant safe sleep with prenatal patients (Table 8). A similar percentage (54%) agreed or strongly agreed that SIDS/infant safe sleep education is an important part of prenatal care. When presented with the following statement: “It is difficult to provide SIDS/infant safe sleep education in the prenatal clinic/office,” 46% of participants agreed. Most physicians (66%) expressed positive outcome expectations about their ability to influence patients’ decisions related to SIDS/infants safe sleep and approximately one-half (52%) indicated their self-efficacy, or confidence in their ability, by agreeing or strongly agreeing with the statement “I am confident in my ability to provide guidance to patients on SIDS/infant safe sleep.” For each of the five attitude questions, 25-34% of participants selected “neutral” as their response. An attitude score was calculated for
each respondent as described previously. The mean attitude score was 2.6 (range 0-5, SD=1.6) and 33% of participants had an attitude score of 4 or greater, with higher scores indicating a more positive attitude about providing infant safe sleep education in the obstetric environment.

<table>
<thead>
<tr>
<th>Attitude Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important for obstetricians to discuss SIDS/infant safe sleep with prenatal patients. a</td>
<td>68 (16.5)</td>
<td>159 (38.5)</td>
<td>142 (34.3)</td>
<td>39 (9.4)</td>
<td>5 (1.2)</td>
</tr>
<tr>
<td>SIDS/infant safe sleep education is an important part of prenatal care. b</td>
<td>76 (18.4)</td>
<td>149 (36.0)</td>
<td>141 (34.1)</td>
<td>41 (10.0)</td>
<td>7 (1.7)</td>
</tr>
<tr>
<td>It is difficult to provide SIDS/infant safe sleep education in the prenatal clinic/office. b</td>
<td>43 (10.4)</td>
<td>149 (36.0)</td>
<td>104 (25.1)</td>
<td>109 (26.3)</td>
<td>9 (2.2)</td>
</tr>
<tr>
<td>I can influence my patients' decisions related to SIDS/infant safe sleep. b</td>
<td>47 (11.4)</td>
<td>227 (54.8)</td>
<td>112 (27.1)</td>
<td>25 (6.0)</td>
<td>3 (0.7)</td>
</tr>
<tr>
<td>I am confident in my ability to provide guidance to patients on SIDS/infant safe sleep. b</td>
<td>48 (11.6)</td>
<td>169 (40.8)</td>
<td>135 (32.6)</td>
<td>55 (13.3)</td>
<td>8 (1.9)</td>
</tr>
</tbody>
</table>

Note: n (%) provided for each statement; percentage totals may not add up to 100% due to rounding and item non-response. Item non-response: a=5, b=4

Table 8. Physicians’ infant safe sleep attitudes
Barriers and Enabling/Reinforcing Factors

The majority of participants indicated that they perceived barriers to providing SIDS/infant safe sleep education in the prenatal clinic/office (70%, n=291). Participants who indicated that barriers exist were asked to respond “yes” or “no” to a list potential obstacles. The most commonly identified barriers were lack of resources (81%), not enough time to address the topic (80%), the perception that most obstetric offices do not provide education on this topic (79%), lack of training in residency programs (74%), and the belief that providing education on this topic is not the norm in the participant’s practice/clinic (71%) (Table 9).

<table>
<thead>
<tr>
<th>Identified Barriersa</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not enough time</td>
<td>232</td>
<td>79.7</td>
</tr>
<tr>
<td>Not enough resources (limited staff time, materials, etc.)</td>
<td>236</td>
<td>81.1</td>
</tr>
<tr>
<td>Inadequate reimbursement</td>
<td>168</td>
<td>57.7</td>
</tr>
<tr>
<td>Obstetricians and nurses are not educated on this topic</td>
<td>174</td>
<td>59.8</td>
</tr>
<tr>
<td>Patients are not interested in education on this topic</td>
<td>47</td>
<td>16.2</td>
</tr>
<tr>
<td>Prenatal clinic not the appropriate place for this education</td>
<td>80</td>
<td>27.5</td>
</tr>
<tr>
<td>Most obstetric offices do not educate on this topic</td>
<td>230</td>
<td>79.0</td>
</tr>
<tr>
<td>SIDS/infant safe sleep in not addressed in residency training</td>
<td>214</td>
<td>73.5</td>
</tr>
<tr>
<td>Not the norm in my practice/office</td>
<td>206</td>
<td>70.8</td>
</tr>
<tr>
<td>Disagreement with the AAP’s recommendations</td>
<td>17</td>
<td>5.8</td>
</tr>
<tr>
<td>Other--Education is/should be provided by pediatrician</td>
<td>6</td>
<td>2.1</td>
</tr>
</tbody>
</table>

a=Among participants who indicated that there were barriers (n=291)

Table 9. Physicians’ barriers to providing infant safe sleep education in the prenatal environment
Most participants (82%) indicated that they were interested in providing SIDS/infant safe sleep education to their obstetric patients. Among this subgroup, the following forms of help or support were identified as being desirable: printed materials to distribute to patients (95%), education or training for office staff (77%), endorsement by ACOG or other professional societies (76%), patient education reminders built into the electronic medical record (67%), increased reimbursement for prevention counseling (64%) and office policies encouraging SIDS/infant safe sleep education (64%) (Table 10).

<table>
<thead>
<tr>
<th>Identified Enabling/Reinforcing Factors</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed materials</td>
<td>322</td>
<td>94.7</td>
</tr>
<tr>
<td>Educational videos</td>
<td>126</td>
<td>37.1</td>
</tr>
<tr>
<td>Increased reimbursement</td>
<td>218</td>
<td>64.1</td>
</tr>
<tr>
<td>Infant safe sleep education/training for myself</td>
<td>203</td>
<td>59.7</td>
</tr>
<tr>
<td>Infant safe sleep education/training for other staff</td>
<td>262</td>
<td>77.1</td>
</tr>
<tr>
<td>Reminders built into the electronic medical record</td>
<td>229</td>
<td>67.4</td>
</tr>
<tr>
<td>Support from colleagues</td>
<td>191</td>
<td>56.2</td>
</tr>
<tr>
<td>Endorsement by ACOG or other professional societies</td>
<td>258</td>
<td>75.9</td>
</tr>
<tr>
<td>Office policies encouraging infant safe sleep education</td>
<td>218</td>
<td>64.1</td>
</tr>
</tbody>
</table>

*Identified Enabling/Reinforcing Factors* refers to the factors that enable or reinforce the provision of SIDS/infant safe sleep education. The table includes the number of participants (n=340) who identified these factors as being desirable.

Table 10. Physicians’ enabling and reinforcing factors related to providing infant safe sleep education in the prenatal environment
Regression Analysis

Logistic regression was conducted to determine if physician knowledge or attitudes were predictive of discussing SIDS risk reduction and/or infant safe sleep with obstetric patients as part of their prenatal care. All predictor variables were entered into the model simultaneously. Along with the predictor variable of knowledge or attitudes, five covariates were included in each model: physician age, gender, race and ethnicity, SIDS training, and percentage of patients who are Black. Patient insurance status was not determined to be significant in the univariate analysis (p>0.20) and was excluded from the model. Provider age and race/ethnicity were also insignificant in the univariate analyses but were included in the regression models based on their theoretical importance and significance in prior studies. The outcomes of all univariate analyses can be found in Table 11.
Table 11. Univariate analyses for physician predictors of discussing SIDS

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>P-value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.63</td>
<td>0.21</td>
<td>&lt;0.001</td>
<td>1.88</td>
<td>1.23</td>
<td>2.85</td>
</tr>
<tr>
<td>Attitudes&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.94</td>
<td>0.29</td>
<td>&lt;0.001</td>
<td>6.96</td>
<td>3.98</td>
<td>12.19</td>
</tr>
<tr>
<td>Age</td>
<td>0.01</td>
<td>0.01</td>
<td>0.58</td>
<td>1.01</td>
<td>0.99</td>
<td>1.02</td>
</tr>
<tr>
<td>Gender&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.39</td>
<td>0.20</td>
<td>0.05</td>
<td>1.48</td>
<td>0.99</td>
<td>2.22</td>
</tr>
<tr>
<td>Race and Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-Hispanic, White&lt;sup&gt;d&lt;/sup&gt;</td>
<td>-0.12</td>
<td>0.58</td>
<td>0.84</td>
<td>0.89</td>
<td>0.28</td>
<td>2.77</td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-Hispanic, non-White</td>
<td>-0.28</td>
<td>0.27</td>
<td>0.30</td>
<td>0.76</td>
<td>0.45</td>
<td>1.28</td>
</tr>
<tr>
<td>SIDS Training&lt;sup&gt;e&lt;/sup&gt;</td>
<td>1.37</td>
<td>0.42</td>
<td>&lt;0.001</td>
<td>3.94</td>
<td>1.72</td>
<td>9.05</td>
</tr>
<tr>
<td>% Patients Black</td>
<td>0.01</td>
<td>0.01</td>
<td>0.16</td>
<td>1.01</td>
<td>1.00</td>
<td>1.02</td>
</tr>
<tr>
<td>% Patients Public/No Insurance</td>
<td>0.00</td>
<td>0.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0.99</td>
<td>1.01</td>
</tr>
</tbody>
</table>

a: 1=knowledge score >= 6 (more knowledge); 0=knowledge score <6 (less knowledge)
b: 1=attitude score >=4 (positive); attitude score <4 (negative)
c: 1=female; 0=male
d: reference
e: 1=have received training on SIDS/infant safe sleep; 0=have not received training

In the logistic regression knowledge analysis, participants with sufficient knowledge of SIDS/infant safe sleep had 1.9 times the odds of discussing SIDS with patients compared to physicians with insufficient knowledge, controlling for physician age, gender, race and ethnicity, SIDS training, and the percent of patients who are Black (Table 12). Knowledge, age, gender, and SIDS training were all statistically significant predictors of physicians’ likelihood to discuss SIDS and/or infant safe sleep with patients. Older physicians, females, and those who reported having received formal SIDS training in the past were more likely than younger physicians, males, and those with no SIDS
training to discuss SIDS with patients. Physician race and ethnicity and the percent of patients who are Black were not found to be statistically significant in this model.

Participants with positive attitudes about providing SIDS/infant safe sleep education to prenatal patients had 7.2 times the odds of discussing the topic with patients when compared to participants with negative attitudes, controlling for all other variables in the model (Table 13). All independent variables in the model were statistically significant for predicting physician discussion except physician race and ethnicity and the percent of patients who are Black. As with the previous model, older physicians, females, and those with formal SIDS training were more likely to discuss SIDS with patients than younger physicians, males, and those without SIDS training.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>P-value</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.65</td>
<td>0.25</td>
<td>0.01</td>
<td>1.92</td>
<td>1.18 – 3.12</td>
</tr>
<tr>
<td>Age</td>
<td>0.03</td>
<td>0.01</td>
<td>0.02</td>
<td>1.03</td>
<td>1.00 – 1.05</td>
</tr>
<tr>
<td>Gender&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.66</td>
<td>0.27</td>
<td>0.01</td>
<td>1.94</td>
<td>1.15 – 3.29</td>
</tr>
<tr>
<td>Race and Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-Hispanic, White&lt;sup&gt;c&lt;/sup&gt;</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.19</td>
<td>0.68</td>
<td>0.78</td>
<td>1.21</td>
<td>0.32 – 4.62</td>
</tr>
<tr>
<td>non-Hispanic, non-White</td>
<td>-0.23</td>
<td>0.31</td>
<td>0.46</td>
<td>0.79</td>
<td>0.43 – 1.46</td>
</tr>
<tr>
<td>SIDS Training&lt;sup&gt;d&lt;/sup&gt;</td>
<td>1.12</td>
<td>0.44</td>
<td>0.01</td>
<td>3.06</td>
<td>1.30 – 7.20</td>
</tr>
<tr>
<td>% Patients Black</td>
<td>0.01</td>
<td>0.01</td>
<td>0.31</td>
<td>1.01</td>
<td>0.99 – 1.02</td>
</tr>
</tbody>
</table>

<sup>a</sup> 1=knowledge score >= 6 (more knowledge); 0=knowledge score <6 (less knowledge)
<sup>b</sup> 1=female; 0=male
<sup>c</sup> reference
<sup>d</sup> 1=have received training on SIDS/infant safe sleep; 0=have not received training

Table 12. Logistic regression with physician knowledge as a predictor of discussing SIDS (n=354)
### Table 13. Logistic regression with physician attitudes as a predictor of discussing SIDS (n=365)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>P-value</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upper</td>
</tr>
<tr>
<td>Attitude&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.97</td>
<td>0.31</td>
<td>&lt;0.001</td>
<td>7.16</td>
<td>3.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13.20</td>
</tr>
<tr>
<td>Age</td>
<td>0.03</td>
<td>0.01</td>
<td>0.03</td>
<td>1.03</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.05</td>
</tr>
<tr>
<td>Gender&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.79</td>
<td>0.29</td>
<td>0.01</td>
<td>2.21</td>
<td>1.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.87</td>
</tr>
<tr>
<td>Race and Ethnicity</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-Hispanic, White&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.57</td>
<td>0.68</td>
<td>0.40</td>
<td>1.77</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.70</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.35</td>
<td>0.34</td>
<td>0.30</td>
<td>0.71</td>
<td>0.36</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.37</td>
</tr>
<tr>
<td>non-Hispanic, non-White</td>
<td>0.94</td>
<td>0.46</td>
<td>0.04</td>
<td>2.56</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.26</td>
</tr>
<tr>
<td>SIDS Training&lt;sup&gt;d&lt;/sup&gt;</td>
<td>0.01</td>
<td>0.01</td>
<td>0.23</td>
<td>1.01</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.02</td>
</tr>
<tr>
<td>% Patients Black</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>: 1=attitude score >=4 (positive); attitude score <4 (negative)

<sup>b</sup>: 1=female; 0=male

<sup>c</sup>: reference

<sup>d</sup>: 1=have received training on SIDS/infant safe sleep; 0=have not received training

**DISCUSSION**

The primary aim of this study was to gather information regarding the infant safe sleep knowledge, attitudes, and behaviors of obstetric physicians. Due to limited studies about this topic and the disparities associated with SIDS and sleep-related SUID, there was a need to explore if infant safe sleep messages are being provided to women in this medical care setting. Findings indicate that many participants in this study do not make recommendations to obstetric patients regarding infant sleep positioning, environment, or location. Among those who do make such recommendations, many reported giving advice on infant sleep positioning and environment that is consistent with the AAP’s
2011 policy statement. An exception was the topic of co-sleepers as a safe option for an infant’s sleep environment. Nineteen percent of participants reported recommending co-sleepers to obstetric patients, although this is not recognized by the AAP as a safe infant sleep environment. A second topic for which participants’ responses indicated that they were not giving advice that is in line with the AAP’s recommendations was infant sleep location, with just 7% of respondents advising that infants sleep in the same room as the parent(s).

Fifty-five percent of participants in this study indicated that they felt it was important for obstetricians to discuss SIDS/infant safe sleep with prenatal patients; however, only 21% reported that they do so “all of the time” or “most of the time.” This behavior is consistent with the findings of two prior studies which found that 18-48% of obstetrician-gynecologists reported that they or someone in their office regularly discussed SIDS with their patients (Moon et al., 2002; Eron et al., 2011). Although more than 93% of participants reported that they regularly discuss breastfeeding with obstetric patients, 37% indicated that they never talk about SIDS/infant safe sleep with their patients. Given that breastfeeding mothers are three times more likely to bedshare than mothers who do not breastfeed, any discussion of breastfeeding in the prenatal healthcare setting should also include a discussion of infant safe sleep guidelines (McCoy et al., 2004).

Very few participants (13%) reported having ever received formal training on SIDS/infant safe sleep; however, most had at least a moderate amount of knowledge of
the AAP’s infant safe sleep recommendations. Although most participants (88%) recognized that “on the back” is the safest sleeping position for infants, they were less knowledgeable about safe infant sleep environments. Only 27% of participants recognized a portable crib or play yard as a recommended environment for routine infant sleep. This is important as many of the crib distribution programs in the U.S. that offer free or discounted cribs to low-income families provide portable cribs because they are easy to move and less expensive than traditional cribs. Sixteen percent of participants believed that infants are more likely to aspirate when placed on their back to sleep and equal percentage felt it was safe for mothers and infants to bedshare under certain circumstances, indicating that additional education is needed on these topics as well.

One deterrent to obstetric physicians in this study providing infant safe sleep education to their patients may be that many participants had neutral or negative attitudes about providing such education. Although 66% of respondents felt they could influence their patients’ decisions related to this topic, participants were divided about other aspects of providing infant safe sleep education in the prenatal healthcare environment, such as the importance of providing education on this topic as part of prenatal care and the difficulty of doing so. Most participants (70%) perceived that there were barriers to providing SIDS/infants safe sleep education in the prenatal healthcare environment. Of the barriers that were identified most frequently, perhaps the most difficult to change is the lack of time; physicians’ offices are notoriously busy places and
competing demands on providers’ time is great. However, other barriers, such as lack of resources (materials), lack of training, and perceived norms may be more changeable. Indeed, the majority of participants (82%) indicated they were interested in providing education on SIDS/infant safe sleep to their obstetric patients. They identified materials to distribute to patients, education/training for office staff, and norm-changing efforts such as endorsement by ACOG or other professional societies and supportive office policies as strategies that they felt would help them provide this education. It should be noted that physicians were more interested in infant safe sleep education for other staff (77%) than for themselves (60%). This study was not able to determine whether this is due to physicians’ lack of time or some other reason.

Each survey included a comment box that participants could use to leave additional remarks about the survey. Although some of the comments pertained to specific survey questions, many of the comments were more general in nature and provided insight into the participants’ thoughts about the research topic. Eighteen percent (n=77) of physicians who participated in the survey left general comments either in the box provided or elsewhere on the survey or mailing envelope. The most common theme to emerge from the comments was the idea that providing SIDS/infant safe sleep education is the responsibility of pediatricians and/or hospitals, not obstetric healthcare providers. One-third of physicians who left comments (n=26) addressed this issue. One obstetric physician said “Our hospital has prenatal classes that most patients take. In hospital/delivery time gets plenty of ‘mother baby’ instruction. The patients are
well informed.” And another physician said “You don’t seem to acknowledge that this is done in hospital along with CPR info. before discharge.” And a third provided this comment:

I do not believe that education about infant care is part of the obstetrician’s role. We have more than enough issues that we have to deal with. This is an area best addressed after delivery when the parents have a baby in their arms that they can relate to. Our poor patients get bombarded with educational material during pregnancy. Let's not start loading them up on pediatric info while they are still handling the pregnancy stuff.

Several participants emphasized that prenatal healthcare providers do not have time to address the issue of SIDS/infant safe sleep. One physicians said “There is barely enough time to address the needs of our obstetric patients and provide prenatal care in a 15 minute appt. We rely on the multidisciplinary approach where the pediatricians discuss care of the newborn/infant.” Twelve percent of eligible respondents who provided comments (n=9) indicated that they felt SIDS/infant safe sleep education should be included as part of prenatal care in the obstetric clinic environment. One obstetric physician said “Important topic. Would be great to include in 36-37 week prenatal visit.” A second remarked “Thank you for sending this survey. I will most likely make an effort to increase counseling and education about SIDS,” and a third said simply “Good work. We need this.”
Very little is known about the infant safe sleep-related knowledge, attitudes and behaviors of obstetric physicians in the U.S. A strength of this study is that it helps to fill this research gap by conducting the largest survey to date on this important topic. Even in this increasingly technological age, mailed paper surveys, such as this one, remain a valuable tool for data collection and produce higher response rates than web-based and telephone surveys (Dillman et al., 2014). Another strength of this study is that the recruitment list of obstetric physicians was obtained from the SMBO, and therefore includes the most complete and up-to-date information available for every currently licensed physician in the state of Ohio. In addition, a census of the target population was used, eliminating the possibility of sampling error.

There are a few limitations to this study that warrant discussion. The first limitation of this study is that the response rate was only 30%. Although this is equivalent to or higher than the results from other published physician survey studies on this topic and other health-related topics, it may have introduced some non-response bias into the results if individuals who responded to the survey are different from those who did not participate in a way that impacted the study results (Moon et al., 2002; Eron et al., 2011; Moon et al., 2007; Groves et al. 2009; Dillman et al, 2014). Other surveys on this topic have found that physician respondents were more likely to
be female. In this study, slightly more participants were female than male (53% versus 47%); however, the percentage of female physicians in this study is consistent with national data showing that 52% of physicians in this specialty are female (Association of American Medical Colleges, 2014). Participants’ decisions whether to respond to the survey may also have been influenced by their interest and knowledge related to the topic. Measurement error also may have been a factor if respondents were unable or unwilling to give accurate responses to the survey questions (Dillman et al., 2014). This could have resulted in response bias if the participants attempted to give socially desirable answers. The anonymous nature of the mailed survey may have helped to limit this issue; however, given that the survey responses were self-reported, it is a limitation that must be considered when interpreting the study results. By focusing on only the physicians’ reported primary specialty as the criteria for study inclusion, some physicians who practice obstetrics (e.g., family physicians) may have been missed. Also, although the amount of missing data in this study due to item non-response was only 1-2% for most questions, the decision to use listwise deletion for missing data in the regression analyses resulted in the exclusion of up to 15% of participants from these models. Lastly, the study only included physicians from one state, and the results may not be generalizable to other areas.

In summary, knowledge of SIDS prevention and infant safe sleep recommendations, positive attitudes about providing infant safe sleep education in the prenatal clinic environment, and prior SIDS training were found to be significant
predictors of discussing SIDS/infant safe sleep with patients. These associations are notable because they indicate that studies to develop and evaluate interventions to improve obstetric physicians’ knowledge and attitudes may be a worthwhile direction for future research related to this topic. In Ohio, where infant mortality rates are among the highest in the nation, it is especially important that physicians provide infant safe sleep-related education to expectant mothers during the prenatal period when many decisions are already being made that will influence a child’s risk for SIDS/infant sleep-related death. Prenatal healthcare providers can have a strong influence on the choices that an expectant mother makes and therefore it is important to know whether they are educating them about this important issue, and if so, what information they are providing. In order to reduce the rates of SIDS and sleep-related infant death and the associated disparities, it is imperative that all healthcare providers who work with expectant mothers and mothers of newborns are providing evidence-based and consistent education on this topic beginning in pregnancy and continuing through infancy. The results of this study indicate that additional research and prevention efforts are needed to meet this goal.
Chapter 6: Infant Safe Sleep: Beliefs and Practices of Certified Nurse Midwives

ABSTRACT

Objectives: Certified nurse midwives are an important and trusted source of information for expectant mothers; however little is known about the SIDS and infant safe sleep-related knowledge, attitudes and behaviors of these healthcare providers. The purpose of this study was to explore the infant safe sleep-related perspectives of certified nurse midwives in one Midwestern state and to identify potential barriers and enabling/reinforcing factors associated with providing education on this topic in the prenatal care environment.

Methods: The target population for this cross-sectional survey study was certified nurse midwives who provide prenatal healthcare to women in Ohio. Surveys were mailed to all nurses included in the licensing registry of the Ohio Board of Nursing as a certified nurse midwife (n=333).

Results: The survey was completed by 153 eligible certified nurse midwives and the response rate was 55%. Most participants had some knowledge of the AAP’s infant safe sleep recommendations, and two-thirds had positive attitudes about providing infant
safe sleep education in the prenatal environment. Many participants (61%) perceived that there were barriers to providing infant safe sleep education in the prenatal clinic, but nearly all (94%) indicated that they were interested in providing this education to their patients. Positive attitudes about infant safe sleep education and previous SIDS training were found to be predictive of whether the certified nurse midwives in the study discussed SIDS/infant safe sleep with their prenatal patients.

Conclusions: The importance of positive provider attitudes and formal SIDS training should be considered when developing future interventions for certified nurse midwives. Also, efforts should be made to support certified nurse midwives in their desire to provide infant safe sleep education to their patients to ensure that the information that is provided is consistent with the recommendations of the American Academy of Pediatrics.
BACKGROUND

In 2014, there were 1,545 infant deaths attributed to sudden infant death syndrome (SIDS) in the United States (U.S.), making it the leading cause of mortality among infants one month to one year of age (CDC NCHS, 2015). While SIDS rates have remained largely stagnant since the early 2000s, the U.S. has seen an increase in non-SIDS sleep-related infant deaths categorized as sudden unexpected infant deaths (SUID) (AAP, 2011b; CDC, 2016a). In 2014, the infant death rate for accidental suffocation and strangulation in bed, a subset of SUID deaths, reached a record high of 21.4 deaths per 100,000 live births (CDC, 2016b). Sleep-related infant deaths contribute to the nation’s overall infant mortality rate and are associated with significant health disparity. Non-Hispanic African American and American Indian/Alaskan Native infants in the U.S. have sleep-related death rates two to three times higher than non-Hispanic Caucasian infants (AAP, 2011b; Hauck et al., 2002; Moon & Fu, 2012).

Ohio is ranked 11th in the U.S. for its overall infant mortality rate and has the 3rd highest mortality rate in the country for African American infants (CDC NCHS, 2016). Despite declines in the national infant mortality rate over the past decade, Ohio’s rate has remained largely unchanged, with the state experiencing modest declines only within the past few years (Mathews et al., 2015; ODH, 2013; ODH, 2015). Among Ohio infants one month to one year of age, 46% of all deaths are sleep-related and of these deaths, more than one-half (56%) occur on adult beds, couches, chairs, or other unsafe sleep locations (ODH & Ohio Children’s Trust Fund, 2015). Half of Ohio’s infant sleep-
related deaths occur while an infant is sharing a sleep surface with another person (ODH & Ohio Children’s Trust Fund, 2015).

In 2011, the American Academy of Pediatrics (AAP) released a revised policy statement on sudden infant death syndrome (SIDS) and other causes of sleep-related infant death to highlight the importance of safe infant sleep environments (AAP, 2011a; AAP, 2011b). Recommendations for infants include the following: supine only sleep positioning; firm sleep surface; avoidance of soft or loose objects and bedding in the sleep environment, including crib bumpers; infants sleeping in the same room with parents, but not in the same bed (roomsharing without bedsharing); breastfeeding; routine immunizations; avoidance of overheating; pacifier use at naptime and bedtime (after breastfeeding is established); and avoidance of exposure to tobacco smoke. Pregnant women are advised to receive regular prenatal care and to abstain from smoking and exposure to secondhand tobacco smoke both during pregnancy and after the infant’s birth (AAP, 2011a; AAP, 2011b). Alcohol and illicit drugs should also be avoided during pregnancy and after the birth of the infant (AAP, 2011a; AAP, 2011b). Exposure to alcohol or illicit drugs in utero is associated with an increased risk of SIDS. Some studies have also found an increased risk of sleep-related infant death among infants who bedshare with an adult who has been drinking alcohol (Carpenter et al., 2004; James, et al., 2003).

Nurses are trusted resources for information related to newborn care and can influence the decisions that caregivers make related to infant safe sleep (Zachry &
Kitzmann, 2010; Gelfer et al., 2013; Vernacchio et al., 2003; Colson & Joslin, 2002; Shaefer et al., 2010). One study found that 60% of mothers who were interviewed at Women, Infants, and Children programs said they trusted physicians and nurses most when receiving advice on infant safe sleep (Colson et al., 2006). The same study found that mothers who reported that they trusted their healthcare provider were more likely to place their infant to sleep in the supine sleeping position (Colson et al., 2006). Most of the published research that has been conducted on the topic of SIDS knowledge and risk reduction behaviors among nurses has been done with the purpose of examining and improving infant safe sleep practices within birthing hospitals, hospital nurseries, and neonatal intensive care units (NICUs) (Price et al., 2008; McMullen et al., 2009; Carrier, 2009; Gelfer et al., 2013). A survey of nurses (n=430) working in NICUs found that 85% of respondents were able to identify the AAP’s infant safe sleep recommendations and 73% provided verbal infant safe sleep education to parents at discharge (Grazel et al., 2010). However, in the same study only 67% of nurses indicated that they placed full term discharge ready infants exclusively in the supine position for sleep (Grazel et al., 2010). When nurses in another study (n=252) were asked what infant sleep position they recommend to parents upon hospital discharge, only 52% recommended the supine position (Aris et al., 2006). Little is known about the knowledge and infant safe sleep-related practices of nurses in other specialties that work with expectant mothers and mothers of newborns, such as certified nurse midwives (CNMs).
Although physicians and nurses working in the field of pediatrics are frequently the targets of infant safe sleep education, fewer resources have been dedicated to including prenatal care providers in these interventions, even though they may be an expectant mother’s primary source of professional advice about her infant prior to the birth. As a result, little is known about the infant safe sleep-related knowledge, attitudes, and behaviors of CNMs and other healthcare professionals who provide prenatal care. The purpose of the current study was to address these gaps in the research by exploring the perspectives of CNMs in Ohio. The study identified potential individual and environmental barriers to providing SIDS/infant safe sleep-related education in the obstetric environment and factors that could be addressed to improve the delivery of prenatal infant safe sleep education. This is the first known study to examine the prenatal care-related infant safe sleep practices of CNMs in the U.S.

METHODS

Study Design

A detailed description of survey measures and analyses can be found in Chapter 4: Survey Methodology.

Survey Participants

The population of interest for this study was CNMs who provide prenatal care to obstetric patients in Ohio. The Ohio Board of Nursing (OBN) makes available to the
public, by request, their database of licensed nurses in the state. The OBN database is updated monthly and is believed to be the most current and comprehensive listing of nurses in Ohio. The database includes names and contact information, including mailing addresses and email addresses (when available), for all individuals licensed to practice nursing in Ohio. All CNMs (n=333) included in the OBN database as of June 3, 2015 were invited to participate in the study.

The researcher was also interested in including other obstetric nurses (i.e., nurses who work primarily with prenatal patients) in the survey; however the OBN database does not capture all nursing specialties and “obstetric nursing” is not a designation used by the OBN. An attempt was made to purchase a mailing list from the Ohio chapter of the Association of Women’s Health, Obstetric, and Neonatal Nurses (AWHONN) to fill this gap, but the organization was only able to provide nursing specialty information for approximately 8% of its 798 Ohio members. After careful consideration as well as consultation with an active Ohio AWHONN member who indicated that most obstetric nurses in the state are not members of the organization, a decision was made to limit the study recruitment list to the CNMs identified in the OBN database.

Participants in this survey were required to meet the following eligibility criteria: a) inclusion in the OBN registry; b) licensed as a certified nurse midwife; c) provides healthcare to obstetric patients; and d) works primarily within the state of Ohio.
RESULTS

A survey was mailed to each potential participant on the recruitment list (n=333) and 207 individuals responded. Included in the analysis are 153 completed surveys that were returned by eligible participants. The remaining 54 surveys that were returned by respondents did not meet the eligibility criteria for the study and were not included in the response rate calculation or data analysis (33 did not see obstetric (OB) patients; 8 did not primarily practice in Ohio; 8 were not currently practicing nurses; 4 were retired; and 1 was not a CNM). Five surveys were returned by the U.S. Postal Service as undeliverable and 121 potential participants did not return a survey or respond in any way to the recruitment efforts. The response rate was 55%, as calculated according to the guidelines of the AAPOR (153/(153+5+121). (AAPOR, 2015) (Figure 5).
Participant Characteristics

CNMs who participated in this study had a mean age of 49.5 years (SD=11.6, range 27-75 years) (Table 14). All respondents who provided information on their gender identified as female (100%). Nearly all participants indicated that they were not Hispanic (99%) and most reported their race as White (93%). All participants were
Table 14. Demographic characteristics of certified nurse midwives (n=153)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>151</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>149</td>
<td>99.3</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>142</td>
<td>92.8</td>
</tr>
<tr>
<td>Black</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Nurse Specialty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certified Nurse Midwife</td>
<td>153</td>
<td>100.0</td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>24</td>
<td>15.7</td>
</tr>
<tr>
<td>RN</td>
<td>18</td>
<td>11.8</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Number of obstetric patients seen on a typical clinic day</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fewer than 25</td>
<td>134</td>
<td>87.6</td>
</tr>
<tr>
<td>25 or more</td>
<td>19</td>
<td>12.4</td>
</tr>
<tr>
<td><strong>Years in practice</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-9 years</td>
<td>21</td>
<td>14.1</td>
</tr>
<tr>
<td>10-19 years</td>
<td>36</td>
<td>24.2</td>
</tr>
<tr>
<td>20-29 years</td>
<td>35</td>
<td>23.5</td>
</tr>
<tr>
<td>30 years or more</td>
<td>57</td>
<td>38.3</td>
</tr>
<tr>
<td><strong>Principal place of employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federally Qualified Health Center</td>
<td>17</td>
<td>11.1</td>
</tr>
<tr>
<td>Hospital-based clinic</td>
<td>61</td>
<td>39.9</td>
</tr>
<tr>
<td>Private practice</td>
<td>59</td>
<td>38.6</td>
</tr>
<tr>
<td>Other</td>
<td>16</td>
<td>10.4</td>
</tr>
<tr>
<td><strong>Employer location</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>23</td>
<td>15.6</td>
</tr>
<tr>
<td>Suburban</td>
<td>59</td>
<td>40.1</td>
</tr>
<tr>
<td>Urban</td>
<td>65</td>
<td>44.2</td>
</tr>
</tbody>
</table>

Note: Percentages may not total 100% due to rounding, multiple responses, or item non-response.

Item non-response: a=2, b=3, c=1, d=4, e=6
CNMs, but some were also nurse practitioners (16%) or registered nurses (RNs) (12%). Most CNMs (88%) reported that they typically see fewer than 25 obstetric patients per day. More than sixty percent (62%) of participants had 20 years or more of nursing experience. Nearly equal numbers of CNMs were employed by hospital-based clinics (40%) and private practices (39%). The majority of respondents worked for employers who were located in urban or suburban settings (44% and 40%, respectively). When asked to describe their patient population, on average CNMs estimated that 36% were Black (SD=28) and 11% were Hispanic (SD=12). Seventy-four percent (n=121) of respondents estimated that at least 15% of their patient population was Black. When asked to describe the type of medical insurance held by their patients, 55% of CNMs (n=84) estimated that 50% of more of their patients had public insurance. The mean percentage of patients estimated by the CNMs to have no insurance was 7% (SD=16). Forty percent of respondents (n=59) reported having received formal SIDS/infant safe sleep training in the past, and of those individuals, approximately one-half (53%, n=31) had been educated since the AAP released its revised policy statement on the topic in 2011.

**Behavior**

When asked to identify topics that they regularly discuss with obstetric patients, the subjects selected most frequently by participants were breastfeeding (97%, n=149) and smoking cessation (97%, n=148). Infant safe sleep-related topics, such as infant
sleep positioning, location, and environment, were reported less frequently (28%-52%, n=43-80). In a later survey question asking CNMs what they advise obstetric patients regarding infant sleep positioning, 85% (n=127) indicated that they recommend that infants be placed on their back to sleep. Nearly one-quarter of respondents (23%, n=35) reported that they do not make recommendation to their obstetric patients regarding the infant sleep environment. Of those who indicated that they do make recommendations on this topic, nearly all (94%, n=111) identified a crib or bassinet as acceptable places for an infant to sleep. Half of this subgroup (53%, n=62) suggested a co-sleeper and 4% (n=5) suggested that infants sleep in the parent’s bed. When participants were asked which room they recommend infants sleep in, 26% (n=40) responded “in the same room as the parent(s).” Many respondents (44%, n=68) indicated that they do not make recommendations to their obstetric patients on this topic.

Participants were then asked whether they discuss SIDS risk reduction and/or infant safe sleep with obstetric patients during the course of their prenatal care. Responses were as follows: “all of the time” (16%, n=24), “most of the time” (30%, n=46), “some of the time” (38%, n=58), and “never” (16%, n=24). CNMs who gave a response other than “never” were then asked how they make SIDS/infant safe sleep recommendations to their obstetric patients. Among these participants, 63% (n=78) said they initiate discussions with their patients, 95% (n=117) answer questions that their
patients bring up, 55% (n=67) provide printed materials on the topic, and 12% (n=14) show a video.

**Knowledge**

The survey included seven questions to assess participants’ knowledge of the AAP’s infant safe sleep guidelines; three questions were multiple choice and four were true or false. The first knowledge question asked participants to identify the sleep position recommended by the AAP as being the safest for most infants. Most participants (93%, n=142) correctly identified “on the back” (Table 15). When asked which sleep environments the AAP recommends for routine infant sleep, only 16% (n=25) of participants were able to identify the three recommended sleep environments from a given list (bassinet or cradle; crib; or portable crib) without including any incorrect responses. Most participants did have some knowledge of the topic, however, with 58% (n=89) correctly identifying at least one safe sleep environment and no unsafe options. When asked to select safe items to include in an infant’s sleep environment the majority of respondents (79%, n=120) were able to correctly answer the question by not choosing any unsafe items.

Four additional knowledge questions were presented in a true or false format. Most participants correctly indicated that the risk of SIDS can be reduced (97%) and that exposure to cigarette smoke increases SIDS risk (98%). Participants were slightly less knowledgeable about whether infants are more likely to aspirate when placed on their backs to sleep, with 94% correctly marking “false” for this statement. A significant
## Knowledge Questions

| According to current recommendations from the AAP, which of the following is/are the sleep safest positions(s) for most infants? |
|---|---|
| On the back | 142 | 92.8 |
| Back or side is equally safe | 6 | 3.9 |
| I don't know | 1 | 0.7 |
| Other | 4 | 2.6 |

| According to the AAP, which of the following environments are recommended for routine infant sleep? (Mark all that apply) |
|---|---|---|
| Crib | 133 | 86.9 |
| Bassinet or cradle | 93 | 60.8 |
| Portable crib / play yard | 69 | 45.1 |
| Co-sleeper | 51 | 33.3 |
| Crib with a drop side | 7 | 4.6 |
| Car seat | 6 | 3.9 |
| Infant swing | 3 | 2.0 |
| Armchair or recliner | 0 | N/A |
| Parent's bed | 0 | N/A |
| I don't know | 8 | 5.2 |

| According to the AAP, which of the following are acceptable items to include in an infant’s sleep environment? (Mark all that apply) |
|---|---|---|
| Fitted crib sheet | 137 | 89.5 |
| Pacifier | 64 | 41.8 |
| Sleep positioning device (i.e., wedge) | 19 | 12.4 |
| Bumpers | 5 | 3.3 |
| Quilt | 2 | 1.3 |
| Comforter | 1 | 0.7 |
| Sheepskin | 0 | N/A |
| Stuffed animal | 0 | N/A |
| Pillow | 0 | N/A |
| I don't know | 5 | 3.3 |

### True or False: (Correct Answer is Listed)

<table>
<thead>
<tr>
<th></th>
<th>Correct, n(%)</th>
<th>Incorrect, n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The risk of SIDS can be reduced. (True)</td>
<td>148 (96.7)</td>
<td>5 (3.3)</td>
</tr>
<tr>
<td>Prenatal and/or postnatal exposure to cigarette smoke increases SIDS risk. (True)</td>
<td>149 (98.0)</td>
<td>3 (2.0)</td>
</tr>
<tr>
<td>Infants are more likely to aspirate when placed on their back to sleep. (False)</td>
<td>143 (93.5)</td>
<td>10 (6.6)</td>
</tr>
<tr>
<td>It is safe for mothers and infants to bedshare if the infant is exclusively breastfed and the mother is not obese or under the influence of drugs or alcohol. (False)</td>
<td>91 (60.6)</td>
<td>59 (39.3)</td>
</tr>
</tbody>
</table>

---

Notes:
- Percentages may not add up to 100% due to rounding and item non-response.
- Item non-response: b=1, c=3.

Table 15. Certified nurse midwives’ infant safe sleep knowledge
number of respondents (39%) incorrectly indicated that it is safe for mothers and infants to bedshare if the infant is exclusively breastfed and the mother is not obese or under the influence of drugs or alcohol or responded “I don’t know” to this question. A knowledge score was calculated for each participant by summing the total number of correct responses. The mean knowledge score was 5.8 (range= 0-7, SD=1.2) and 68% of participants had a score of 6 or greater.

**Attitudes**

Participants were asked to respond to five questions about their attitudes related to providing infant safe sleep education as part of prenatal care. Responses were given on a five point Likert scale (Table 16). Nearly all participants (94%) agreed or strongly agreed that it is important for nurses to discuss SIDS/infant safe sleep with prenatal patients. Many participants (84%) also agreed or strongly agreed that SIDS/infant safe sleep education is an important part of prenatal care. When asked to respond to the statement “It is difficult to provide SIDS/infant safe sleep education in the prenatal clinic/office,” 40% of participants agree or strongly agreed, 41% disagreed or strongly disagreed and 20% were neutral. Slightly more than three-quarters of participants (77%) displayed positive outcome expectations by indicating that they agreed or strongly agreed that they can influence their patients’ decisions related to this topic. The majority (82%) also indicated self-efficacy by agreeing or strongly agreeing that they are confident in their ability to provide guidance to patients on SIDS/infant
safe sleep. The mean attitude score was 3.8 (range 0-5, SD=1.2) and 66% of participants had an attitude score of 4 or greater, with higher scores indicating a more positive attitude about providing infant safe sleep education in the obstetric environment.

<table>
<thead>
<tr>
<th>Attitude Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important for nurses to discuss SIDS/infant safe sleep with prenatal patients.</td>
<td>87 (56.9)</td>
<td>57 (37.3)</td>
<td>9 (5.9)</td>
<td>0 (N/A)</td>
<td>0 (N/A)</td>
</tr>
<tr>
<td>SIDS/infant safe sleep education is an important part of prenatal care.</td>
<td>76 (49.7)</td>
<td>52 (34.0)</td>
<td>24 (15.7)</td>
<td>1 (0.7)</td>
<td>0 (N/A)</td>
</tr>
<tr>
<td>It is difficult to provide SIDS/infant safe sleep education in the prenatal clinic/office.</td>
<td>21 (13.7)</td>
<td>40 (26.1)</td>
<td>30 (19.6)</td>
<td>45 (29.4)</td>
<td>17 (11.1)</td>
</tr>
<tr>
<td>I can influence my patients' decisions related to SIDS/infant safe sleep.</td>
<td>33 (21.6)</td>
<td>85 (55.6)</td>
<td>31 (20.3)</td>
<td>3 (2.0)</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>I am confident in my ability to provide guidance to patients on SIDS/infant safe sleep.</td>
<td>43 (28.1)</td>
<td>82 (53.6)</td>
<td>23 (15.0)</td>
<td>4 (2.6)</td>
<td>1 (0.7)</td>
</tr>
</tbody>
</table>

Note: n(%) provided for each statement; percentage totals may not add up to 100% due to rounding.

**Table 16. Certified nurse midwives' infant safe sleep attitudes**

**Barriers and Enabling/Reinforcing Factors**

Many participants indicated that they perceived barriers to providing SIDS/infant safe sleep education in the prenatal clinic environment (61%, n=94). Participants who responded that there were barriers were asked to respond “yes” or “no” to a list potential obstacles. Within this subgroup, the most commonly identified barriers were not enough time to address the issue (78%), lack of resources (71%), the perception that
most obstetric offices do not provide education on this topic (65%), the belief that
providing education on this topic is not the norm in the participant’s practice/clinic
(55%), and inadequate reimbursement for prevention counseling (48%) (Table 17).

<table>
<thead>
<tr>
<th>Identified Barriersa</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not enough time</td>
<td>73</td>
<td>77.7</td>
</tr>
<tr>
<td>Not enough resources (limited staff time, materials, etc.)</td>
<td>67</td>
<td>71.3</td>
</tr>
<tr>
<td>Inadequate reimbursement</td>
<td>45</td>
<td>47.9</td>
</tr>
<tr>
<td>Obstetricians and nurses are not educated on this topic</td>
<td>24</td>
<td>25.5</td>
</tr>
<tr>
<td>Patients are not interested in education on this topic</td>
<td>23</td>
<td>24.5</td>
</tr>
<tr>
<td>Prenatal clinic not the appropriate place for this education</td>
<td>8</td>
<td>8.5</td>
</tr>
<tr>
<td>Most obstetric offices do not educate on this topic</td>
<td>61</td>
<td>64.9</td>
</tr>
<tr>
<td>SIDS/infant safe sleep in not addressed in nursing degree programs</td>
<td>15</td>
<td>16.0</td>
</tr>
<tr>
<td>Not the norm in my practice/office</td>
<td>52</td>
<td>55.3</td>
</tr>
<tr>
<td>Disagreement with the AAP’s recommendations</td>
<td>19</td>
<td>5.8</td>
</tr>
</tbody>
</table>

a: among participants who indicated that there were barriers (n=94)

Table 17. Certified nurse midwives’ barriers to providing infant safe sleep education in the prenatal environment

Most participants indicated that they were interested in providing SIDS/infant
safe sleep education to their obstetric patients (94%, n=143). Within this subgroup, the
following forms of help or support were identified as being desirable: printed materials
to distribute to patients (92%), patient education reminders built into the electronic
medical record (79%), education or training for other office staff (76%), endorsement by
AWHONN or other professional societies (71%), and increased reimbursement for
prevention counseling (71%) (Table 18).
<table>
<thead>
<tr>
<th>Identified Enabling/Reinforcing Factors(^a)</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed materials</td>
<td>131</td>
<td>91.6</td>
</tr>
<tr>
<td>Educational videos</td>
<td>60</td>
<td>42.0</td>
</tr>
<tr>
<td>Increased reimbursement</td>
<td>101</td>
<td>70.6</td>
</tr>
<tr>
<td>Infant safe sleep education/training for myself</td>
<td>77</td>
<td>53.8</td>
</tr>
<tr>
<td>Infant safe sleep education/training for other staff</td>
<td>109</td>
<td>76.2</td>
</tr>
<tr>
<td>Reminders built into the electronic medical record</td>
<td>113</td>
<td>79.0</td>
</tr>
<tr>
<td>Support from colleagues</td>
<td>94</td>
<td>65.7</td>
</tr>
<tr>
<td>Endorsement by AWHONN or other professional societies</td>
<td>102</td>
<td>71.3</td>
</tr>
<tr>
<td>Office policies encouraging infant safe sleep education</td>
<td>96</td>
<td>67.1</td>
</tr>
</tbody>
</table>

\(a\): among participants who indicated that they were interested in providing SIDS education (n=143)

Table 18. Certified nurse midwives’ enabling and reinforcing factors related to providing infant safe sleep education in the prenatal environment.

Regression Analysis

Logistic regression was conducted to determine if CNM knowledge or attitudes were predictive of discussing SIDS risk reduction and/or infant safe sleep with obstetric patients as part of their prenatal care. Univariate analyses were conducted prior to running the logistic regression model (Table 19). All predictor variables were entered into the model simultaneously. Along with the predictor variable of knowledge or attitudes, two covariates were included in each model: CNM age and previous SIDS training. Other covariates were considered but were not included in the model. Provider race and ethnicity was excluded from the model because of the limited number of participants in each of the subgroups. Because the small sample size limited the number of covariates that could be included in the regression analyses, only those that were
most significant in the univariate analysis were included. Therefore, patient race and patient insurance status were also excluded from the model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>P-value</th>
<th>Odds Ratio</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledgea</td>
<td>0.27</td>
<td>0.46</td>
<td>0.56</td>
<td>1.31</td>
<td>0.53</td>
<td>3.25</td>
</tr>
<tr>
<td>Attitudesb</td>
<td>1.63</td>
<td>0.48</td>
<td>&lt;0.001</td>
<td>5.11</td>
<td>2.01</td>
<td>12.98</td>
</tr>
<tr>
<td>Age</td>
<td>-0.04</td>
<td>0.02</td>
<td>0.08</td>
<td>0.97</td>
<td>0.93</td>
<td>1.00</td>
</tr>
<tr>
<td>Race and Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-Hispanic, Whitec</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-22.99</td>
<td>40192.97</td>
<td>1.00</td>
<td>1.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>non-Hispanic, non-White</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>-0.41</td>
<td>0.83</td>
<td>0.62</td>
<td>0.67</td>
<td>0.13</td>
<td>3.37</td>
</tr>
<tr>
<td>SIDS Trainingd</td>
<td>1.31</td>
<td>0.58</td>
<td>0.02</td>
<td>3.72</td>
<td>1.19</td>
<td>11.57</td>
</tr>
<tr>
<td>% Patients Black</td>
<td>0.01</td>
<td>0.01</td>
<td>0.31</td>
<td>1.01</td>
<td>0.99</td>
<td>1.03</td>
</tr>
<tr>
<td>% Patients Public/No Insurance</td>
<td>0.01</td>
<td>0.01</td>
<td>0.17</td>
<td>1.01</td>
<td>1.00</td>
<td>1.03</td>
</tr>
</tbody>
</table>

a: 1=knowledge score >= 6 (more knowledge); 0=knowledge score <6 (less knowledge)
b: 1=attitude score >=4 (positive); attitude score <4 (negative)
c: reference
d: 1=have received training on SIDS/infant safe sleep; 0=have not received training

Table 19. Univariate analyses for certified nurse midwife predictors of discussing SIDS

In the logistic regression analysis to determine whether CNM knowledge of SIDS/infant safe sleep recommendations is a predictor of discussing SIDS with patients, knowledge was not a significant predictor in the model, nor was age (Table 20). Only previous SIDS training was determined to be predictive, with participants who reported having received formal SIDS training in the past more likely to discuss SIDS and/or infant safe sleep with patients than those with no SIDS training.
<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>P-value</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.18</td>
<td>0.49</td>
<td>0.71</td>
<td>1.20</td>
<td>0.46</td>
</tr>
<tr>
<td>Age</td>
<td>-0.03</td>
<td>0.02</td>
<td>0.12</td>
<td>0.97</td>
<td>0.93</td>
</tr>
<tr>
<td>SIDS Training</td>
<td>1.37</td>
<td>0.59</td>
<td>0.02</td>
<td>3.94</td>
<td>1.25</td>
</tr>
</tbody>
</table>

a: 1=knowledge score >= 6 (more knowledge); 0=knowledge score <6 (less knowledge)
b: 1=have received training on SIDS/infant safe sleep; 0=have not received training

Table 20. Logistic Regression with certified nurse midwife knowledge as a predictor of discussing SIDS (n=140)

The overall attitude model (Table 21) was also statistically significant.

Participants with positive attitudes about providing SIDS/infant safe sleep education to prenatal patients had 3.8 times the odds of discussing the topic with patients.

Participants with formal SIDS training were more likely to discuss SIDS/infant safe sleep with patients than those without training. CNM age was not a statistically significant predictor.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>P-value</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>Attitude</td>
<td>1.33</td>
<td>0.51</td>
<td>0.01</td>
<td>3.77</td>
<td>1.40</td>
</tr>
<tr>
<td>Age</td>
<td>-0.02</td>
<td>0.02</td>
<td>0.33</td>
<td>0.98</td>
<td>0.94</td>
</tr>
<tr>
<td>SIDS Training</td>
<td>1.04</td>
<td>0.61</td>
<td>0.08</td>
<td>2.84</td>
<td>0.87</td>
</tr>
</tbody>
</table>

a: 1=attitude score >=4 (positive); attitude score <4 (negative)
b: 1=have received training on SIDS/infant safe sleep; 0=have not received training

Table 21. Logistic Regression with certified nurse midwife attitudes as a predictor of discussing SIDS (n=144).
DISCUSSION

In light of the public health burden caused by infant mortality and the significant health disparities associated with SIDS and other causes of sleep-related infant death, the purpose of this study was to explore the knowledge, attitudes, and behaviors of certified nurse midwives who deliver prenatal healthcare to expectant mothers. Given that many sleep-related infant deaths are preventable, it is important to identify what education and advice is being provided to women on this topic and by whom. The majority of participants in this study indicated that they give advice to obstetric patients about infant sleep positioning, and of this group most reported that they recommend infants sleep on their backs, as recommended by the AAP. Many CNMs said they provide advice to patients about infant sleep environment, and most who did so gave suggestions that were compliant with the AAP’s recommendations. However, some recommended co-sleepers or bedsharing (53% and 4%, respectively), neither of which are endorsed by the AAP as safe environments for infant sleep. Only one-quarter of participants suggested that infants sleep in the same room as the parent(s), as recommended by the AAP.

Nearly all of the CNMs who participated in this study (94%) indicated that they believed it is important for nurses to discuss SIDS/infant safe sleep with prenatal patients and a sizable majority (84%) agreed education on the topic is an important part of prenatal care. However, fewer than half reported discussing SIDS risk reduction or infant safe sleep with their patients “all of the time” or “most of the time” and only two-
thirds indicated that they initiate conversations with patients on the subject. Little is known about the infant safe sleep-related practices of certified nurse midwives working in prenatal healthcare environments, as most research with nurses on this topic has been conducted in birthing hospitals, hospital nurseries, and neonatal intensive care units. However, the findings of this study are consistent with prior research in which 18-48% of obstetrician-gynecologists reported that they or someone in their office regularly discussed SIDS with their patients (Moon et al., 2002; Eron et al., 2011). Despite mixed responses on whether they talk to obstetric patients about SIDS/infant safe sleep, nearly all (97%) reported that they regularly discuss breastfeeding with this patient population. This is problematic, as breastfeeding mothers are three times more likely to bedshare than mother who do not breastfeed; therefore, any discussion of breastfeeding in the prenatal healthcare setting should also include a discussion of infant safe sleep guidelines (McCoy et al., 2004).

Forty percent of participants reported having received formal SIDS/infant safe sleep training in the past and most had a least a moderate amount of knowledge about the AAP’s infant safe sleep guidelines. Nearly all participants knew that the supine sleep position was recommended for most infants and many could identify items that were not safe to include in an infant’s sleep environment. Respondents were less knowledgeable about safe sleep spaces for infants. One-third of participants incorrectly believed that co-sleepers are recommended by the AAP and less than half knew that portable cribs are considered a safe environment for routine infant sleep. Given that
many free and low-cost crib distribution programs in the U.S. provide portable cribs to low-income families because they are easy to move and less expensive than traditional cribs, CNMs should be aware that they are a safe option for families. Also concerning is the fact that only 61% of respondents recognized that it is unsafe for mothers and infants to bedshare even if the infant is exclusively breastfed and the mother is not obese or under the influence of drugs or alcohol.

Many CNMs who participated in this study indicated they had positive attitudes about providing infant safe sleep education in the prenatal environment, with the majority reporting confidence in their ability to educate and influence their patients’ decisions on this topic. Although some participants (61%) perceived barriers to providing SIDS/infant safe sleep education in the prenatal clinic environment, nearly all (94%) were interested in providing this information to their patients. Some of the barriers identified by participants are difficult to address, such as lack of time and inadequate reimbursement for prevention counseling, while others, such as lack of materials and social norms may be more easily changed. Most participants were interested in printed materials to distribute to their patients, which are easy to provide, but not likely to result in behavior change among patients. Other strategies that were selected by the participants and may be more effective in changing behaviors include: patient education reminders built into the electronic medical record, education or training for office staff, and endorsement by AWHONN or other professional societies. CNMs who participated in this study showed greater support for the idea of training for
other office staff (79%) than for themselves (56%). Given that 82% of participants expressed confidence in their ability to provide guidance to patients on SIDS/infant safe sleep, it may be that they feel they have sufficient knowledge on this topic; however, knowledge scores from this study indicate that additional education may be beneficial.

The survey included a comment box that could be used by participants to provide additional remarks about the survey. Some of the comments received were related to specific survey questions; however, most were general in nature and provided insight into the participants’ thoughts about the research topic. Twenty-one percent (n=32) of eligible respondents left comments in the text box provided or elsewhere on the survey or mailing envelope. Several CNMs who participated in the survey indicated that prenatal healthcare providers do not have time to address the issue of SIDS/infant safe sleep. One CNM said “I agree that SIDS education is important, just tough to fit in a 15 minute OB appt. where you have to cover weight, nutrition, childbirth questions and pregnancy complaints. We encourage a baby care class.” Six CNMs provided comments indicating that they support bedsharing and/or recommend the practice to their patients. One CNM said:

There needs to be more public health campaigns for safe co-sleeping. Almost all my moms report sleeping with their newborn at one time or another. Safe co-sleeping is possible. I believe the Back to Sleep campaign has done more harm than good.
Another commented:

I believe there are conflicting studies regarding co-sleeping, particularly with breastfed infants and when parents are not obese or chemically impaired. For that reason, much of the printed material available is not desirable to me, being biased against this practice.

Sixteen percent of CNMs who provided comments (n=5) mentioned the importance of the infant safe sleep or indicated that they thought the topic should be included as part of prenatal care. A CNM remarked “Historically speaking SIDS is a topic discussed in the postpartum period and pediatrics focus, however this can change and should be a priority in the prenatal period.” And two CNMs indicated that the survey prompted them to begin including the topic in their prenatal care, including one who provided the following comment: “I can honestly say I have never thought to include this in prenatal care, but I am going to start.”

This is the first known study to examine the SIDS/infant safe sleep-related knowledge, attitudes, and behaviors of certified nurse midwives who provide prenatal healthcare to women in the U.S. In addition to providing a novel perspective on this issue, another strength of this study is that it utilized robust survey data collection procedures, including a mailed paper survey, a recruitment list with a very low likelihood of coverage error, and a census of the target population to avoid the possibility of sampling error.
This study does have several limitations which should be mentioned. First, the response rate for this study was modest at 55%. Although this is higher than other published survey studies of nurses related to this topic, it still may have resulted in some non-response bias if CNMs who responded to the survey were different from those who did not participate in a way that impacted the study findings (Grazel et al., 2010; Aris et al., 2006; Gelfer et al., 2013; Groves et al. 2009; Dillman et al, 2014). Also, participants may have been more or less likely to participate in the survey based on their knowledge, interest, and opinions on the topic. Measurement error may have skewed the study results if respondents were not able or willing to give accurate responses to the survey questions (Dillman et al., 2014). As with any study that relies on self-reported responses, if participants tried to give socially desirable answers there could be response bias impacting the findings; however, the anonymous nature of the mailed survey may have helped to limit this problem. Although the amount of missing data in this study due to item non-response was <2% for most survey questions, the logistic regression models excluded 6-9% of participants as a result of listwise deletion in the analyses. And lastly, CNMs are only one population of nurses who work prenatally with obstetric patients, and these findings are not representative of all nurses working with this population.

In this study, positive attitudes about providing infant safe sleep education in the obstetric clinic environment and prior training related to SIDS and infant safe sleep were found to be statistically significant predictors of whether CNMs discuss these topics with their patients. Future research on this topic should explore the effectiveness of
combining provider education and training along with efforts to improve the social norms around providing SIDS/infant safe sleep education in the obstetric environment. Prenatal healthcare providers can impact the decisions that women make about the care they will provide to their infant. All healthcare providers who work with expectant mothers and mothers of newborns should work together to provide frequent, consistent, and evidence-based education on this leading cause of infant mortality and health disparities.
One research question posed by this study that was not addressed in the previous chapters of this dissertation is whether there are differences in the infant safe sleep knowledge, attitudes, and behaviors of obstetric physicians versus obstetric nurses and CNMs. As discussed in Chapter 2: Background, the researcher was unable to obtain a comprehensive mailing list for all obstetric nurses in Ohio and as a result non-CNMs were excluded from the study. Therefore, the following comparisons include only obstetric physicians and CNMs. Prior to data collection, the researcher hypothesized that the infant safe sleep-related knowledge, attitudes, and behaviors of study participants would vary by occupation, with CNMs being more likely than obstetric physicians to provide responses that are consistent with the AAP’s recommendations.

A behavior question asking how frequently healthcare providers discuss SIDS prevention and/or infant safe sleep with obstetric patients during the prenatal period was examined to compare responses across the two study populations (Figure 6). Ordinal responses indicating that the participant discusses this topic with “all,” “most,”
Figure 6. Comparison of frequency of discussing SIDS between physicians and certified nurse midwives
or “some” patients were combined and compared to responses of “never.” A chi-square test of independence was conducted and the statistically significant results indicated that CNMs were more likely than obstetric physicians to discuss SIDS/infant safe sleep with patients ($X^2 (1, n=569) = 23.62, p<0.01$).

Three questions asking respondents about the infant safe sleep recommendations they make to their patients were scored as “recommended” or “not recommended,” based on whether their advice was in agreement with the AAP’s guidelines. Responses to each of the questions were compared using multiple chi-square tests of independence. All tests were statistically significant, with CNMs being more likely to give advice that is in line with the AAP’s recommendations on infant sleep positioning ($X^2 (1, n=565) = 29.70, p<0.01$) and infant sleep location ($X^2 (1, n=563) = 43.23, p<0.001$) and obstetric physicians being more likely to give recommended advice on infant sleep environment ($X^2 (1, n=571) = 4.55, p=0.03$) (Table 22).

As described previously, each knowledge question was scored as “correct” or “incorrect,” with “I don’t know” responses scored as “incorrect.” The number of correct and incorrect responses to each of the knowledge questions were placed into contingency tables by sample population (obstetric physicians versus CNMs) and the responses were compared using multiple chi-square tests of independence. Then the number of correct responses to the knowledge questions was totaled for each participant to create a knowledge score. Score distributions were compared between physicians and CNMs using a Mann-Whitney U Test.
<table>
<thead>
<tr>
<th>Behavior Questions</th>
<th>Obstetric Physicians</th>
<th>Certified Nurse Midwives</th>
<th>χ²</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you recommend to obstetric patients regarding how they should place their infant for sleep?[^a]</td>
<td>Not Recommended n(%)</td>
<td>Recommended n(%)</td>
<td>Not Recommended n(%)</td>
<td>Recommended n(%)</td>
</tr>
<tr>
<td></td>
<td>163 (39.2)</td>
<td>253 (60.8)</td>
<td>22 (14.8)</td>
<td>127 (85.2)</td>
</tr>
<tr>
<td>Which do you recommend to obstetric patients as acceptable places for an infant to sleep?</td>
<td>226 (54.1)</td>
<td>192 (45.9)</td>
<td>98 (64.1)</td>
<td>55 (35.9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which do you recommend to obstetric patients as the best room for an infant to sleep in?[^b]</td>
<td>385 (93.2)</td>
<td>28 (6.8)</td>
<td>109 (72.7)</td>
<td>41 (27.3)</td>
</tr>
</tbody>
</table>

[^a]: Item non-response: a=6, b=8

**Table 22. Comparison of SIDS/infant safe sleep behaviors between physicians and certified nurse midwives**

The results of the analyses for the individual knowledge questions were mixed, with responses to four of the questions generating differences that were statistically significant at the p=0.05 level (Table 23). A greater proportion of CNMs gave correct responses to questions related to items that are safe to include in an infant’s sleep.
<table>
<thead>
<tr>
<th>Knowledge Questions</th>
<th>Obstetric Physicians</th>
<th>Certified Nurse Midwives</th>
<th>X²</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>According to current recommendations from the AAP, which of the following is/are the safest positions(s) for most infants?ᵃ</td>
<td>Incorrect, n(%) 51 (12.3) Correct, n(%) 364 (87.7) Incorrect, n(%) 11 (7.2) Correct, n(%) 142 (92.8)</td>
<td></td>
<td>2.99</td>
<td>0.08</td>
</tr>
<tr>
<td>According to the AAP, which of the following environments are recommended for routine infant sleep?ᵇ</td>
<td>Incorrect, n(%) 139 (33.7) Correct, n(%) 274 (66.3) Incorrect, n(%) 64 (41.8) Correct, n(%) 89 (58.2)</td>
<td></td>
<td>3.24</td>
<td>0.07</td>
</tr>
<tr>
<td>According to the AAP, which of the following are acceptable items to include in an infant’s sleep environment?ᶜ</td>
<td>Incorrect, n(%) 160 (39.9) Correct, n(%) 241 (60.1) Incorrect, n(%) 29 (19.5) Correct, n(%) 120 (80.5)</td>
<td></td>
<td>20.12</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>The risk of SIDS can be reduced. (True)ᵇ</td>
<td>Incorrect, n(%) 24 (5.8) Correct, n(%) 389 (94.2) Incorrect, n(%) 5 (3.3) Correct, n(%) 148 (96.7)</td>
<td></td>
<td>1.49</td>
<td>0.22</td>
</tr>
<tr>
<td>Prenatal and/or postnatal exposure to cigarette smoke increases SIDS risk. (True)ᵇ</td>
<td>Incorrect, n(%) 29 (7.0) Correct, n(%) 385 (93.0) Incorrect, n(%) 3 (2.0) Correct, n(%) 149 (98.0)</td>
<td></td>
<td>5.28</td>
<td>0.02</td>
</tr>
<tr>
<td>Infants are more likely to aspirate when placed on their back to sleep. (False)ᵈ</td>
<td>Incorrect, n(%) 65 (15.8) Correct, n(%) 346 (84.2) Incorrect, n(%) 10 (6.5) Correct, n(%) 143 (93.5)</td>
<td></td>
<td>8.33</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>It is safe for mothers and infants to bedshare if the infant is exclusively breastfed and the mother is not obese or under the influence of drugs or alcohol. (False)ᵉ</td>
<td>Incorrect, n(%) 66 (16.0) Correct, n(%) 347 (84.0) Incorrect, n(%) 59 (39.3) Correct, n(%) 91 (60.7)</td>
<td></td>
<td>34.74</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Item non-response: a=3, b=5, c=21, d=7, e=8

Table 23. Comparison of SIDS/infant safe sleep knowledge between physicians and certified nurse midwives
environment ($X^2$ (1, n=550)=20.12, $p<0.001$), the association between exposure to cigarette smoking and increased risk of SIDS ($X^2$ (1, n=566)=5.28, $p=0.02$), and aspiration risk when infants are placed on their backs to sleep ($X^2$ (1, n=564)=8.33, $p<0.001$). Obstetric physicians were more likely to give a correct response to a survey question about the safety of bedsharing ($X^2$ (1, n=563)=34.74, $p<0.001$). When knowledge scores were compared using the Mann-Whitney U test, no statistically significant difference was found between the overall knowledge scores for obstetric physicians and certified nurse midwives ($U=29713.00$, $n_1=399$, $n_2=149$, $p=0.99$).

Questions pertaining to healthcare providers’ attitudes related to providing infant safe sleep education in the prenatal care environment were analyzed using dichotomized data from each of the attitude questions with “strongly agree” and “agree” compared to “neutral,” “disagree,” and “strongly disagree.” Responses to each attitude question were compared between obstetric physicians and CNMs using multiple chi-square tests of independence. (The data was not analyzed using a chi-square test of trend due to small cell sizes among the expected frequencies.) The number of positive responses to the attitude questions was totaled for each participant to create an attitude score. Score distributions were compared between physicians and certified nurse midwives using a Mann-Whitney U Test.
For each of the individual attitude questions, a greater proportion of CNMs gave responses that were consistent with positive attitudes about providing infant safe sleep education as part of prenatal care. The differences were statistically significant for each question (p≤0.001) (Table 24). A comparison of overall attitude score distributions between the two groups supports this finding, with CNMs having higher scores indicating more positive attitudes (U=18042.50, n₁=414, n₂=153, p<0.001).

<table>
<thead>
<tr>
<th>Attitude Statement</th>
<th>Obstetric Physicians</th>
<th>Certified Nurse Midwives</th>
<th>X²</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important for obstetricians/nurses to discuss SIDS/infant safe sleep with prenatal patients.</td>
<td>187 (45.2)</td>
<td>227 (54.8)</td>
<td>9 (5.9)</td>
<td>144 (94.1)</td>
</tr>
<tr>
<td>SIDS/infant safe sleep education is an important part of prenatal care.</td>
<td>189 (45.7)</td>
<td>225 (54.3)</td>
<td>25 (16.3)</td>
<td>128 (83.7)</td>
</tr>
<tr>
<td>It is difficult to provide SIDS/infant safe sleep education in the prenatal clinic/office.</td>
<td>296 (71.5)</td>
<td>118 (28.5)</td>
<td>91 (59.5)</td>
<td>62 (40.5)</td>
</tr>
<tr>
<td>I can influence my patients' decisions related to SIDS/infant safe sleep.</td>
<td>140 (33.8)</td>
<td>274 (66.2)</td>
<td>35 (22.9)</td>
<td>118 (77.1)</td>
</tr>
<tr>
<td>I am confident in my ability to provide guidance to patients on SIDS/infant safe sleep.</td>
<td>198 (47.8)</td>
<td>216 (52.2)</td>
<td>28 (18.3)</td>
<td>125 (81.7)</td>
</tr>
</tbody>
</table>

a: Question reverse-coded: "disagree" and "strongly disagree" coded as positive

Table 24. Comparison of SIDS/infant safe sleep attitudes between physicians and certified nurse midwives (n=567)
Overall, the results presented here partially support the proposed study hypothesis that CNMs would be more likely than obstetric physicians to give responses that support the AAP’s recommendations. A greater proportion of CNMs than physicians reported discussing SIDS/infant safe sleep with their obstetric patients; however, the advice given by the CNMs was more likely to be in line with the AAP’s recommendations for only two of the three subtopic areas examined. While provider knowledge varied to some degree by subject area, the overall knowledge scores were not statistically different between the two groups. There were statistically significant differences in responses to the attitude questions, with CNMs consistently more likely to give responses reflecting more positive attitudes than obstetric physicians.

In summary, the results of these comparison analyses document differences in SIDS and infant safe sleep knowledge, attitudes, and practices by type of healthcare provider. This additional information will be important when planning future interventions or educational programs aimed at improving healthcare providers’ communication about infant safe sleep recommendations to women in the prenatal healthcare setting.
Chapter 8: Discussion

The purpose of this study was to contribute to SIDS and infant safe sleep research by collecting data on the knowledge, attitudes, and behaviors of prenatal and postnatal healthcare providers in Ohio. A mixed-methods approach was used, including a cross-sectional survey of 418 obstetric physicians and 153 certified nurse midwives as well as focus groups comprised of 22 certified lactation consultants. The following three primary research questions were answered by this study:

1) What prenatal healthcare provider characteristics are associated with making infant safe sleep recommendations based on current best practice guidelines?

2) Do prenatal and postnatal healthcare providers perceive that there are barriers to providing SIDS/infant safe sleep-related education in the obstetric environment? If so, what barriers do they perceive?; and

3) What key factors should be addressed to improve prenatal and postnatal healthcare provider initiated infant safe sleep education in Ohio?

The main findings addressing the first research question are that positive attitudes and prior SIDS training are healthcare provider characteristics that predict
whether an individual discussed infant safe sleep with obstetric patients among both obstetric physicians and CNMs. This finding partially supports the study hypothesis that knowledge, positive attitudes, and prior SIDS training would be predictive of discussing SIDS/infants safe sleep with obstetric patients; however, in this study knowledge was a statistically significant predictor only among obstetric physicians.

Although most participants displayed a moderate amount of knowledge about infant safe sleep, in general they did not report providing such education to patients on a consistent basis. Prior research on this topic conducted with obstetricians and gynecologists found similar patterns of support for providing infant safe sleep education as well as some knowledge of the topic, but with few practitioners indicating that they provide advice to patients on SIDS risk reduction, particularly when compared to pediatricians and family practitioners (Moon et al., 2002; Eron et al., 2011). No similar published studies with CNMs have been identified. In the current study, a greater proportion of CNMs than obstetric physicians reported discussing SIDS and/or infant safe sleep with obstetric patients “all of the time” or “most of the time” (46% versus 21%, respectively). This may be associated with the fact that CNMs were more likely to report positive attitudes toward providing infant safe sleep education in the prenatal healthcare environment and prior SIDS/infant safe sleep training.

Most obstetric physicians and CNMs who participated in the survey study indicated that they had not previously received formal training related to SIDS/infant safe sleep (80% and 60%, respectively). This supports the idea proposed in this research
that prenatal healthcare providers are a population that is frequently overlooked when developing initiatives to prevent SIDS and other causes of sleep-related infant death. More than one-half of obstetric physicians and nearly all CNMs who participated in this study indicated that it was important for obstetricians/nurses, respectively, to discuss SIDS/infant safe sleep with prenatal patients.

Focusing on the second research question, the key study finding is that healthcare providers perceive numerous barriers to providing SIDS/infant safe sleep education in the prenatal clinic environment. In fact, 70% of obstetric physicians and 63% of CNMs indicated that barriers exist to providing infant safe sleep information during the prenatal time spent with women. Prior to data collection, the researcher hypothesized that perceived barriers would include time constraints, staff knowledge/training, and perceptions of infant safe sleep education as being outside the role of obstetric care providers. The barriers identified most frequently by study participants included: lack of resources, not enough time to address the topic, the perception that most obstetric offices do not provide education on this topic, the belief that providing education on this topic is not the norm in the participant’s practice/clinic, and lack of training in residency programs (cited among obstetric physicians). The most commonly perceived barriers were nearly identical between the two study populations.

In addition to surveys of obstetric physicians and CNMs, this research study also included focus groups to explore the infant safe sleep-related beliefs and occupational practices of certified lactation consultants in Ohio. The primary barrier to providing
infant safe sleep education that was identified among this population was that many participants in the focus group component of the current research indicated strong disagreement with organizational policies that discourage bedsharing and prohibit some lactation consultants from discussing the topic with their clients. Some focus group participants also expressed distrust of the infant fatality data on which the policies are based and trusted an alternate set of studies to support their views. Many of the sources that lactation consultants cited as the basis of their beliefs about the benefits and safety of bedsharing have limited scientific merit (small sample sizes, controlled laboratory environments, anecdotal observations), despite being endorsed by some of the leading agencies in the U.S. that advocate for breastfeeding (Wiessinger et al., 2014; McKenna, 2007; McKenna & McDade, 2005; Mosko et al., 1997; Mosko et al., 1996; Mosko et al., 1993).

The main finding addressing the study’s third research question is that 82% of obstetric physicians and 94% of CNMs indicated that they would be interested in providing education about infant safe sleep to their patients. Hypothesized enabling and reinforcing factors were: supportive office policies, education reminders built into the electronic medical record, endorsement by professional societies, and material resources. All of these items were included among the leading enabling and reinforcing factors identified by study participants from both populations, along with education or training for other office staff and increased reimbursement for prevention counseling.
Healthcare providers who provide prenatal care to women, such as obstetric physicians and CNMs, interact with expectant mothers during a time when many women are making plans about the sleep environment they will provide for their newborn. Cribs, bassinets, co-sleepers, and bedding are being purchased or mothers may be making plans for bedsharing. Although not all mothers adhere to the infant sleep plans they make during pregnancy and many bedshare unexpectedly as a result of maternal exhaustion or other reasons, opportunities to provide infant safe sleep education before the infant’s arrival should be promoted by prenatal healthcare providers.

Among lactation consultants, the disconnect between the recommendations of the AAP and the enthusiastic beliefs and practices of lactation consultants means that mothers may be receiving inconsistent messaging from healthcare providers and/or inaccurate or no education about infant safe sleep. In addition, infant safe sleep educational policies may not be implemented in the manner that policy makers and healthcare agency leaders intended. Given the limited sample of lactation consultants included in this study, it would be worthwhile to examine this issue on a broader scale to see if similar views are found among a larger population of lactation consultants. In Ohio, development of future interventions to address this topic among lactation consultants will require extensive efforts directed at changing knowledge, attitudes, and behaviors and may benefit from the inclusion of organizational change theories to guide
successful policy adoption, as current policies have not been accepted by all practitioners.

As discussed in Chapter 2: Background, a multi-faceted, multi-level intervention is likely to be more successful at changing behaviors than focusing on a single strategy aimed at one level of the social ecological model (Sallis et al., 2008). The socioecological model used as a framework for this line of research included five levels of influence: infant, maternal, family and household, and community and society, all placed into the historical context of race. Although a great deal of work has been done in Ohio in recent years to educate mothers of newborns and other infant caregivers about how to reduce the risk of SIDS and other causes of infant sleep-related death, the findings of this study indicate that additional work is still needed to improve the infant safe sleep knowledge, attitudes, and behaviors of prenatal and postnatal healthcare providers. In addition, strategies to address infant safe sleep should also include efforts at the community and society levels.

This research serves as a needs assessment of the infant safe sleep beliefs and practices of obstetric physicians, CNMs, and lactation consultants in Ohio. As discussed in Chapter 2: Background, the PRECEDE-PROCEED Model was used as the conceptual framework for this study and the findings address Phases 1-3 of the PRECEDE portion of the framework. Phase 1: Social assessment was accomplished through the successful completion of the focus groups and surveys. The extensive literature review conducted as part of this dissertation research provided data for addressing Phase 2:
Epidemiological, behavioral and environmental assessments. And Phase 3: Educational and ecological assessment was completed by exploring infant safe sleep-related predisposing, enabling, and reinforcing factors among the study participants.

Consistent infant safe sleep education from multiple sources can have a positive influence on the choices that mothers of newborns make related to this topic (Smith et al., 2016). Waiting for mothers to receive infant safe sleep education for the first time in a hospital postpartum setting from healthcare providers they have never met is likely to be less effective than initiating those discussions with prenatal care providers with whom a relationship has been established and then reinforcing this messaging after delivery. Also, depending solely on pediatricians to introduce the topic may provide the guidance too late, as one study found that 19% of infants had bedshared at least once between the time of hospital discharge and their first well-child visit (Norton & Grellner, 2011). Although pediatricians should reinforce and expand on the education that has been provided on this topic, the initial well-child visit shouldn’t be the first time this important topic is discussed. As an example, in this study the vast majority of obstetric physicians and CNMs surveyed indicated that they regularly discuss breastfeeding with their obstetric patients. Given that breastfeeding mothers are three times more likely to bedshare, no discussion of breastfeeding should occur in the healthcare environment without including education on infant safe sleep recommendations (McCoy et al., 2004).

In recent years, Ohio has leveraged substantial financial resources and legislative effort into strategies to address the problem of infant mortality, including the
prevention of SIDS and sleep-related infant death, in the state. Despite these endeavors, the findings of this study indicate that Ohio mothers may not be receiving frequent and consistent messaging in agreement with AAP’s recommendations about infant safe sleep from their healthcare providers. This finding is critical since prior studies have shown that healthcare providers can have a positive influence on the infant safe sleep-related behaviors of their patients (Colson et al., 2006; Zachry & Kitzmann, 2010; Gelfer, et al., 2013; Vernacchio et al., 2003; Colson & Joslin, 2002; Shaefer et al., 2010; Smith et al., 2016). Although there is great deal that remains unknown about the causes of SIDS, the AAP’s recommendations are based upon the most current scientific research available on this topic, and in the absence of reliable evidence to support alternative practices, should be universally endorsed and promoted by prenatal healthcare providers and lactation consultants in the state.

This study did have several limitations beyond those described in the previous chapters. Due to financial constraints, the target population for this study was limited to prenatal and postnatal healthcare providers practicing in Ohio and did not collect comparison data from providers in other states. However, the research did take place in a state with one of the highest infant mortality rates in the nation and the results provide a needs assessment of the populations of interest. Survey results were limited by low to moderate response rates and possible non-response bias. Also, although the survey was reviewed for content validity by topic experts, the survey instrument has not
been scientifically validated. Focus groups were limited by small sample sizes, geographical limitations, and lack of diversity among the participant population.

The results of this study provide clear guidance for future intervention research on this topic, since the findings identified barriers and enabling/reinforcing factors to giving consistent infant safe sleep information according to AAP recommendations as part of prenatal and postnatal healthcare. Most obstetric physicians and CNMs who expressed an interest in providing infant safe sleep education to their obstetric patients requested printed materials that they could distribute. Distributing materials alone is not an effective strategy for changing patient behaviors, but materials could be offered to providers as a way to open the door for future multi-level interventions. Although both obstetric physicians and CNMs preferred the option of SIDS/infant safe sleep education for other office staff to educations for themselves, educational strategies for all prenatal healthcare providers should be explored, both as part of residency and nursing school training as well as continuing medical education. Patient education reminders built into the electronic medical record and office policies encouraging SIDS/infant safe sleep education are also ideas worthy of consideration. Endorsement and support for infant safe sleep education in the obstetric healthcare environment should be sought from professional societies such as ACOG and AWHONN. Any developed intervention should be tested in a randomized controlled trial to determine effectiveness. In addition, it may also be useful to explore this subject on a national scale to determine if prenatal and postnatal healthcare providers in other states,
particularly those with lower rates of SIDS/sleep-related infant death, report similar beliefs and practices.

In closing, the results of this research contribute to existing knowledge in the field by providing a needs assessment of healthcare providers who are not typically included in SIDS and infant safe sleep research and prevention initiatives. Very little research has been conducted to date to examine the infant safe sleep-related knowledge, attitudes, and behaviors of obstetric physicians and no known studies have been conducted to assess these characteristics among CNMs who provide prenatal care to women. It is also the first known study to examine the SIDS and infant safe sleep-related attitudes and behaviors of lactation consultants in the U.S. The results of this research provide evidence that strategies aimed at multiple levels are needed to address this significant public health issue and to reduce SIDS and sleep-related SUID disparities.
References


Appendix A: Survey Codebook
<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Variable Name</th>
<th>Variable Label</th>
<th>Value Labels</th>
<th>Desired Response</th>
<th>Question Type</th>
<th>Framework</th>
<th>Question Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Is Ohio your primary practice location? (Choose one):</td>
<td>ID</td>
<td>ID Number</td>
<td>1=MD; 2=CMN</td>
<td>1</td>
<td>screener</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MDorCNM</td>
<td>MD or CMN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>2</td>
<td>What is your medical specialty? (Mark all that apply): (Physicians Only)</td>
<td>OHIO</td>
<td>Practice in Ohio</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td>MD OB</td>
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<td></td>
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<td></td>
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<td>MD MFM</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>SpecOth</td>
<td>MD Other</td>
<td>string</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>What is your occupation? (Mark all that apply): (Nurses only)</td>
<td>LPN</td>
<td>Nurse Specialty LPN</td>
<td>1=yes; 0=no</td>
<td></td>
<td>screener/demographic</td>
<td></td>
<td></td>
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<tr>
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<td></td>
<td>RN</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>NP</td>
<td>Nurse Specialty NP</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>CNM</td>
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<td></td>
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<td></td>
<td></td>
<td>CNS</td>
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<tr>
<td>Field</td>
<td>Description</td>
<td>Value</td>
<td>Source</td>
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<tr>
<td>-------------</td>
<td>------------------------------------------------------------------------------</td>
<td>--------</td>
<td>----------------------------</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NurseOth</td>
<td>Nurse Specialty Other</td>
<td>string</td>
<td>screen specialty for eligibility; If no response to Q2=ineligible</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NumPatients</td>
<td>Number OB Patients per Day</td>
<td>1=fewer than 25; 2=25 or more; 3=I do not see OB patients</td>
<td>1,2</td>
<td>screener demographic adapted from R. Moon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DiscBedshare</td>
<td>Discuss Bedsharing</td>
<td>1=yes; 0=no</td>
<td>behavior adapted from R. Moon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DiscBF</td>
<td>Discuss Breastfeeding</td>
<td>1=yes; 0=no</td>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DiscCSS</td>
<td>Discuss Carseat</td>
<td>1=yes; 0=no</td>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>DiscChildproof</td>
<td>Discuss Childproofing</td>
<td>1=yes; 0=no</td>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>DiscSleepEnv</td>
<td>Discuss Sleep Environment</td>
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<td>behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DiscSleepPos</td>
<td>Discuss Sleep Position</td>
<td>1=yes; 0=no</td>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DiscPaci</td>
<td>Discuss Pacifier</td>
<td>1=yes; 0=no</td>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DiscRoomshar e</td>
<td>Discuss Roomsharing</td>
<td>1=yes; 0=no</td>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DiscImmun</td>
<td>Discuss Immunizations</td>
<td>1=yes; 0=no</td>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DiscSmoke</td>
<td>Discuss Smoking</td>
<td>1=yes; 0=no</td>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DiscNoRespon se</td>
<td>Discuss Q no response</td>
<td>1=participant did not mark any response for Q4</td>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5 What do you recommend to obstetric patients regarding how they should place their infant for sleep? (Choose one):

<table>
<thead>
<tr>
<th>RecPos</th>
<th>Recommend Sleep position</th>
<th>1=I do not make recommendations; 2=on the back; 3= on the side; 4=on the stomach; 5=back or side; 6=stomach or side; 7=back or stomach; 8=other; 9=other; 99-no response</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecPosOth</td>
<td>Recommend sleep position other</td>
<td>string</td>
</tr>
</tbody>
</table>

6 Which do you recommend to obstetric patients as acceptable places for an infant to sleep? (Mark all that apply):

<table>
<thead>
<tr>
<th>RecEnvNone</th>
<th>Recommend Sleep Env No Recommendation</th>
<th>1=yes; 0=no</th>
</tr>
</thead>
<tbody>
<tr>
<td>RecEnvCrib</td>
<td>Recommend Sleep Env Crib</td>
<td>1=yes; 0=no</td>
</tr>
<tr>
<td>RecEnvCoSl</td>
<td>Recommend Sleep Env Cosleeper</td>
<td>1=yes; 0=no</td>
</tr>
<tr>
<td>RecEnvParents</td>
<td>Recommend Sleep Env Parent Bed</td>
<td>1=yes; 0=no</td>
</tr>
<tr>
<td>RecEnvNoPref</td>
<td>Recommend Sleep Env No Preference</td>
<td>1=yes; 0=no</td>
</tr>
<tr>
<td>RecEnvOther</td>
<td>Recommend Sleep Env Other</td>
<td>string</td>
</tr>
</tbody>
</table>

Adapted from R. Moon
7. Which do you recommend to obstetric patients as the best room for an infant to sleep in? (Choose one):

<table>
<thead>
<tr>
<th>RecLoc</th>
<th>Recommend Sleep Location</th>
<th>1=I do not recommend; 2=in a separate room; 3=in same room with parent; 4=no preference; 5=other; 99=no response</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td>behavior</td>
</tr>
</tbody>
</table>

8. How frequently do you discuss Sudden Infant Death Syndrome (SIDS) risk reduction and/or infant safe sleep with obstetric patients during the course of their prenatal care? (Choose 1):

<table>
<thead>
<tr>
<th>DiscSIDS</th>
<th>Discuss SIDS</th>
<th>1=all of the time; 2=most of the time; 3=some of the time; 4=never; 99=no response [if never, skip to Q10]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>behavior</td>
</tr>
</tbody>
</table>

9. How do you make SIDS/infant safe sleep recommendations to your obstetric patients? (Mark all that apply):

<table>
<thead>
<tr>
<th>SIDSRecInitiate</th>
<th>Initiate SIDS Discussion</th>
<th>1=yes; 0=no</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SIDSRecAnsw</th>
<th>Answer SIDS Questions</th>
<th>1=yes; 0=no</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SIDSRecPrint</th>
<th>Provide SIDS Printed Material</th>
<th>1=yes; 0=no</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SIDSRecVideo</th>
<th>Show SIDS video</th>
<th>1=yes; 0=no</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SIDSRecOth</th>
<th>Other SIDS Recommendation</th>
<th>string</th>
</tr>
</thead>
</table>

adapted from R.Moon
According to current recommendations from the American Academy of Pediatrics, which of the following is/are the safest sleep position(s) for most infants? (Choose one):

1. on the back
2. on the side
3. on the stomach
4. back or side is equally safe
5. stomach or side is equally safe
6. back or stomach is equally safe
7. sleep position doesn’t matter
8. I don’t know
9. no response

According to the American Academy of Pediatrics, which of the following environments are recommended for routine infant sleep? (Mark all that apply):

1. Chair
2. Bassinet
3. Cradle
4. Co-sleeper
5. Couch
6. Crib
7. Dropside Crib
8. Swing
9. Parent Bed

Knowledge predisposing adapted from R. Moon
12 According to the AAP, which of the following are acceptable items to include in an infant’s sleep environment? (Mark all that apply):

- AAPEnvPAP: AAP Sleep Env Portable Crib 1=yes; 0=no
- AAPEnvIDK: AAP Sleep Env IDK 1=yes; 0=no
- AAPBump: AAP Bumpers 1=yes; 0=no
- AAPComforter: AAP Comforter 1=yes; 0=no
- AAPSheet: AAP Sheet 1=yes; 0=no
- AAPPaci: AAP Pacifier 1=yes; 0=no
- AAPPillow: AAP Pillow 1=yes; 0=no
- AAPQuilt: AAP Quilt 1=yes; 0=no
- AAPSheep: AAP Sheepskin 1=yes; 0=no
- AAPWedge: AAP Wedge 1=yes; 0=no
- AAPAnimal: AAP Stuffed Animal 1=yes; 0=no
- AAPIDK: AAP IDK 1=yes; 0=no

13 The risk of SIDS can be reduced. (T/F)

- TFSIDSReduce: SIDS risk can be reduced 1=true; 0=false; 88=IDK; 99=no response

- TFSmoke: Smoking increases SIDS risk 1=true; 0=false; 88=IDK; 99=no response

- TFBTS: Aspiration risk increases on back 1=true; 0=false; 88=IDK; 99=no response
<table>
<thead>
<tr>
<th>Question</th>
<th>Code</th>
<th>Description</th>
<th>Possible Responses</th>
<th>Code</th>
<th>Knowledge</th>
<th>Outcome</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is safe for mothers and infants to bed-share if the infant is exclusively breastfed and the mother is not obese or under the influence of drugs or alcohol. (T/F)</td>
<td>TFSafe</td>
<td>Safe to bedshare</td>
<td>1=true; 0=false; 88=IDK; 99=no response</td>
<td>0</td>
<td>knowledge</td>
<td>predisposing</td>
<td></td>
</tr>
<tr>
<td>It is important for obstetricians to discuss SIDS/infant safe sleep with patients during prenatal appointments.</td>
<td>AttOBDisc</td>
<td>Attitudes Important OB Discuss</td>
<td>1=strongly agree; 2=agree; 3=neutral; 4=disagree; 5=strongly disagree; 99=no response</td>
<td>1 or 2</td>
<td>attitudes</td>
<td>predisposing</td>
<td></td>
</tr>
<tr>
<td>SIDS/infants safe sleep education is an important part of prenatal care.</td>
<td>AttOBEduc</td>
<td>Attitude SIDS Education Important</td>
<td>1=strongly agree; 2=agree; 3=neutral; 4=disagree; 5=strongly disagree; 99=no response</td>
<td>1 or 2</td>
<td>attitudes</td>
<td>predisposing</td>
<td></td>
</tr>
<tr>
<td>It is difficult to provide SIDS/infant safe sleep education in the prenatal clinic/office.</td>
<td>AttOBHard</td>
<td>Attitude SIDS Education Difficult</td>
<td>1=strongly agree; 2=agree; 3=neutral; 4=disagree; 5=strongly disagree; 99=no response</td>
<td>4 or 5</td>
<td>attitudes</td>
<td>predisposing</td>
<td></td>
</tr>
<tr>
<td>I can influence my patient’s decisions related to SIDS/infant safe sleep.</td>
<td>AttOBInfluence</td>
<td>Attitude OB Influence</td>
<td>1=strongly agree; 2=agree; 3=neutral; 4=disagree; 5=strongly disagree; 99=no response</td>
<td>1 or 2</td>
<td>attitudes</td>
<td>predisposing/outcome expectations</td>
<td></td>
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<tr>
<td>I am confident in my ability to provide guidance to patients on this topic.</td>
<td>AttOBConfident</td>
<td>Attitude OB Confidence</td>
<td>1=strongly agree; 2=agree; 3=neutral; 4=disagree; 5=strongly disagree; 99=no response</td>
<td>1 or 2</td>
<td>attitudes</td>
<td>predisposing/self efficacy</td>
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</table>
Do you perceive any barriers to providing SIDS/infant safe sleep education in the prenatal clinic/office? (Choose 1)

What barriers do you perceive to providing SIDS/infant safe sleep education in the prenatal clinic/office? (Respond yes or no to each item)
<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Enabling</th>
<th>Enabling</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Are you interested in providing SIDS/infant safe sleep education to your obstetric patients? (Choose 1)</td>
<td>Enabling</td>
<td>Enabling</td>
<td>1=yes; 0=no; 99=no response</td>
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<tr>
<td></td>
<td></td>
<td>Enabling printed materials</td>
<td>Enabling printed materials</td>
<td>1=yes; 0=no; 99=no response [If no, skip to Q19]</td>
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<td>Enabling video</td>
<td>1=yes; 0=no; 99=no response</td>
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<td></td>
<td>Enabling reimbursement</td>
<td>Enabling reimbursement</td>
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<td>Enabling education for self</td>
<td>Enabling education for self</td>
<td>1=yes; 0=no; 99=no response</td>
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<td>Enabling education for staff</td>
<td>1=yes; 0=no; 99=no response</td>
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<td>Enabling EMR</td>
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<td>Enabling colleague support</td>
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<td>Description</td>
<td>Type</td>
<td>Response</td>
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<td>--------</td>
<td>------------------------------------------------</td>
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<tr>
<td>Have you ever received formal training on SIDS/infant safe sleep?</td>
<td>SIDSTrain</td>
<td>SIDS Training</td>
<td>string</td>
<td>1=yes; 0=no; 99=no response [If no, skip to Q20]</td>
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<tr>
<td>If yes, have you received formal training on SIDS/infant safe sleep</td>
<td>SIDSTrain4Y</td>
<td>SIDS Training in Past 4 Years</td>
<td>demographics</td>
<td></td>
</tr>
<tr>
<td>How many years have you been practicing as a physician (excluding</td>
<td>YearsPrac</td>
<td>Years in Practice</td>
<td>demographics</td>
<td></td>
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<tr>
<td>How many years have you been employed as a nurse?</td>
<td>Hispanic</td>
<td>Hispanic</td>
<td>demographics</td>
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<tr>
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<td>Hispanic</td>
<td>Hispanic</td>
<td>demographics</td>
<td></td>
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<tr>
<td>How would you describe your race? (Mark all that apply):</td>
<td>White</td>
<td>White</td>
<td>demographics</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>Black</td>
<td>1=yes; 0=no</td>
<td>demographics</td>
<td></td>
</tr>
<tr>
<td>AsianPl</td>
<td>Asian</td>
<td>1=yes; 0=no</td>
<td>demographics</td>
<td></td>
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<tr>
<td>AIAN</td>
<td>AI/AN</td>
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<td>demographics</td>
<td></td>
</tr>
<tr>
<td>RaceOth</td>
<td>Race Other</td>
<td>string</td>
<td>demographics</td>
<td></td>
</tr>
<tr>
<td>What is your gender (Circle one):</td>
<td>Gender</td>
<td>Gender</td>
<td>demographics</td>
<td></td>
</tr>
<tr>
<td>0=male; 1=female; 99=no response</td>
<td>Age</td>
<td>Age</td>
<td>demographics</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Question</td>
<td>Variable</td>
<td>Description</td>
<td>Source</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------------------------------------</td>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>25</td>
<td>How would you describe your principal place of employment? (Choose 1):</td>
<td>Employer</td>
<td>Employer 1=FQHC; 2=hospital-based clinic; 3=private practice; 4=public health dept; 5=other; 99=no response</td>
<td>demographics adapted from R.Moon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Employer Oth</td>
<td>string</td>
<td>demographics adapted from R.Moon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Location</td>
<td>1=rural; 2=suburban; 3=urban; 99=no response</td>
<td>demographics adapted from R.Moon</td>
</tr>
<tr>
<td>26</td>
<td>How would you describe the location of your principal place of employment? (Choose 1):</td>
<td>EmployOth</td>
<td>string</td>
<td>demographics adapted from R.Moon</td>
</tr>
<tr>
<td>27</td>
<td>What percentage of your patients do you estimate are Hispanic or Latino?</td>
<td>PatHisp</td>
<td>percent</td>
<td>demographics adapted from R.Moon</td>
</tr>
<tr>
<td>28</td>
<td>How would you describe your patient population (to the best of your ability)? (Sum should equal 100%):</td>
<td>PatWhite</td>
<td>percent</td>
<td>demographics adapted from R.Moon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PatBlack</td>
<td>percent</td>
<td>demographics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PatAsianPi</td>
<td>percent</td>
<td>demographics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PatAIAN</td>
<td>percent</td>
<td>demographics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PatPrivatelns</td>
<td>percent</td>
<td>demographics adapted from R.Moon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PatPubIns</td>
<td>percent</td>
<td>demographics</td>
</tr>
</tbody>
</table>

Note: The table entries include variable names, descriptions, and the source of the data. The numbers in the first column are placeholders for the actual question numbers.
<table>
<thead>
<tr>
<th>PatMilitary</th>
<th>Patients military / government insurance</th>
<th>percent</th>
<th>demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td>PatNoInsur</td>
<td>Patients no insurance</td>
<td>percent</td>
<td>demographics</td>
</tr>
</tbody>
</table>
Appendix B: Focus Group Discussion Guide
Focus Group Guide—Lactation Consultant Views

- Participants will be consented and complete a brief demographic form upon arrival and prior to beginning the focus group.

- Introduction
  - Welcome
  - Housekeeping notes (refreshments, restrooms, etc.)
  - Introductions
  - Focus group audio recording
  - Privacy and confidentiality

- Begin the audio recorder

- What is the role of a lactation consultant/counselor?
  - What are some of the tasks that you typically perform when working with a mother?
  - What are some of the topics you discuss with mothers?
  - Do you give advice to mothers that is not related directly to breastfeeding? If so, what are some topics that you discuss?

- Frequently new mothers have questions about infant sleep. Tell me how you talk to mothers about infant sleep. What advice do you give to mothers on this topic?
  - Possible probe: For example, what advice do you offer to mothers who are concerned that their infant is sleeping too much/too little?
  - Where do you suggest that an infant should sleep?

- Infant safe sleep is a topic that is talked about a great deal as a way to prevent Sudden Infant Death Syndrome (SIDS) and other causes of sleep-related infant death. What are some words that come to mind when you hear the phrase “infant safe sleep”?
  - What are some of the SIDS-prevention / infant safe sleep recommendations that you have heard of? (Brainstorm and then pass out a list of the American Academy of Pediatrics’ guidelines for each participant to review.)
  - What are your thoughts about these infant safe sleep recommendations?
    - Do you think these recommendations are beneficial to infants? Why or why not?
    - How do these recommendations support or contradict breastfeeding promotion?
- Do you think that these recommendations are realistic for parents to follow? What about for breastfeeding mothers in particular? Why or why not?
  - Do you feel that these infant safe sleep recommendations relate to your work as a lactation consultant? Why or why not?
- [NURSE GROUP ONLY]: Do you feel that these infant safe sleep recommendations relate to your work as a nurse? Why or why not?
  - If you provide advice to mothers related to infant sleep, is the advice you give consistent with the infant safe sleep recommendations? In what way?
- Do you think there are barriers or obstacles to lactation consultants providing infant safe sleep education to mothers? If so, what might those barriers be?
- Are there benefits to lactation consultants providing infant safe sleep education to mothers? If so, what might those benefits be?
- Wrap up
  - Closing remarks; distribution of infant safe sleep resources/handouts
  - Distribution of gift cards and parking tokens
Appendix C: Focus Group Participant Gift Card Receipt
Human Subject Payment Receipt

Date

Paid To: __________________________ $ __________

Subject Number _______________________

Check number if paid by check _______________

Gift card number from back of gift card if paid by gift card _______________

Human Subject Protocol #: ________________ Project #: ________________

Payee Signature: _______________________

Authorized By: _______________________

Please note that this payment is taxable income and the recipient is required to report this amount on federal and state tax returns.

This receipt should be maintained, confidentially, in the project files.

The Ohio State University Human Subject Payment Receipt: Version 1.1 10/09/2008
Appendix D: Focus Group Recruitment Flyer
Are you a lactation consultant working in Ohio?

Certified lactation consultants are invited to participate in Ohio focus groups

The College of Public Health at The Ohio State University is conducting a research study to learn about the beliefs and practices of lactation consultants in Ohio.

Eligibility criteria:
- At least 18 years of age
- Comfortable participating in a group discussion in English
- Certified lactation consultant or counselor
- Currently working as a lactation consultant/counselor in Ohio

Focus groups will take place during evening and weekend hours and will last approximately 90 minutes. Participants will receive a $50 gift card in appreciation for their time.

If you are interested in participating or would like to learn more about this study, please contact:

Nichole Hodges, MPH, MCHES
(614) 355-5870
Hodges.340@buckeyemail.osu.edu
Appendix E: Focus Group Recruitment Email
Subject: Lactation Consultants Needed for Focus Group Study

Attachment: Focus Group Recruitment Flyer

Dear XXXXXXX,

I am conducting a study to learn about the beliefs and practices of lactation consultants. For this research, I am recruiting lactation consultants to take part in a focus group in [City], Ohio. The focus group will last about 90 minutes and will take place during evening or weekend hours. Participants will receive a $50 gift card in appreciation for their time.

Focus group eligibility criteria:
• At least 18 years of age
• Comfortable participating in a group discussion in English
• Certified lactation consultant or counselor
• Currently working as a lactation consultant or counselor in Ohio

If you are interested in participating or would like to learn more about this study, please contact:
Nichole Hodges, MPH, MCHES, at (614) 355-5870 or Hodges.340@buckeyemail.osu.edu.

You are welcome to forward this email and attached flyer to others who may like to participate.

Thank you,

Nichole Hodges, MPH, MCHES
Doctoral Candidate
College of Public Health
The Ohio State University
Appendix F: Focus Group Screening Form
Thank you for calling about the lactation consultant study. This study is being conducted by researchers at The Ohio State University College of Public Health. I am interested in learning about the beliefs and occupational practices of lactation consultants in the state of Ohio.

As part of this study, I am conducting focus groups with certified lactation consultants and counselors. The focus groups will last approximately 90 minutes and will take place in [City], Ohio. During the focus groups, lactation consultants will be asked about the advice and education they provide to their clients. Individuals will receive a $50 gift card to a local retailer in appreciation for their time.

Do you think this sounds like something you would be interested in participating in? [If no, thank the caller for his/her time and end the call.]

Would you mind if I asked you a few questions to determine if you are eligible to participate?

1. Are you at least 18 years of age?
   □ Yes
   □ No

2. Are you comfortable participating in a group discussion in English?
   □ Yes
   □ No

3. Are you an Internationally Board Certified Lactation Consultant or Certified Lactation Counselor?
   □ Yes
   □ No

4. Do you work as a lactation consultant in Ohio (either independently or for a hospital or other employer)?
   □ Yes
   □ No

**If the participant answered “No” to any of the above questions, they are ineligible to participate. Thank the caller for their time and end the call.**

5. Are you currently employed as a nurse?
   □ Yes [STOP. Assign to FG #1]
   □ No
6. How many years have you been working as a lactation consultant?

☐ Less than 10 years [STOP. Assign to FG #2]
☐ 10 years or more [STOP. Assign to FG #3]

Great, it looks like you are eligible to participate in this study.

The focus group time that we have available for you is:

☐ FG #1 (Nurses Only) Day, Date, Start time-End Time, Location
☐ FG #2 (<10 years) Day, Date, Start time-End Time, Location
☐ FG #3 (>= 10 years) Day, Date, Start time-End Time, Location

7. Does this date and time work for you?

☐ Yes [Go to PARTICIPANT CONFIRMATION section below.]
☐ No [If no, advise caller that they may be added to a waitlist if future dates/times become available. If they would like to be added to the waitlist, Skip to WAITLIST section below. If they would prefer not to be added to the waitlist, thank the caller and end the call.]

PARTICIPANT CONFIRMATION

Check in will begin 15 minutes prior to the start of the focus group and refreshments will be provided.

In order to send you a confirmation reminder and directions to the meeting location may I have your name, address, phone number and email address?

Name: _____________________________________________________
Street Address: ____________________________________________
Apt #: ____________
City/State/Zip Code: ________________________________________
Phone Number : (Circle: Work  Home  Cell) __(______)__________________________
Email Address: ______________________________________________

[Read all contact information back to the caller to confirm.]
8. One final question for today: Would you be interested in being contacted about participating in future research related to this study?

□ Yes
□ No

Thank you. If your plans change and you are unable to participate, please call (614) 355-5870 so that we may invite another participant from the waiting list. Otherwise we look forward to seeing you on Day, Date, at Time.

WAITLIST

I would be happy to add you to our waiting list for this study. May I have your name, address, phone number and email address so that we may contact you if future dates become available?

Name: ____________________________________________

Street Address: ____________________________________________

Apt #: __________

City/State/Zip Code: ________________________________

Phone Number: (Circle: Work  Home  Cell) ____________

Email Address: ____________________________________________

[Read all contact information back to the caller to confirm.]

Is there a particular day of the week and time that would work better for you?

Preferred days/times (Mark day and circle time):

□ Monday   morning   afternoon   evening
□ Tuesday   morning   afternoon   evening
□ Wednesday morning   afternoon   evening
□ Thursday  morning   afternoon   evening
□ Friday    morning   afternoon   evening
□ Saturday  morning   afternoon   evening
□ Sunday    morning   afternoon   evening

Thank you. We will contact you if additional focus group sessions become available.
Appendix G: Focus Group Consent Form
The Ohio State University Consent to Participate in Research

Study Title: Infant Sleep: Lactation Consultant Views
Researcher: Mira Katz, PhD and Nichole Hodges, MPH
Sponsor: N/A

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.

Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

Purpose:

This study will collect information from lactation consultants in Ohio about their beliefs and professional behaviors related to infant sleep practices. This information will be used to help guide future research and education on this topic.

Procedures/Tasks:

This focus group study will consist of a group discussion with other lactation consultants. The focus group leader will ask you to share information about your beliefs and behaviors related to your work. The focus group will be tape recorded.

Duration:

The focus group will last around 90 minutes and will take place during evening and weekend hours.

You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University.

Risks and Benefits:
The focus group leader will ask questions about your beliefs and behaviors, which may be uncomfortable for some participants. If there is a question that you do not want to answer you may skip it.

This study may have benefits to individuals and communities; however, you may not benefit directly from being in this study.

Confidentiality:

Efforts will be made to keep your study-related information confidential; however the confidentiality of the information discussed during the focus group cannot be guaranteed. Each person in the focus group will be given a subject ID number to identify their responses. Your personal information, including name and contact information, will not be stored with the focus group responses. Responses will be reported in ways that do not identify study participants.

However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies,
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices,
- The sponsor, if any, or agency (including the Food and Drug Administration for FDA-regulated research) supporting the study.

Incentives:

You will get a $50 gift card for participating in the focus group. By law, payments to subjects are considered taxable income.

Participant Rights:

You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to
applicable state and federal regulations and University policies designed to protect the rights
and welfare of participants in research.

Contacts and Questions:
For questions, concerns, or complaints about the study, or you feel you have been harmed as a
result of study participation, you may contact Dr. Mira Katz at (614) 293-6603 or Ms. Nichole
Hodges at (614) 355-5870.

For questions about your rights as a participant in this study or to discuss other study-related
calls or complaints with someone who is not part of the research team, you may contact
Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.
Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

Printed name of subject | Signature of subject
------------------------|---------------------
Date and time

Printed name of person authorized to consent for subject (when applicable) | Signature of person authorized to consent for subject (when applicable)
-----------------------------------------------------------------------|--------------------------------------------------------
Relationship to the subject | Date and time

Investigador/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent | Signature of person obtaining consent
------------------------------------------|-----------------------------------------
Date and time

Page 4 of 4  Form date: 02/11/13
Appendix H: Focus Group Demographic Form
Focus Group Participant Survey

1. How many years have you worked as a lactation consultant or counselor? (Choose 1):
   □ 0-4 years
   □ 5-9 years
   □ 10-14 years
   □ 15-19 years
   □ 20 years or more

2. Approximately how many mothers do you typically see each week in your work as a lactation consultant?  _______ mothers

3. Are you currently employed as a nurse? (Choose 1):
   □ Yes
   □ No

4. Are you an Internationally Board Certified Lactation Consultant (IBCLC) or a Certified Lactation Counselor (CLC)? (Choose 1):
   □ Internationally Board Certified Lactation Consultant (IBCLC)
   □ Certified Lactation Counselor (CLC)
   □ Other: __________________________

5. How would you describe your principal place of employment? (Choose 1):
   □ Federally-qualified health center (FQHC)
   □ Hospital-based clinic
   □ Physician’s office (private practice)
   □ Public health department clinic
   □ Self-employed
   □ Other: __________________________

6. What is your gender? (Circle 1):   Female    Male

7. What is your age?    _____ years

211
8. Are you Hispanic or Latino? (Circle 1):  Yes  No

9. How would you describe your race? (Mark all that apply):
   □  White or Caucasian
   □  Black or African American
   □  Asian or Pacific Islander
   □  American Indian or Alaska Native
   □  Other: ________________________

10. What percentage of your clients do you estimate are Hispanic or Latino? _____%

11. How would you describe your client population (to the best of your ability)?
   (Sum should equal 100%):
   _____ % White or Caucasian
   _____ % Black or African American
   _____ % Asian or Pacific Islander
   _____ % American Indian or Alaska Native

12. What percentage of your clients have each of the following types of medical insurance (Sum should equal 100%):
   _____ % Private insurance
   _____ % Public insurance
   _____ % Military / government insurance
   _____ % Not insured

   Thank you!!!
   Please return this form to the study team.
Appendix I: Focus Group Codebook
<table>
<thead>
<tr>
<th>Topic/Question</th>
<th>Subtopic</th>
<th>Code</th>
<th>Code Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of Lactation Consultant (LC)</td>
<td>Providing Education</td>
<td>Education</td>
<td>Participant remarks about LC their role/tasks including education, goal setting, etc. Either directly related to breastfeeding (BF) or not.</td>
</tr>
<tr>
<td></td>
<td>Providing resources</td>
<td>Resource</td>
<td>Participant remarks about LC role/tasks including providing resources, networking, etc.</td>
</tr>
<tr>
<td></td>
<td>Support/Encouragement</td>
<td>Support</td>
<td>Participant remarks about the role/tasks of LCs including encouragement, support, listening, empowerment, etc. Either directly related to BF or not.</td>
</tr>
<tr>
<td>How do Lactation Consultants Discuss Infant Sleep/Bedsharing with Mothers?</td>
<td>Don't discuss because of work policies</td>
<td>No discussion</td>
<td>Participant mentions that they do not discuss (or try not to bring up) bedsharing with mothers because of work policies</td>
</tr>
<tr>
<td></td>
<td>Discuss against work policies</td>
<td>Discuss bedsharing not approved</td>
<td>Participant says that they discuss or hint at bedsharing despite work policies. (Examples: I tell her to google it; I recommend a book...)</td>
</tr>
<tr>
<td></td>
<td>Discuss and work ok with it</td>
<td>Discuss bedsharing approved</td>
<td>Participant says that they discuss or hint at bedsharing and that this is acceptable at their work. (Include individuals who are in private practice or working independently.)</td>
</tr>
<tr>
<td>Do Lactation Consultants Recommend Bedsharing? Why or Why Not?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant says that they only discuss bedsharing in the context of what their employer approves (e.g., I have to say..., I can only say...)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employer approved response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant mentions an expert/book/conference that supports their argument</td>
</tr>
<tr>
<td>Participant mentions that bedsharing is evidence based or biologically normal. (Mothers and babies in sync, etc.)</td>
</tr>
<tr>
<td>Participant mentions personal or family experience with bedsharing</td>
</tr>
<tr>
<td>Participant indicates that bedsharing is necessary for successful breastfeeding</td>
</tr>
<tr>
<td>Participant mentions that co-sleeping is the norm for breastfeeding mothers</td>
</tr>
<tr>
<td>Participant indicates that their clients/patients are not at risk/high risk for SIDS/infant sleep-related death</td>
</tr>
<tr>
<td>Participant expresses distrust of infant fatality data/statistics/fatality review process (statistics not accurate; deaths really due to other causes)</td>
</tr>
<tr>
<td>BF Protective</td>
</tr>
<tr>
<td>Safe</td>
</tr>
<tr>
<td>Parental Risk Factors</td>
</tr>
<tr>
<td>Infant Risk Factors</td>
</tr>
<tr>
<td>Mom Choice</td>
</tr>
<tr>
<td>Too Risky</td>
</tr>
<tr>
<td>Job Risk</td>
</tr>
<tr>
<td>Attitudes about infant safe sleep (ISS) policies. Policies may be at any level (AAP, ODH, local health department, hospital, etc.)</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>ISS policies developed with good intentions</td>
</tr>
<tr>
<td>ISS policies not research/evidence-based</td>
</tr>
<tr>
<td>ISS policies too restrictive for LCs</td>
</tr>
<tr>
<td>ISS policies not supportive of BF</td>
</tr>
<tr>
<td>Frustrated with ISS policies</td>
</tr>
<tr>
<td>Policy goes against beliefs</td>
</tr>
<tr>
<td>Policy beneficial to infants and/or mothers</td>
</tr>
<tr>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Policy supports BF</td>
</tr>
<tr>
<td>Policy not beneficial to infant and/or mothers</td>
</tr>
<tr>
<td>Policy unrealistic for mothers</td>
</tr>
</tbody>
</table>

**Looking for middle ground**

<table>
<thead>
<tr>
<th>Crib distribution programs</th>
<th>Comments related to crib distribution programs (Cribs for Kids)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCs Doing ISS Education</td>
<td>Comments related to possibility of LCs providing ISS education</td>
</tr>
<tr>
<td>Room Sharing</td>
<td>Comments related to the recommendation of roomsharing instead of bedsharing</td>
</tr>
</tbody>
</table>
Appendix J: Survey Pretest Recruitment Email
Survey Pretest Recruitment Email
Infant Safe Sleep in Ohio: Where Do Prenatal Care Providers Fit In?

Subject: Prenatal Care Provider Survey Reviewers Needed

Dear XXXXXXX,

I am conducting a study to learn about the patient education practices of prenatal care providers. You have been identified by XXXXXXXX as someone who may be willing to help me pretest my survey tool. For this research, I am recruiting obstetric care providers in your state to provide feedback on this proposed survey instrument. If you choose to participate, you will be mailed a copy of a brief survey instrument and asked to complete the survey and provide written comments about your experience. After reviewing your responses, a member of our research team will follow up with you by phone to discuss any areas of concern that you identify. The survey review process is expected to last no more than 45 minutes, with an additional 15 minute follow-up phone call. You will receive a $25 gift card by mail in compensation for your time.

If you are interested in participating or would like to learn more about this study, please contact:
Nichole Hodges, MPH, MCHES, at (614) 355-5870 or Hodges.340@osu.edu.

Kindest regards,

Nichole Hodges, MPH, MCHES
Doctoral Candidate
College of Public Health
The Ohio State University
Appendix K: Survey Pretest Cover Letter
[Date]

Dear [DR./MS./MR.] [LAST_NAME],

Thank you for volunteering to pretest the enclosed survey instrument!

I am a doctoral candidate in the College of Public Health at The Ohio State University. The enclosed brief survey is a component of my dissertation research project, which is designed to explore the educational practices of prenatal care providers in Ohio. As an out-of-state practitioner, I appreciate your willingness to help us pretest this survey instrument. Please follow the enclosed instructions for completing the survey and response form. Completed surveys and response forms should be returned in the enclosed stamped envelope. After your responses are received and reviewed, a member of our study team will contact you by telephone to discuss any areas of concern or questions related to the survey.

The survey review process is expected to last no more than 45 minutes, with an additional 15 minute follow-up phone call. Your participation in this research study is voluntary and will not affect your future relationship with The Ohio State University. This survey review process does not involve any foreseeable risk to you. This study may have benefits to society; however, you may not benefit directly from being in this study. Survey reviewers will be mailed a $25 Amazon gift card in compensation for their time.

Because this is a survey pretest, we are primarily interested in your feedback on the survey instrument and your understanding of the survey questions. We will not be analyzing your individual responses or including them in the study results. Efforts will be made to keep your study-related information confidential. Your personal information, including name and contact information, will not be stored with the survey responses. A returned survey will serve as your implied consent to participate in this study.

If you have any questions, concerns, or complaints about this study, or if you feel you have been harmed as a result of study participation, you may contact me using the information below or you may speak to my academic advisor, Mira Katz, PhD, at (614) 293-6603 If you have questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-278-6251.

I look forward to receiving your responses and thank you for your support!

Kindest regards,

Nichole Hodges, MPH, MCHES
OSU Graduate Student
College of Public Health
(614) 388-5870
Hodges.340@osu.edu
Appendix L: Survey Pretest Reviewer Instructions
Survey Reviewer Pretest Instructions

Instructions for completing the survey pretest:

1. Please begin by completing the entire survey as you would normally. Record your beginning and ending times here:

   START TIME: __________   END TIME: __________

2. Now go through the survey a second time and identify any questions that were unclear, confusing, or difficult to complete. Comments, questions, or suggestions can be written directly on the survey instrument and/or on the response form provided.

3. Next, please provide any overall comments, questions, or concerns in the box below:
4. After your survey responses have been received and reviewed by our study staff, we would like to schedule a brief (15 minute) phone call with you to discuss your comments and any additional questions that we have. What is the best way to reach you for this call?

Telephone Number: ___(_______)_____________________________________________________

Best days of the week to call (Circle all that apply):

Sunday  Monday  Tuesday  Wednesday  Thursday  Friday  Saturday

Best time of the day to reach you (Circle all that apply):

Morning  Afternoon  Evening

5. Please return the following items in the enclosed stamped envelope and return to Nichole Hodges, PO Box 3061, Westerville, OH, 43086.

☐ This survey pretest instruction form
☐ The survey instrument
☐ The survey response/comment form

Thank you for your participation in this survey pretest!
Appendix M: Survey Pretest Response Form
Survey Pretest Response Form

Comments, questions, or suggestions can be written directly on the survey instrument and/or in the boxes below:

<table>
<thead>
<tr>
<th>Question Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>NOTE: This survey is designed for Ohio practitioners, but out-of-state survey pretest participants should complete the entire survey as if they are Ohio residents.</strong></td>
</tr>
</tbody>
</table>

2

3

4

5

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9
<table>
<thead>
<tr>
<th>Question Number</th>
<th>Comments</th>
</tr>
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<tbody>
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<td>10</td>
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<tr>
<td>29</td>
<td></td>
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<tr>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>
Appendix N: Survey Initial Cover Letter (1st Contact)
Dear [DR./MS./MR] [LAST_NAME],

[OBSTETRICIANS/NURSES] are a vital source of education and advice for expectant mothers. For many women, her prenatal care provider is her primary source of guidance about her infant as she plans for her baby’s arrival. I am writing to ask for your help in improving our understanding of prenatal patient education in Ohio. Your responses are critical for guiding future work on this issue in our state.

I am a doctoral candidate in the College of Public Health at The Ohio State University. The enclosed brief survey is a component of my dissertation research project, which is designed to explore the educational practices of prenatal care providers in Ohio. I hope that you will take a few minutes to share your views on this important issue. Please return the completed survey in the enclosed stamped envelope.

Completion of the enclosed survey should take approximately 10 minutes of your time. Your participation in this research study is voluntary and will not affect your future relationship with The Ohio State University. This survey does not involve any foreseeable risk to you. This study may have benefits to society, however, you may not benefit directly from being in this study. Your responses to this survey will be kept confidential. Survey responses will not be associated with participant contact information and only de-identified aggregate data will be used for analysis and reporting. A returned survey will serve as your implied consent to participate in this study.

If you have any questions, concerns, or complaints about this study, or if you feel you have been harmed as a result of study participation, you may contact me using the information below or you may speak to my academic advisor, Mira Katz, PhD, at (614) 293-6603. If you have questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

I look forward to receiving your responses and thank you for your support!

Kindest regards,

Nichole Hodges, MPH, MCHES
OSU Graduate Student
College of Public Health
(614) 355-9670
Hodges.340@osu.edu

P.S. Please accept the enclosed $2 bill as a token of my appreciation for completing the survey!
Appendix O: Survey Email/Postcard (2\textsuperscript{nd} Contact)
Email/Postcard Text (2nd contact)

Dear [DR./MS./MR] [LAST_NAME],

Two weeks ago we mailed you a letter requesting your participation in a survey study about the prenatal patient education practices of [OBSTETRICIANS/NURSES] in our state.

If you have already completed and returned the survey, please accept my sincere gratitude. If not, please complete and return the survey as soon as possible. Your opinions are needed!

If you would like another copy of the survey, or if you have any questions about this study, please contact me at (614) 355-5870 or Hodges.340@osu.edu.

Many Thanks,

Nichole

Nichole Hodges, MPH, MCHES
OSU Graduate Student
College of Public Health
(614) 355-5870
Hodges.340@osu.edu
Appendix P: Survey Follow Up Cover Letter (3rd Contact)
[Date]

Dear [DR./MS./MR. LAST_NAME],

A few weeks ago I sent you a survey request asking for your help in increasing our understanding of the patient education practices of prenatal care providers in Ohio. To the best of our knowledge, we have not yet received your responses. [OBSTETRICIANS/NURSES] have a critical role in providing timely education and professional advice to expectant mothers. One of the goals of this research is to determine the degree to which this education relates to specific infant care recommendations.

I am writing to you again to request your participation in this survey study. In order to ensure that our results truly represent the opinions and practices of prenatal care providers in Ohio, we need to hear from you! Please take a moment today to complete the enclosed survey and return it in the stamped envelope provided.

Completion of the enclosed survey should take approximately 10 minutes of your time. Your participation in this research study is voluntary and will not affect your future relationship with The Ohio State University. This survey does not involve any foreseeable risk to you. This study may have benefits to society; however, you may not benefit directly from being in this study. Your responses to this survey will be kept confidential. Survey responses will not be associated with participant contact information and only de-identified aggregate data will be used for analysis and reporting. A returned survey will serve as your implied consent to participate in this study.

If you have any questions, concerns, or complaints about this study, or if you feel you have been harmed as a result of study participation, you may contact me using the information below or you may speak to my academic advisor, Mira Katz, PhD. at (614) 233-5603. If you have questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6261.

Thank you so much for your help on this important issue!

Kindest regards,

Nichole Hodges, MPH, MCHES
OSU Graduate Student
College of Public Health
(614) 355-5870
Hodges.340@osu.edu
Appendix Q: Survey Final Email/Postcard (4th Contact)
Dear [DR./MS./MR.] [LAST_NAME],

In recent weeks our research team has asked for your participation in a survey study about prenatal education in the obstetric clinic environment. We plan to start analyzing the results soon and we hope to have your completed survey by then.

Please consider helping us meet our response goals by filling out the survey that was mailed to you and returning it in the stamped envelope provided. If you have recently returned your survey, many thanks for your participation!

If you would like another copy of the survey, or if you have any questions about this study, please contact me at (614) 355-5870 or Hodges.340@osu.edu.

Kindest regards,

Nichole

Nichole Hodges, MPH, MCHES
OSU Graduate Student
College of Public Health
(614) 355-5870
Hodges.340@osu.edu
Appendix R: Physician Survey Instrument
Please mark your responses and return the completed survey in the postage-paid envelope provided. Thank you!

1. Is Ohio your primary practice location?
   
   [ ] Yes
   [ ] No → STOP. If "No," please stop here and return survey.

2. What is your medical specialty?
   
   MARK ALL THAT APPLY:
   [ ] Obstetrics and/or Gynecology
   [ ] Maternal and Fetal Medicine
   [ ] Other: ____________________

3. Approximately how many obstetric patients do you see in a typical clinical work day?
   
   [ ] Fewer than 25
   [ ] 25 or more
   [ ] I do not see obstetric patients → STOP. If you do not see obstetric patients, please stop here and return survey.

4. Which of the following topics do you regularly discuss with obstetric patients?
   
   MARK ALL THAT APPLY:
   [ ] Bed-sharing (parent and infant sharing a sleep surface)
   [ ] Breastfeeding
   [ ] Car seat selection/use
   [ ] Childproofing/home safety
   [ ] Infant sleep environment (bedding, mattress, items in crib)
   [ ] Infant sleep position
   [ ] Pacifier use
   [ ] Room-sharing (infant and parent(s) sleeping in the same room, but not sharing a sleep surface)
   [ ] Routine immunizations for infants
   [ ] Tobacco smoking cessation
5. What do you recommend to obstetric patients regarding how they should place their infant for sleep?

CHOOSE 1:

- I do not make recommendations to patients on this topic
- On the back
- On the side
- On the stomach
- Back or side
- Stomach or side
- Back or stomach
- Sleep position does not matter
- Other: ________________________

6. Which do you recommend to obstetric patients as acceptable places for an infant to sleep?

MARK ALL THAT APPLY:

- I do not make recommendations to patients on this topic
- In a crib or bassinet
- In a co-sleeper (baby sleep surface that can be placed in the parent’s bed or attached to the side)
- In the parent’s bed
- No preference
- Other: ________________________

7. Which do you recommend to obstetric patients as the best room for an infant to sleep in?

CHOOSE 1:

- I do not make recommendations to patients on this topic
- In a separate room from the parent(s)
- In the same room as the parent(s)
- No preference
- Other: ________________________

8. Do you discuss Sudden Infant Death Syndrome (SIDS) risk reduction and/or infant safe sleep with obstetric patients during the course of their prenatal care?

CHOOSE 1:

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

↓ IF "NEVER," SKIP TO QUESTION 10.
9. How do you make SIDS/Infant safe sleep recommendations to your obstetric patients?

<table>
<thead>
<tr>
<th>RESPOND &quot;YES&quot; OR &quot;NO&quot; TO EACH ITEM:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>I initiate discussion of SIDS/infant safe sleep-related topics with my obstetric patients.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I answer SIDS/infant safe sleep questions that my patients bring up.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I provide printed materials to my obstetric patients about SIDS/infant safe sleep.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I show a video to my obstetric patients about SIDS/infant safe sleep.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other: ___________________________</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

10. According to current recommendations from the American Academy of Pediatrics (AAP), which of the following is/are the safest sleep position(s) for most infants?

- On the back
- On the side
- On the stomach
- Back or side is equally safe
- Stomach or side is equally safe
- Back or stomach is equally safe
- Sleep position doesn’t matter
- I don’t know

11. According to the AAP, which of the following environments are recommended for routine infant sleep?

- Armchair or recliner
- Bassinet or cradle
- Car seat
- Co-sleeper (baby sleep surface that can be placed in the parent’s bed or attached to the side)
- Couch or sofa
- Crib
- Crib with a drop side
- Infant swing
- Parent’s bed
- Portable crib / play yard (Pack-and-Play or similar)
- I don’t know
12. According to the AAP, which of the following are acceptable items to include in an infant's sleep environment?

MARK ALL THAT APPLY:

☐ Bumpers
☐ Comforter
☐ Fitted crib sheet
☐ Pacifier
☐ Pillow
☐ Quilt
☐ Sheepskin
☐ Sleep positioning device (i.e., wedge)
☐ Stuffed animal
☐ I don't know

13. The next four statements are True or False. Please mark your answers in the boxes.

<table>
<thead>
<tr>
<th>THE NEXT FOUR STATEMENTS</th>
<th>TRUE</th>
<th>FALSE</th>
<th>I DON'T KNOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>The risk of SIDS can be reduced.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Prenatal and/or postnatal exposure to cigarette smoke increases SIDS risk.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Infants are more likely to aspirate when placed on their back to sleep.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>It is safe for mothers and infants to bed-share if the infant is exclusively breastfed and the mother is not obese or under the influence of drugs or alcohol.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

14. To what extent do you agree or disagree with the following statements?

<table>
<thead>
<tr>
<th>THE NEXT FOUR STATEMENTS</th>
<th>STRONGLY AGREE</th>
<th>AGREE</th>
<th>NEUTRAL</th>
<th>DISAGREE</th>
<th>STRONGLY DISAGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important for obstetricians to discuss SIDS/infant safe sleep with prenatal patients.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>SIDS/infant safe sleep education is an important part of prenatal care.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>It is difficult to provide SIDS/infant safe sleep education in the prenatal clinic/office.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I can influence my patients’ decisions related to SIDS/infant safe sleep.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I am confident in my ability to provide guidance to patients on SIDS/infant safe sleep.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
15. Do you perceive any barriers to providing SIDS/infant safe sleep education in the prenatal clinic/office?

CHOOSE 1:

☐ Yes ➔ IF "YES," CONTINUE TO QUESTION 16

☐ No ➔ IF "NO," SKIP TO QUESTION 17

16. What barriers do you perceive to providing SIDS/infant safe sleep education in the prenatal clinic/office?

RESPOND "YES" OR "NO" TO EACH ITEM:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not have enough time to address this topic with my patients.</td>
<td>☐</td>
</tr>
<tr>
<td>Not enough resources (limited staff time, materials, etc.) to devote to this topic.</td>
<td>☐</td>
</tr>
<tr>
<td>Inadequate reimbursement for prevention counseling.</td>
<td>☐</td>
</tr>
<tr>
<td>Obstetricians and nurses are not educated on this topic.</td>
<td>☐</td>
</tr>
<tr>
<td>Patients are not interested in receiving education on this topic.</td>
<td>☐</td>
</tr>
<tr>
<td>The prenatal clinic/office is not the appropriate place for this education.</td>
<td>☐</td>
</tr>
<tr>
<td>Most obstetric offices do not provide education on this topic.</td>
<td>☐</td>
</tr>
<tr>
<td>SIDS/infant safe sleep is not addressed in residency training for OB/GYNs.</td>
<td>☐</td>
</tr>
<tr>
<td>Providing education on this topic is not the norm in my practice/clinic.</td>
<td>☐</td>
</tr>
<tr>
<td>Disagreement with the AAP's SIDS/Infant safe sleep recommendations.</td>
<td>☐</td>
</tr>
<tr>
<td>Other: _____________________________</td>
<td>☐</td>
</tr>
</tbody>
</table>

17. Are you interested in providing SIDS/infant safe sleep education to your obstetric patients?

CHOOSE 1:

☐ Yes ➔ IF "YES," CONTINUE TO QUESTION 18

☐ No ➔ IF "NO," SKIP TO QUESTION 19

18. What would help or support you in providing SIDS/infant safe sleep education to your obstetric patients?

RESPOND "YES" OR "NO" TO EACH ITEM:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed materials (handouts, brochures, etc.) to distribute to my patients.</td>
<td>☐</td>
</tr>
<tr>
<td>Educational videos to share with my patients.</td>
<td>☐</td>
</tr>
<tr>
<td>Increased reimbursement for prevention counseling.</td>
<td>☐</td>
</tr>
<tr>
<td>SIDS/infant safe sleep education or training for myself.</td>
<td>☐</td>
</tr>
<tr>
<td>SIDS/infant safe sleep education or training for other office staff.</td>
<td>☐</td>
</tr>
<tr>
<td>Patient education reminders built into the electronic medical record.</td>
<td>☐</td>
</tr>
<tr>
<td>Support from colleagues.</td>
<td>☐</td>
</tr>
<tr>
<td>Endorsement by ACOG or other professional societies.</td>
<td>☐</td>
</tr>
<tr>
<td>Office policies encouraging SIDS/infant safe sleep education.</td>
<td>☐</td>
</tr>
<tr>
<td>Other: _____________________________</td>
<td>☐</td>
</tr>
</tbody>
</table>
19. Have you ever received formal training on SIDS/infant safe sleep?

CHOOSE 1:

☐ Yes  ➔ IF "YES" ➔ Have you received formal training on SIDS/infant safe sleep within the past 4 years?  ☐ Yes  ☐ No

☐ No  ➔ IF "NO," CONTINUE TO QUESTION 20

20. How many years have you been practicing as a physician (excluding residency training)?

CHOOSE 3:

☐ 0-9 years
☐ 10-19 years
☐ 20-29 years
☐ 30 years or more
☐ I am currently in residency training

21. Are you Hispanic or Latino?  CIRCLE ONE:  Yes  No

22. How would you describe your race?

MARK ALL THAT APPLY:

☐ White or Caucasian
☐ Black or African American
☐ Asian or Pacific Islander
☐ American Indian or Alaska Native
☐ Other: __________________________

23. What is your gender?  CIRCLE ONE:  Female  Male

24. What is your age?  _____ years

25. How would you describe your principal place of employment?

CHOOSE ONE:

☐ Federally-qualified health center (FQHC)
☐ Hospital-based clinic
☐ Private practice
☐ Public health department clinic
☐ Other: __________________________
26. How would you describe the location of your principal place of employment?

☐ Rural
☐ Suburban
☐ Urban

27. What percentage of your patients do you estimate are Hispanic or Latino? ____%

28. How would you describe your patient population (to the best of your ability)?

SUM SHOULD EQUAL 100%:

___% White or Caucasian
___% Black or African American
___% Asian or Pacific Islander
___% American Indian or Alaska Native

29. What percentage of your patients do you estimate have each of the following types of medical insurance?

SUM SHOULD EQUAL 100%:

___% Private insurance
___% Public insurance
___% Military / government insurance
___% Not insured

If you have any additional comments, please enter them here:

Thank you very much for completing this survey!
Please return in the postage-paid envelope provided or mail to the following address:
College of Public Health, P.O. Box 3061, Westerville, OH 43086

Form # ____________________
Appendix S: Nurse Survey Instrument
Obstetric Patient Education in Ohio
Nurse Survey
2015
Please mark your responses and return the completed survey in the postage-paid envelope provided. Thank you!

1. Is Ohio your primary practice location?
   • Yes
   • No ➔ STOP. If "No," please stop here and return survey.

2. What is your occupation?
   • LPN
   • RN
   • Nurse Practitioner
   • Certified Nurse Midwife
   • Clinical Nurse Specialist
   • Other: __________________________

3. Approximately how many obstetric patients do you see in a typical clinical work day?
   • Fewer than 25
   • 25 or more ➔ STOP. If you do not see obstetric patients, please stop here and return survey.
   • I do not see obstetric patients ➔

4. Which of the following topics do you regularly discuss with obstetric patients?
   • Bed-sharing (parent and infant sharing a sleep surface)
   • Breastfeeding
   • Car seat selection/use
   • Childproofing/home safety
   • Infant sleep environment (bedding, mattress, items in crib)
   • Infant sleep position
   • Pacifier use
   • Room-sharing (infant and parent(s) sleeping in the same room, but not sharing a sleep surface)
   • Routine immunizations for infants
   • Tobacco smoking cessation
5. What do you recommend to obstetric patients regarding how they should place their infant for sleep?

**CHOOSE 1:**

- I do not make recommendations to patients on this topic
- On the back
- On the side
- On the stomach
- Back or side
- Stomach or side
- Back or stomach
- Sleep position does not matter
- Other: __________________________

6. Which do you recommend to obstetric patients as acceptable places for an infant to sleep?

**MARK ALL THAT APPLY:**

- I do not make recommendations to patients on this topic
- In a crib or bassinet
- In a co-sleeper (baby sleep surface that can be placed in the parent’s bed or attached to the side)
- In the parent’s bed
- No preference
- Other: __________________________

7. Which do you recommend to obstetric patients as the best room for an infant to sleep in?

**CHOOSE 1:**

- I do not make recommendations to patients on this topic
- In a separate room from the parent(s)
- In the same room as the parent(s)
- No preference
- Other: __________________________

8. Do you discuss Sudden Infant Death Syndrome (SIDS) risk reduction and/or infant safe sleep with obstetric patients during the course of their prenatal care?

**CHOOSE 1:**

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

**IF “NEVER,” SKIP TO QUESTION 10.**
9. How do you make SIDS/Infant safe sleep recommendations to your obstetric patients?

<table>
<thead>
<tr>
<th>RESPOND &quot;YES&quot; OR &quot;NO&quot; TO EACH ITEM:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>I initiate discussion of SIDS/infant safe sleep-related topics with my obstetric patients.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I answer SIDS/infant safe sleep questions that my patients bring up.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I provide printed materials to my obstetric patients about SIDS/infant safe sleep.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>I show a video to my obstetric patients about SIDS/infant safe sleep.</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other: _________________________________</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

10. According to current recommendations from the American Academy of Pediatrics (AAP), which of the following is/are the safest sleep position(s) for most infants?

   **CHOOSE 1:**
   - ☐ On the back
   - ☐ On the side
   - ☐ On the stomach
   - ☐ Back or side is equally safe
   - ☐ Stomach or side is equally safe
   - ☐ Back or stomach is equally safe
   - ☐ Sleep position doesn’t matter
   - ☐ I don’t know

11. According to the AAP, which of the following environments are recommended for routine infant sleep?

   **MARK ALL THAT APPLY:**
   - ☐ Armchair or recliner
   - ☐ Bassinet or cradle
   - ☐ Car seat
   - ☐ Co-sleeper (baby sleep surface that can be placed in the parent’s bed or attached to the side)
   - ☐ Couch or sofa
   - ☐ Crib
   - ☐ Crib with a drop side
   - ☐ Infant swing
   - ☐ Parent’s bed
   - ☐ Portable crib / play yard (Pack-and-Play or similar)
   - ☐ I don’t know

251
12. According to the AAP, which of the following are acceptable items to include in an infant’s sleep environment?  
MARK ALL THAT APPLY:

- □ Bumpers  
- □ Comforter  
- □ Fitted crib sheet  
- □ Pacifier  
- □ Pillow  
- □ Quilt  
- □ Sheepskin  
- □ Sleep positioning device (i.e., wedge)  
- □ Stuffed animal  
- □ I don’t know

13. The next four statements are True or False. Please mark your answers in the boxes.

<table>
<thead>
<tr>
<th>CHOICE 1 PER ITEM:</th>
<th>True</th>
<th>False</th>
<th>I don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>The risk of SIDS can be reduced.</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Prenatal and/or postnatal exposure to cigarette smoke increases SIDS risk.</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Infants are more likely to aspirate when placed on their back to sleep.</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>It is safe for mothers and infants to bed-share if the infant is exclusively breastfed and the mother is not obese or under the influence of drugs or alcohol.</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

14. To what extent do you agree or disagree with the following statements?

<table>
<thead>
<tr>
<th>CHOICE 1 PER ITEM:</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important for nurses to discuss SIDS/infant safe sleep with prenatal patients.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>SIDS/infant safe sleep education is an important part of prenatal care.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>It is difficult to provide SIDS/infant safe sleep education in the prenatal clinic/office.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>I can influence my patients’ decisions related to SIDS/infant safe sleep.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>I am confident in my ability to provide guidance to patients on SIDS/infant safe sleep.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
15. Do you perceive any barriers to providing SIDS/Infant safe sleep education in the prenatal clinic/office?

<table>
<thead>
<tr>
<th>CHOOSE</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ No</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

IF "YES," CONTINUE TO QUESTION 16
IF "NO," SKIP TO QUESTION 17

16. What barriers do you perceive to providing SIDS/Infant safe sleep education in the prenatal clinic/office?

RESPOND "YES" OR "NO" TO EACH ITEM:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not have enough time to address this topic with my patients. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Not enough resources (limited staff time, materials, etc.) to devote to this topic. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Inadequate reimbursement for prevention counseling. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Obstetricians and nurses are not educated on this topic. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Patients are not interested in receiving education on this topic. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>The prenatal clinic/office is not the appropriate place for this education. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Most obstetric offices do not provide education on this topic. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>SIDS/Infant safe sleep is not addressed in nursing degree programs. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Providing education on this topic is not the norm in my practice/clinic. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Disagreement with the AAP's SIDS/Infant safe sleep recommendations. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Other: ____________________________ ☐ ☐</td>
<td></td>
</tr>
</tbody>
</table>

17. Are you interested in providing SIDS/Infant safe sleep education to your obstetric patients?

<table>
<thead>
<tr>
<th>CHOOSE</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ No</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

IF "YES," CONTINUE TO QUESTION 18
IF "NO," SKIP TO QUESTION 19

18. What would help or support you in providing SIDS/Infant safe sleep education to your obstetric patients?

RESPOND "YES" OR "NO" TO EACH ITEM:

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed materials (handouts, brochures, etc.) to distribute to my patients. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Educational videos to share with my patients. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Increased reimbursement for prevention counseling. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>SIDS/Infant safe sleep education or training for myself. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>SIDS/Infant safe sleep education or training for other office staff. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Patient education reminders built into the electronic medical record. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Support from colleagues. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Endorsement by AWHONN or other professional societies. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Office policies encouraging SIDS/Infant safe sleep education. ☐ ☐</td>
<td></td>
</tr>
<tr>
<td>Other: ____________________________ ☐ ☐</td>
<td></td>
</tr>
</tbody>
</table>
19. Have you ever received formal training on SIDS/infant safe sleep?

**CHOOSE 1:**

- Yes 
  ➔ IF "YES" ➔ Have you received formal training on SIDS/infant safe sleep within the past 4 years? □ Yes □ No

- No 
  ➔ IF "NO," CONTINUE TO QUESTION 20

20. How many years have you been employed as a nurse?

**CHOOSE 3:**

- 0-9 years
- 10-19 years
- 20-29 years
- 30 years or more
- I am currently in residency training

21. Are you Hispanic or Latino? [CIRCLE ONE] Yes No

22. How would you describe your race?

**MARK ALL THAT APPLY:**

- White or Caucasian
- Black or African American
- Asian or Pacific Islander
- American Indian or Alaska Native
- Other: __________________________

23. What is your gender? [CIRCLE ONE] Female Male

24. What is your age? _____ years

25. How would you describe your principal place of employment?

**CHOOSE ONE:**

- Federally-qualified health center (FQHC)
- Hospital-based clinic
- Private practice
- Public health department clinic
- Other: __________________________
26. How would you describe the location of your principal place of employment?  
☐ Rural  
☐ Suburban  
☐ Urban

27. What percentage of your patients do you estimate are Hispanic or Latino? ____%

28. How would you describe your patient population (to the best of your ability)?  
SUM SHOULD EQUAL 100%:

____ % White or Caucasian
____ % Black or African American
____ % Asian or Pacific Islander
____ % American Indian or Alaska Native

29. What percentage of your patients do you estimate have each of the following types of medical insurance?  
SUM SHOULD EQUAL 100%:

____ % Private insurance
____ % Public insurance
____ % Military / government insurance
____ % Not insured

If you have any additional comments, please enter them here:

Thank you very much for completing this survey!

Please return in the postage-paid envelope provided or mail to the following address:  
College of Public Health, P.O. Box 3061, Westerville, OH 43086

Form # __________________