

Knowledge Gaps of Professionals Regarding Infant Safe Sleep Recommendations: Qualitative Evaluation of Topics Learned

Katherine Hess, MS-4¹, Ashley Herve, M.Ed.^{1,2,3}, Alicia Smith¹, Christy Schunn, LCSW⁴, Maria Torres, B.S.⁴, Carolyn R. Ahlers-Schmidt, Ph.D.^{1,2,3}

¹The University of Kansas School of Medicine-Wichita, Wichita, Kansas

²Department of Pediatrics

³Center for Research for Infant Birth and Survival

⁴Kansas Infant Death and SIDS Network

Received Aug. 28, 2024; Accepted for publication July 3, 2025; Published online Aug. 15, 2025
Kansas J Med 2025 Jul-Aug; 18:75-77. <https://doi.org/10.17161/kjmvol18.22753>

ABSTRACT

Introduction. To reduce Sudden Unexpected Infant Death (SUID), the Kansas Infant Death and SIDS Network offered a series of two-day Safe Sleep Instructor (SSI) certification trainings. These sessions aimed to educate health care and related professionals on the American Academy of Pediatrics (AAP) evidence-based safe sleep recommendations.

Methods. A secondary analysis of qualitative data was conducted using responses to a single open-ended question on the post-training assessment. Participants were asked to list three specific things they learned during the training. All Fiscal Year 2023 participants (N = 67) responded. Two trained coders independently analyzed responses using *a priori* codes derived from the 2022 AAP Safe Sleep Recommendations and key concepts from the Safe Sleep Instructor training. Inter-rater reliability was assessed using Cohen's kappa.

Results. A total of 205 comments were collected from 67 participants, who self-identified as nurses, social workers, home visitors, early childhood professionals, parent educators, and others. Cohen's kappa indicated substantial agreement ($\kappa = 0.87$; 95% CI, 0.77-0.87; $p < 0.001$). The most frequently cited AAP-related topics were temperature regulation (13%, $n = 27$) and the recommendation for a separate sleep surface (10%, $n = 21$). Additionally, 12% ($n = 24$) of responses aligned with key training concepts, while 11% ($n = 23$) were categorized as "other." No clear patterns in knowledge acquisition emerged within specific professional groups (e.g., nurses).

Conclusions. The presence of pre-training knowledge gaps related to safe sleep practices highlights the importance of comprehensive, evidence-based educational programs for professionals involved in perinatal and infant care.

INTRODUCTION

Healthy People 2030 reported an infant mortality rate of 5.4 deaths per 1,000 live births in 2021, with a target of reducing this to 5.0 per 1,000 by 2030.¹ Sudden Unexpected Infant Death (SUID)² contributes significantly to these mortality rates and encompasses all sudden and unexpected infant deaths, whether from explained causes such as injuries or accidents, or from unknown origins. In Kansas, SUID was the second leading cause of infant death from 2017 to 2021, accounting for 20.8% of all infant deaths.³ Despite ongoing efforts, the persistence

of these numbers highlights the need for more targeted and effective interventions.

One such intervention is broader dissemination of the 2022 American Academy of Pediatrics (AAP) *Recommendations for Reducing Infant Deaths in the Sleep Environment* (hereafter referred to as the Safe Sleep Recommendations).⁴ These evidence-based guidelines, updated every five years, are grounded in the triple risk model.⁵ This model suggests that the risk of SUID is highest when three factors overlap: intrinsic vulnerability (e.g., prematurity or genetic predisposition), exogenous stressors (e.g., tobacco exposure), and a critical period of development (typically one to four months of age). The AAP's Safe Sleep Recommendations focus primarily on modifiable exogenous factors.

To promote implementation of these guidelines, the Kansas Infant Death and SIDS (KIDS) Network offers a two-day Safe Sleep Instructor (SSI) certification training. The program covers the current AAP Safe Sleep Recommendations and provides strategies for educating professionals, parents, caregivers, and individuals involved in perinatal care.⁶ Previous evaluations of this training have shown significant increases in participant awareness of SUID risk-reduction strategies.^{7,8} However, less is known about broader knowledge gaps not captured by standard pre/post-training knowledge assessments.

To address this, authors of this study analyzed qualitative data from the SSI training evaluation to identify pre-training knowledge gaps related to the 2022 AAP Safe Sleep Recommendations. The aim was to assess new learning across both the evidence-based content and the communication strategies taught, with the goal of informing future improvements to the training curriculum.

METHODS

Participants. Eligible participants were individuals who attended the SSI training sessions held on September 29-30, 2022 and May 18-19, 2023, and completed the post-training survey.

Instrument. The post-training survey, developed by the program evaluation team and reviewed by content experts, included 10 multiple-choice knowledge questions (reported elsewhere) and open-ended items. This study focused on responses to one open-ended question designed to assess new knowledge gained during the training. The format allowed participants to provide unrestricted feedback on specific areas of learning. Demographic data were limited to self-reported occupation; no additional demographic information was collected.

Procedures. The University of Kansas Medical Center Institutional Review Board (IRB) determined that this secondary analysis of deidentified data did not constitute human subjects research. Participants completed the post-training survey on the second day of training. KIDS Network staff entered deidentified responses into REDCap® (Research Electronic Data Capture®), a secure, web-based application hosted at The University of Kansas Medical Center.^{9,10} Evaluation staff downloaded the qualitative data and forwarded it to two trained coders for analysis. Coders independently applied predefined (*a priori*) codes to

the responses. These codes were based on two sources: (1) the 2022 AAP Safe Sleep Recommendations⁴ and (2) key training concepts from the SSI certification, which support effective communication of AAP guidelines. The AAP guideline on sleep location was divided into three separate categories: location, separate surface, and location plus separate surface, resulting in 24 categorical variables (Table 1; available online at journals.ku.edu/kjm).

Statistical Analysis. Categorical variables were reported as frequencies and percentages. Cohen's kappa was used to assess inter-rater agreement for coded categories (SPSS Version 26, IBM® Corp). After reliability was calculated, discrepancies in coding were flagged, and coders resolved them during a one-hour video conference.

RESULTS

Participants (N = 67) self-identified as at least one of the following, with many selecting multiple roles: home visitor (n = 65; 25.4%), nurse (n = 54; 21.1%), early childhood professional (n = 47; 18.4%), social worker (n = 33; 12.8%), parent educator (n = 26; 10.2%), and other (n = 31; 12.1%). The "other" category included roles such as administrator, community engagement coordinator, clerk, community health worker, daycare/childcare provider, trainer, family resource specialist, law enforcement officer, obstetrical navigator, and professional training specialist.

Participants provided between one and six comments each, resulting in a total of 205 comments for coding and analysis.

Cohen's kappa was 0.82 (95% CI: 0.77-0.87; $p < 0.001$), indicating substantial inter-rater agreement. The most frequently cited categories were temperature (13%), SSI training components (12%), and "other" (11%); the latter included items that did not align with established coding definitions.

By role, nurses (8/54; 15%), home visitors (12/65; 18%), and early childhood professionals (5/47; 11%) most frequently reported learning about temperature regulation. Social workers (6/33; 18%) most often reported gaining knowledge about separate sleep surfaces. Parent educators (3/26; 12%) most frequently cited learning about firm, flat, non-inclined sleep surfaces as well as separate sleep surfaces.

DISCUSSION

The purpose of this study was to assess the extent of new knowledge acquired by SSI trainees, focusing on both evidence-based guidelines and strategies for effectively communicating those guidelines. By analyzing participant comments and reported learning patterns, the authors gained insight into how well the training enhanced understanding of infant safety practices. Identifying knowledge gaps is essential for developing effective curricula to improve learning outcomes. Findings from this study suggest that comprehensive training programs focused on evidence-based recommendations for reducing the risk of SUID remain necessary.

Awareness of 2022 AAP Recommendation Updates. Few participants referenced specific updates from the 2022 AAP guidelines, such as the use of a non-inclined sleep surface, as newly acquired

knowledge. Several trainees, however, identified long-standing recommendations (e.g., same room but separate bed) as new information, despite their inclusion in earlier guideline iterations.^{11,12} This lack of awareness underscores the importance of training programs that not only highlight updated content but also reinforce foundational recommendations to address persistent knowledge gaps.

Key Training Concepts. In addition to specific AAP recommendations, 14% of participant responses focused on key training concepts. These included practical tools such as the "ABCs of Safe Sleep" mnemonic and strategies for tailoring educational content to different populations. These findings highlight the dual importance of evidence-based knowledge and practical communication strategies in ensuring that professionals are equipped to apply and convey safe sleep guidelines effectively.

Addressing Knowledge Gaps Among Professionals. While no clear patterns emerged across occupational groups, the highest proportions of nurses, home visitors, and early childhood professionals identified temperature-related guidance as new learning. This suggests that even professionals routinely engaged in infant care may lack awareness of specific recommendations. The finding reinforces the importance of including detailed, nuanced content in trainings to ensure that all professionals, regardless of background or experience, receive comprehensive, accurate information to share with families and caregivers.

Implications for Public Health. These findings have important implications for public health efforts aimed at reducing SUID. Despite widespread dissemination of AAP guidelines, previous studies have shown that professionals continue to model and recommend practices, such as prone positioning, that increase SUID risk.¹³ The present study similarly reveals knowledge gaps among experienced, multidisciplinary professionals. The fact that all participants reported learning something new related to infant sleep underscores the value of ongoing, structured training. Ensuring that professionals are well-informed and confident in communicating safe sleep recommendations is essential for supporting families and mitigating SUID risk.

Strengths. This study has several strengths. The use of qualitative data provided valuable insights into the types of knowledge gained, insights that may not be captured through quantitative assessments alone. The inclusion of participants from multiple disciplines enabled identification of learning needs across professional roles, helping to inform more tailored training strategies. Additionally, the use of a structured codebook based on *a priori* codes grounded the analysis in established, evidence-based guidelines. Substantial inter-rater reliability (Cohen's kappa = 0.82) further supports the consistency and credibility of the coding process.

Limitations. Several limitations should be noted. The study was conducted in a single geographic location, which may limit generalizability. The relatively small sample size and reliance on self-reported data introduce the potential for bias, including social desirability and recall bias.¹⁴ Additionally, the lead evaluators' affiliation with the KIDS Network could have influenced data interpretation. To mitigate this risk, neither of the independent coders had prior involvement with the KIDS Network or the evaluators.

CONCLUSIONS

This study contributes to the ongoing evaluation of the SSI certification trainings by identifying knowledge gaps among trainees. These findings underscore the need for continued initiatives that effectively communicate evidence-based guidelines to professionals across the continuum of care. Such trainings are essential for all levels of providers, including experienced nurses and frontline perinatal professionals, to ensure a thorough understanding and consistent implementation of safe sleep practices. Ongoing research and evaluation are important to ensure that child safety practices remain aligned with the most current guidelines and recommendations.

ACKNOWLEDGEMENTS

The authors would like to thank the participants for attending the SSI training and completing the evaluations.

Funding. The SSI training is supported in part by the Kansas Department of Health and Environment's Bureau of Family Health Maternal and Child Health Services Block Grant #B04MC30614 funded by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS). This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS, or the U.S. Government.

The training is also supported in part by Grant 1R13HS027541-01A1 from the Agency for Healthcare Research and Quality (AHRQ). The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

REFERENCES

- ¹ Reduce the rate of infant deaths-MICH-02, Healthy People 2030. Office of Disease and Health Promotion Website. <https://health.gov/healthypeople/objectives-and-data/browse-objectives/infants/reduce-rate-infant-deaths-mich-02>. Accessed August 20, 2024.
- ² National Institute of Health. What is SIDS? Safe to Sleep. 2024. <https://safetosleep.nichd.nih.gov/about/sids-definition>. Accessed August 20, 2024.
- ³ Kansas Infant Mortality and Stillbirth Report, 2021. <https://www.kdhe.ks.gov/DocumentCenter/View/29631/Infant-Mortality-Report-2021-PDF>. Accessed August 20, 2024.
- ⁴ Moon RY, Carlin RF, Hand I, et al. Sleep-related infant deaths: Updated 2022 recommendations for reducing infant deaths in the sleep environment. *Pediatrics* 2022; 150(1):e2022057990. PMID: 35726558.
- ⁵ Filiano JJ, Kinney HC. A perspective on neuropathologic findings in victims of the sudden infant death syndrome: The triple-risk model. *Biol Neonate* 1994; 65(3-4):194-197. PMID: 8038282.
- ⁶ Kansas Infant Death and SIDS Network. 2025. <https://www.kidsks.org/>. Accessed August 20, 2024.
- ⁷ Ahlers-Schmidt CR, Schunn C, Kuhlmann S, Kuhlmann Z, Engel M. Developing a state-wide infrastructure for safe sleep promotion. *Sleep Health* 2017; 3(4):296-299. PMID: 28709518.
- ⁸ Ahlers-Schmidt CR, Schunn C, Engel M, Dowling J, Neufeld K, Kuhlmann S. Implementation of a statewide program to promote safe sleep, breastfeeding and tobacco cessation to high-risk pregnant women. *J Community Health* 2019; 44(1):185-191. PMID: 30187364.
- ⁹ Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research Electronic Data Capture (REDCap)- A metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform* 2009; 42(2):377-381. PMID: 18929686.
- ¹⁰ Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: Building an international community of software platform partners. *J Biomed Inform* 2019; 95:103208. PMID: 31078660.

¹¹ Task Force on Sudden Infant Death Syndrome; Moon RY. SIDS and other sleep-related infant deaths: Expansion of recommendations for a safe infant sleeping environment. *Pediatrics* 2011; 128(5):e1341-e1367. PMID: 22007003.

¹² Task Force on Sudden Infant Death Syndrome. SIDS and other sleep-related infant deaths: Updated 2016 recommendations for a safe infant sleeping environment. *Pediatrics* 2016; 138(5):e20162938. PMID: 27940804.

¹³ Patton C, Stiltner D, Wright KB, Kautz DD. Do nurses provide a safe sleep environment for infants in the hospital settings? An integrative review. *Adv Neonatal Care* 2015; 15(1):8-22. PMID: 25626979.

¹⁴ Jones TL, Baxter MA, Khanduja V. A quick guide to survey research. *Ann R Coll Surg Engl* 2013; 95(1):5-7. PMID: 23317709.

Keywords: sudden infant death, infant care, public health education for professionals, sudden infant death syndrome