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ORIGINAL ARTICLE

Knowledge Levels of Nurses of Sudden Infant Death Syndrome (SIDS) and Safe Sleep: A Descriptive Study

Hemşirelerin Ani Bebek Ölümü Sendromu (ABÖS) ve Güvenli Uyku Konusundaki Bilgi Düzeyleri: Tanımlayıcı Bir Çalışma

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Abstract

Introduction: Sudden Infant Death Syndrome (SIDS) is one of the leading causes of infant deaths in the post neonatal period. A safe sleep environment should be created to reduce SIDS risk factors. The aim of this study is to determine the knowledge levels of Turkish family health nurses regarding SIDS and safe sleep.

Methods: This descriptive study was conducted with 115 nurses working in family health centers in a province in Türkiye between March and July 2021. Data were collected using a form developed by the researcher.

Results: It was found that the nurses' average score on SIDS and safe sleep was 19.59 (±3.36) out of 30 and that nobody correctly responded to every question on the information form. The average knowledge level score of married nurses was higher than that of single ones, and nurses with one or two children outperformed those who had no or more than three kids ($p<0.05$). The average knowledge level score rose in tandem with the nurses' educational attainment ($p<0.05$).

Discussion and Conclusion: The knowledge of nurses regarding SIDS and safe sleep was found to be above average, while it was found that their knowledge was incomplete. It was concluded that nurses' knowledge concerning SIDS and safe sleep practices needed to be strengthened. The inclusion of SIDS and safe sleep-in undergraduate nursing curricula, along with in-service training, is projected to help nurses become more knowledgeable and aware of the concern.

Keywords: Knowledge level; Nurse; Safe sleep; Sudden infant death syndrome

Sudden Infant Death Syndrome (SIDS) is defined as "the sudden and unexpected death of infants younger than one year of age due to an unexplained cause after a comprehensive case investigation, clinical history, and autopsy."[1,2] SIDS is the greatest cause of post neonatal (28 days–1 year) infant death in developed countries, despite variations by nation, society, and even ethnic group.[3] It is also one of the most prevalent

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causes of infant deaths throughout the postnatal period. According to the literature, SIDS rates in the majority of countries range from 0.2 to 0.5 per 1000 live births.[4,5] Although there is little information available on SIDS statistics in Türkiye, it has been reported that the infant mortality rate was 9% in 2019 and that SIDS accounted for 2.5% of all infant deaths.[6]

Two-4 months, the postpartum period, and the winter months are when SIDS is the most prevalent. It is still unclear what exactly causes the gender gap. According to Doğan and Bal Yılmaz (2023)[7] and Fleming et al. (2015),[8] it is observed in two-thirds more male babies than female babies. The etiology of SIDS is currently unclear, but the relevant literature offers numerous theories.[9,10] "The Triple Risk Model" (Fig. 1), defined by Filiano and Kinney in 1994,[11] is stated as the most accepted hypothesis for SIDS.[2,7,11] According to this model, a vulnerable baby, a critical developmental period, and exogenous stressors are the three basic factors for the development of SIDS.[2,11]

There are modifiable and unmodifiable risk factors for SIDS, and they can also be categorized as environmental, maternal, and infant risk factors.[3,12] Non-modifiable risk factors include prematurity, low birth weight, and intrauterine growth retardation, while modifiable risk factors for SIDS include sharing a bed with a parent, putting the baby to sleep in a non-supine sleeping position, using a soft mattress and pillow for the baby, keeping soft objects such as blankets and toys in the baby's sleeping environment, covering the baby's face while sleeping, etc.[2,7,12]

The American Academy of Pediatrics (AAP) has recommended a safe sleep environment to reduce the risk of all sleep-related infant deaths since 1992 and has published guidelines containing safe sleep recommendations to prevent SIDS.[2,3] Creating a safe sleep environment to reduce SIDS risk factors has been a widely researched topic for the last 25 years and is both well-studied and well-documented.[13] However, the continuing high rates of SIDS in the United States (US) indicate that safe sleep practices are not consistently followed and maintained,[14] revealing that mothers exhibit many sleep-related risk behaviors in terms of SIDS in the post neonatal period.[7,15,16] Nurses have a significant role in ensuring safe sleep for babies in the hospital and in the community since it has been demonstrated that families mimic the actions of nurses and that families watch nurses in the hospital setting when they deliver

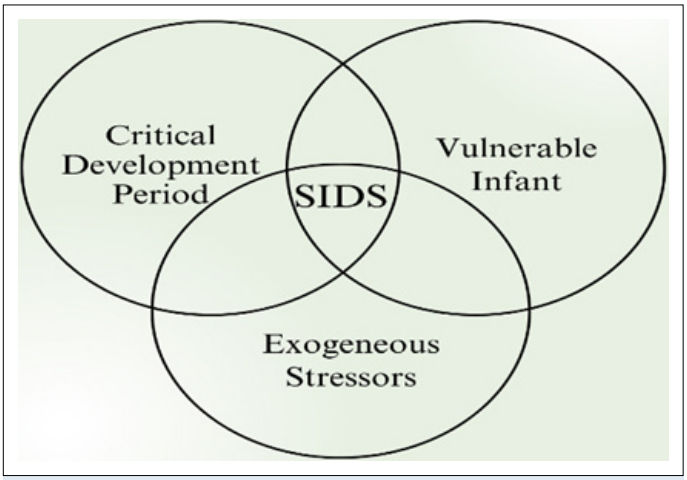

Figure 1. Triple risk model.

health services.[14] In addition to providing education and counseling services, nurses should serve as role models for parents in creating a safe sleep environment for the babies at home, reducing risk factors linked to SIDS through evidence-based practices, modeling best practices, influencing others, and eliminating common misconceptions.[2,3,13] Thus, nurses who offer direct care and counseling to the infant and family play a crucial role in educating families about the known risk factors for SIDS and safe sleep, beginning in the prenatal period, and in supporting parents.[7,10,13]

According to the body of literature on the subject, pediatric nurses advise women on inappropriate sleeping positions since they are unaware of the American Academy of Pediatrics' guidelines.[17–19] A review of the literature reveals that while numerous international studies on SIDS and safe sleep have been carried out with pediatric nurses,[9,20–22] studies assessing nurses' knowledge on the subject are limited, particularly in Türkiye.[18,20] Non-supine sleeping position, soft bedding, covering the baby's face while sleeping, not using pacifiers, smoking during pregnancy and after birth of the mother, exposure of the baby to cigarette smoke at home, using pillow, and bed sharing were founded as risky behaviors that could lead to SIDS in the studies in Türkiye.[12,16,18,20] Considering that nurses are responsible for educating those who will provide primary care to the baby starting from the pregnancy period, it is recommended that they be trained in line with the recommendations of APA.[5,18,20] In addition to raising awareness about SIDS and safe sleep, which are still crucial in the twenty-first century, this study was aimed at measuring the nurses' knowledge levels of SIDS and safe sleep.

Materials and Methods

Study Place, Research Design and Sampling

This descriptive study was conducted to determine SIDS and safe sleep knowledge levels of nurses in family health centers in a province in the Central Black Sea Region of Türkiye.

Family health centers employ at least one nurse and a family physician. These units offer primary health care services where people can readily access them and where efficient and widespread health service delivery is achieved, along with health promotion, preventive health services, and initial diagnosis, treatment, and rehabilitation services. In Türkiye, nurses in family health centers have a major role in lowering the infant mortality rate.[23] They also keep health records and statistics related to the services they provide.[6] They also work in line with the family doctor to provide preventive and rehabilitative health services for individuals. Professionals from other disciplines were not employed as nurses.

Ethics committee approval (Feb 27, 2020/ Number: 220-28) and institutional permission for this study were obtained from the Provincial Health Directorate. Prior to the research, the nurses were informed about the objective of the study and what they are needed to accomplish, and An Informed Voluntary Consent Form was obtained. The study complied with the Declaration of Helsinki rules.

The population of the research consisted of nurses working in a total of 46 family health centers in a province in the Central Black Sea Region of Türkiye between March and July 2021 (N=120). No sample selection was conducted in the study, and all nurses (n=115) who (a) worked in the family health center, (b) agreed to participate in the study, and (c) did not have a problem that would limit communication between the dates of the study (March-July 2021) constituted the sample of the study. 95.8% of the participants in the study were reached.

Data Collection Tools

The "Descriptive Characteristics Form for Nurses" and the "SIDS and Safe Sleep Knowledge Level Assessment Form" created by the researcher based on the literature and expert opinions were used as data collection tools.[2,7,12,16,18,20,24,25]

The "Descriptive Characteristics Form for Nurses" consists of two sections. The first section of the form includes questions for certain descriptive characteristics of nurses (age, gender, marital status eg. 7 items), and the second section covers questions to determine the characteristics of nurses regarding SIDS and safe sleep (hearing about SIDS, previous encounter with SIDS eg. 8 items).

Nurses' knowledge of SIDS and safe sleep is assessed using 30 questions on the "SIDS and Safe Sleep Knowledge Level Assessment Form". Ten of the questions aim to identify protective variables for SIDS and safe sleep, sixteen seek to determine risk factors for SIDS and safe sleep, and four aim to find out nurses' general knowledge about SIDS and safe sleep. There are three answers to each question: "true," "false," and "don't know." Once nurses had read these questions, they were asked to mark "true" if they believed the item to be true, "false" if they thought it was false, and "don't know" if they didn't know. "True" responses are worth "1" point, "False" and "don't know" answers are "0" point, and the form's lowest possible score is 0. The highest possible score is 30. A higher score for a nurse indicates a higher level of knowledge. Following its development, the SIDS and Safe Sleep Knowledge Level Assessment Form was revised with the opinions of 15 experts. Faculty members and clinical nurses with backgrounds in pediatric critical care, pediatric emergency department nursing, and family health centers provided their expert feedback. For every item in the study, the Scope Validity Ratio (CVR) value was determined. The low-validity items 1, 12, 27, and 30 were organized differently, the revised versions were presented to the experts once more, and their expert approval was obtained. The final CVI was calculated as 1.00, exceeding the commonly accepted threshold of 0.99, which supports the excellent content validity of the instrument.

Data Evaluation and Analysis

Statistical analysis of the data was performed using SPSS Statistics 22.0 (SPSS Statistics Inc., Chicago, IL, USA). G*power (version 3.1.9.2) was used for power analysis. Descriptive statistics were reported using mean±standard deviation and median (min-max) depending on whether the data followed a normal distribution for continuous variables obtained with surveys and scales. Categorical data are presented as frequency and percentages distributions (%). Normality was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. In comparisons of numerical variables between two independent groups, t-test (student's t-test) was used for normally distributed data and Mann-Whitney U test was used for non-normally distributed data. In comparisons of numerical variables between more than two independent groups, Oneway analysis of variance (ANOVA) test was used for normally distributed data. Tukey post hoc multiple comparison tests were used to determine the groups from which the difference originated after the ANOVA test. A p-value less than 0.05 was considered statistically significant.

Table 1. Some descriptive characteristics of nurses (n=115)

Descriptive characteristics	n	%
Age		
≤29	25	21.7
30–39	44	38.3
≥40	46	40.0
Mean age (Mean±SD)	35.63±7.89	Min=22 Max=53
Gender		
Female	115	100
Marital status		
Married	87	75.7
Single	28	24.3
Number of children		
None	32	27.8
1–2	72	62.6
3 and more	11	9.6
Educational attainment		
Highschool degree	23	20.0
Associate degree	29	25.3
Undergraduate and/or postgraduate degrees	63	54.7
Work experience as a nurse		
<1 year	3	2.6
1–5 years	13	11.3
6–10 years	29	25.2
>10 years	70	60.9
Previous workplace		
Always the same family health center	28	24.3
Different family health centers	59	51.4
Neonatal and child intensive care unit	12	10.4
Pediatric emergency and child service	16	13.9
Total	115	100

SD: Standard deviation; Min: Minimum; Max: Maximum.

Table 2. Characteristics of nurses regarding SIDS and safe sleep (n=115)

Characteristics	n	%
Hearing about SIDS		
Yes	108	93.9
No	7	6.1
Previous encounter with SIDS		
Yes	24	20.9
No	91	79.1
Hearing about safe sleep		
Yes	92	80.0
No	23	20.0
Previous training for SIDS		
Yes	28	24.3
No	87	75.7
Training received on SIDS		
No training received	87	75.7
Received during in-service training	12	10.4
Received in high school/university education	16	13.9
Previous training for safe sleep		
Yes	15	13.0
No	100	87.0
Training received on safe sleep		
No training received	100	87.0
Received in high school/university education	15	13.0
Raising awareness of SIDS and safe sleep among parents visiting the family health center		
Yes	70	60.9
No	45	39.1

SIDS: Sudden infant death syndrome.

Results

The study was conducted with 115 nurses. The mean age of the nurses in the study was 35.63 (±7.89), with ages ranging from 22 to 53. It was found that 51.4% of the nurses worked in various family health facilities, 60.9% were nurses for more than ten years, 54.7% had undergraduate and/or graduate degrees, 75.7% were married, and 62.6% had one or two children (Table 1).

It was observed that 93.9% of the nurses had heard of SIDS, 80.0% had heard of Safe Sleep, 20.9% had encountered a SIDS case, and 76.5% had not received any training on SIDS. It was determined that 10.4% of the nurses who stated that they had received training on SIDS had received this training in in-service training, and 13.9% during high school/university education. It was observed that 87% of the nurses had not received training on safe sleep, and 14.8% of those who had received training had received this training during high school/university education. It was determined that 39.1% of the nurses reported that they did not provide information about SIDS and safe sleep to parents who came to the family health center (Table 2).

It was determined that the nurses who participated in the study responded correctly to at least 12 and at most 26 items of the "SIDS and Safe Sleep Knowledge Level Assessment Form", and their total knowledge score average was 19.59 (±3.36) out of 30. It was determined that none of the nurses

Table 3. Distribution of nurses' responses to the "SIDS and Safe Sleep Knowledge Level Assessment Form"

Item number	Items	Correct response, %
	Knowledge on SIDS and safe sleep	
1.	SIDS is one of the most common causes of infant death in the first year of life.	86.1
2.	SIDS is the sudden and unexpected death of children under five years of age from an unexplained cause after a thorough investigation, clinical history, and autopsy.	27.8
3.	The American Academy of Pediatrics has recommendations for a safe sleep environment to reduce SIDS and other sleep-related infant deaths.	90.4
4.	The diagnosis of SIDS risk is often considered as a diagnosis related to parental neglect.	36.5
	Risk Factors for SIDS and safe sleep	
5.	Baby's sleep position is not a risk factor for SIDS.	89.6
6.	The safest sleep position to protect the baby from SIDS is the supine position.	31.3
7.	It is safer than other positions to put the baby on the side while sleeping during the day.	18.3
8.	Sleeping in the same room with the baby but in different beds is necessary for safe sleep.	87.0
9.	There is no harm in mothers sleeping with their babies.	93.0
10.	It is recommended that babies who are placed in an adult bed for feeding (breastfeeding) should sleep next to their parents after the feeding is over.	80.0
11.	The safest sleeping position after feeding is to lay the baby on their side or stomach to prevent them from aspirating mucus / vomit.	19.1
12.	Babies should be placed to sleep on soft ground as much as possible.	83.5
13.	Putting babies to sleep on a hard surface with fitted sheets reduces the risk of SIDS.	80.9
14.	The baby's face can be covered with a thin blanket so that the baby is not disturbed by light during sleep.	85.2
15.	Pillow use is advised while the baby is sleeping to protect against SIDS.	57.4
16.	There should be no blankets, toys or extra pillows in the baby's bed/sleeping environment.	84.3
17.	There is no link between prenatal exposure to secondhand smoke and the risk of SIDS.	81.7
18.	Smoking in the environment where the baby sleeps does not pose any problem.	96.5
19.	Room temperature where the baby sleeps should be kept above 24 degrees.	70.4
20.	Overdressing a baby to keep them warm increases the risk of SIDS.	77.4
	Protective Factors for SIDS and safe sleep	
21.	The developmental process is supported and the formation of head deformities is minimized by placing the baby in a face down position while awake and under adult supervision,	79.1
22.	There is no link between breastfeeding and SIDS.	74.8
23.	The risk of SIDS decreases in babies who are breastfed for the first 6 months only.	54.8
24.	Using a pacifier before falling asleep and during sleep increases the risk of SIDS.	33.9
25.	There is no significant association between routine immunization (vaccines) and the risk of SIDS.	26.1
26.	When babies are put to sleep, their feet should touch the bottom edge of the bed.	40.9
27.	The blanket placed on the baby should be covered from the armpits and tucked into the edge of the bed.	73.0
28.	Safe swaddling is recommended as a strategy to reduce the risk of SIDS.	53.0
29.	There is no significant relationship between pregnant women receiving regular prenatal care and SIDS.	73.9
30.	Nurses and midwives only offer counseling to the parents they believe are required, rather than informing all parents about SIDS and safe sleep practices.	73.0

*: Items were written verbatim and therefore some items may have been expressed incorrectly to determine nurses' knowledge; SIDS: Sudden infant death syndrome.

responded correctly to all of the items in the information form. It was determined that 90.4% of the nurses responded correctly to the item "The American Academy of Pediatrics has recommendations for a safe sleep environment to reduce SIDS and other sleep-related infant deaths." 31.3% to the item "The safest sleep position to protect the baby

Table 4. Comparison of the mean scores of knowledge level related to SIDS and safe sleep according to some descriptive characteristics of the nurses.

Descriptive characteristics	Mean±SD	Min–Max	Test	p	Post-hoc p values
Age					
≤29	18.48±2.81	23–12	F (2.112) = 2.041	0.135[a]	
30–39	19.63±3.47	26–12			–
≥40	20.15±3.45	26–13			
Marital status					
Married	19.96±3.22	26–12	t (113) = -2.134	**0.035**[b]	–
Single	18.42±3.59	25–12			
Number of children					
No (1)	18.18±3.36	25–12	F (2.112) = 6.332	**0.002**[a]	**1-2: 0.004**
1-2 (2)	20.41±3.13	26–12			1-3: 0.997
3 or more (3)	18.27±3.34	24–13			2-3: 0.104
Education attainment					
High school (1)	17.47±3.25	25–12	F (2.112) = 6.372	**0.002**[a]	**1-2: 0.027**
Associate degree (2)	19.82±2.82	25–13			**1-3: 0.002**
Undergraduate and/or postgraduate degrees (3)	20.25±3.36	26–13			2-3: 0.826
Work experience in nursing					
<1 year	18.66±3.51	22–15	F (3.111) = 2.112	0.103[a]	
1–5 years	18.07±3.20	23–12			
6–10 years	18.93±3.31	26–13			–
>10 years	20.18±3.33	26–12			
Previous workplace					
Always the same family health centre	19.21±3.10	25–13	F (3.111) = 1.003	0.395[a]	
Various family health centers	20.08±3.63	26–12			
Neonatal and child intensive care unit	19.33±2.38	24–15			–
Pediatric emergency and pediatrics service	18.62±3.34	23–12			

SIDS: Sudden infant death syndrome; SD: Standard deviation; Min: Minimum; Max: Maximum; a: One way ANOVA followed by Tukey post-hoc tests; b: Student's t-test.

from SIDS is the supine position." 18.3% to the item "It is safer than other positions to put the baby on the side while sleeping during the day." 54.8% to the item "The risk of SIDS decreases in babies who are breastfed for the first 6 months only." and 33.9% to the item "Using a pacifier before falling asleep and during sleep increases the risk of SIDS" (Table 3).

The mean knowledge level scores of the nurses were compared based on certain descriptive characteristics (Table 4). It was found that the married nurses had significantly higher knowledge levels than the single ones, that nurses with one or two children had higher knowledge levels than those without children or those with three or more children, and that nurses with an associate's, bachelor's, or master's degree had higher knowledge levels than those with only a high school education ($p<0.05$).

Discussion

The results of this study, which assessed nurses' knowledge of SIDS and safe sleep, showed that while a high percentage of nurses heard of these subjects (94%, 80%, respectively), only a small percentage received training on them (24%, 13%, respectively; Table 2). Once more, this study found that 60.9% of nurses informed parents who visited the family health center about SIDS and safe sleep, and that 24.3% of nurses had formal training on SIDS and 13% on safe sleep (Table 2). This suggests that nurses may have given parents inaccurate information or incorrect advice because they did not have sufficient knowledge on the subject. 79% of nurses included sleep position and APA recommendations in the discharge training they provided

to parents, according to the study by Bartlow et al.[21] and 57.6% of nurses informed parents about sleep position in the study by Isezou et al.[25] The percentage of information that nurses gave to parents who came to the family health center for safe sleep and SIDS (60.9%) is comparable to that of the study by Isezou et al.[25] (57.6%). As nurses should fully fulfill their supportive, educational, and consultative roles regarding the prevention of SIDS risk factors and safe sleep towards parents and infant care providers, these figures demonstrate that the rate of information that nurses provide to parents about SIDS and safe sleep is insufficient.

Considering that it may range from 0 to 30, the average score of nurses in this study, which involved nurses employed at a family health center, was found to be above average at 19.59±3.36, indicating their understanding of SIDS and safe sleep. It was also found that none of the nurses answered the full questionnaire accurately, which assessed their degree of knowledge regarding safe sleep practices and SIDS. In the study conducted by Elwasefy et al.[19] to determine the knowledge levels of nurses about SIDS and safe sleep, it was observed that the knowledge levels of nurses about SIDS and safe sleep were below average in the survey questions prepared by the researchers. In a study conducted with pediatric nurses in South Korea, it was determined that the knowledge levels of nurses about SIDS and safe sleep practices were insufficient.[26] In the study conducted by Solliman et al.[27] it was concluded that more than half of the nurses' total knowledge level about SIDS and safe sleep was insufficient. Since nurses are expected to have a complete knowledge of SIDS and safe sleep, the need to improve the knowledge level of nurses about SIDS and safe sleep emerges both in this study and in the literature.[19,26,27]

In its latest update, which was updated in 2022, the AAP emphasizes the need for babies to be placed in the supine sleeping position at all times until they are one year old to reduce the risk of SIDS.[2] Fernandes et al.[9] reported in their 2020 study in Gynecology and Neonatology services that 82.3% of healthcare professionals (n=113) considered the supine position to be the sleep position with the lowest risk of SIDS. In the study conducted by Hodges et al.[28] it was concluded that almost all of the 153 nurses (92.8%) responded correctly to the statement "AAP recommends the supine sleeping position for safe sleep." In this study, it was determined that 89.6% of the participants correctly knew that the sleeping position was a risk factor for SIDS, but only 31.3% of the nurses correctly knew that the supine sleeping position was the safest sleep position to protect against SIDS, and 81.7% stated that it was safer than other positions for babies to sleep in the side position during the day, which reveals that nurses do not have sufficient knowledge (Table 3) and shows the lack of knowledge of nurses about sleep position, which is one of the most important risk factors for SIDS in our country, compared to Portugal and the USA,[9,27] where similar studies were conducted. Once more, 80.9% of the nurses in this study identified the side or stomach position as the most reliable sleep position to prevent the baby from aspirating mucus/vomit after feeding, indicating that they have inaccurate information (Table 3). This is in contrast to the findings of the studies by Bartlow et al.[21] and Hodges et al.[28] (respectively; n=19; 75%, n=153; 94%). Similar to the results of this study, a study by Barsman et al.[24] with 86 neonatal nurses found that just 17% of the nurses thought that sleeping in a supine position did not raise the risk of aspiration.

Environmental risk factors for SIDS include having the baby sleep in a soft and loose mattress and having various soft objects on the sleeping surface such as pillows, blankets, sheepskin/wool, positioning pillows, crib support pillows (bumper pads), and toys.[2] Fernandes et al.[9] found that 74.3% of healthcare professionals knew that putting the baby on a soft bed and 89.4% knew that putting soft objects such as pillows, quilts and plush toys in the baby's sleeping environment would increase the risk of SIDS. Efe et al.[18] found that 68% of nurses knew that pillows should not be used while the baby sleeps. In this study, 84.3% of the participants correctly answered that babies should sleep on a hard surface with elastic sheets (80.9%) and that there should be no soft objects such as blankets or toys in the environment where the baby sleeps. However, it is a sad finding that the rate of participants who stated that a pillow should be used while the baby is sleeping was 42.6% (Table 3). The findings of this study are similar to the literature,[9,18] and indicate that the nurses in the study have insufficient knowledge about the environmental risk factors of SIDS.

Parents should breastfeed their children for as long as feasible due to the established advantages of breastfeeding as well as reports that it has a preventive impact against SIDS and is linked to a halving of the risk of SIDS.[2] Only 58.4% of healthcare professionals (n=113) in the Fernandes et al.[9] study asserted breastfeeding lowers the risk of SIDS, whereas 81% of those in the Barsman et al.[24] study (n=86) correctly identified breastfeeding's protective effect against SIDS. It was determined in this study that the rate of knowledge that the risk of SIDS would decrease in babies who were breastfed for the first 6 months only (54.8%; Table 3) was similar to the findings of Fernandes et

al.[9] In addition to breastfeeding, pacifier use and routine vaccination are also among the protective factors for SIDS.[2] When the studies were examined, in the study of Hodges et al.[28] 41.8% of the participants and in the study of Barsman et al.,[24] 36% of the participants reported that pacifier use was chosen as a protective factor against SIDS by the AAP. Similar to previous research, the results of this study show that nurses' understanding of protective factors for SIDS and safe sleep is inadequate (Table 3).

Chong et al.[29] reported that being single mother and baby's higher birth order increased the risk of SIDS and that the probability of SIDS being seen in the first baby was lower than in babies born later. The results of this study showed that married nurses knew significantly more about SIDS and safe sleep than single nurses, and that nurses with one or two children knew more than those without children and those with three or more children ($p<0.05$; Table 4). The fact that the average knowledge level scores of the nurses whose marital status was married were higher than those who were single regarding SIDS and safe sleep may be due to their experiences. It is also thought that the knowledge level of those with one child is lower than those with two children because they are less experienced, and the fact that the knowledge level of those with three children is lower than those with two children may be due to their self-confidence and not caring about this issue. The results of this study are comparable to those of the Chong et al.[29] (2004) study. Once more, this study found that nurses' average knowledge scores about SIDS and safe sleep rose significantly ($p<0.05$; Table 4) as their educational attainment increased. One of the major factors influencing the infant mortality rate is the mother's education level, which is also one of the risk factors for SIDS. It has been reported that the more educated the mother is, the more often she applies risk factors like covering the baby's face, sleeping on her stomach, putting the baby to bed in a soft bed, etc.[7,17,22] This study's result that knowledge rose in tandem with the mother's educational attainment is consistent with findings from other studies,[7,18,24] highlighting the significance of education regarding SIDS and safe sleep.

Limitations

The results of this study should not be extrapolated to all Turkish nurses because it was carried out in a province in the Central Black Sea region to ascertain the nurses' knowledge levels on SIDS and safe sleep. The data of this study are limited to the responses given by the nurses who participated in the study.

Conclusion

The knowledge of nurses regarding SIDS and safe sleep was found to be above average (19.39 out of 30). However, it was found that nurses, in particular, were not fully aware of the AAP's recommendations. It is projected that raising the level of knowledge and awareness on SIDS and safe sleep will be facilitated by incorporating these subjects into undergraduate nursing education and offering in-service training.

Ethics Committee Approval: The Hitit University Ethics Committee granted approval for this study (date: 27.02.2020, number: 220-28).

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References

1. Centers for Disease Control and Prevention. Sudden unexpected infant death and sudden infant death syndrome. Available at: https://www.cdc.gov/sudden-infant-death/index.html. Accessed July 9, 2025.
2. Moon RY, Carlin RF, Hand I; Task Force On Sudden Infant Death Syndrome And The Committee On Fetus And Newborn. Sleep-related infant deaths: Updated 2022 Recommendations for reducing infant deaths in the sleep environment. Pediatrics 2022;150(1):e2022057990. [CrossRef]
3. Burgess A, Bell T, Cirelli J, Clymer BJ, Goodstein MH. Nursing students' knowledge and attitudes toward infant sleep safety. Teach Learn Nurs 2017;12:289-94. [CrossRef]
4. Goldstein RD, Trachtenberg FL, Sens MA, Harty BJ, Kinney HC. Overall postneonatal mortality and rates of SIDS. Pediatrics 2016;137(1):e20152298. [CrossRef]
5. Yıldız İ. Ani bebek ölüm sendromu ve adli hemşirelik yaklaşımı. Adli Tıp Bülteni 2018;23:115-9. [CrossRef]
6. T.C. Sağlık Bakanlığı. Sağlık Bakanlığının kuruluşunun 100. yılında Türkiye'de bebek ölümleri durum raporu. Available

at: https://hsgm.saglik.gov.tr/depo/birimler/cocuk-ergen-sagligi-db/Dokumanlar/Kitaplar/Saglik_Bakanliginin_Kurulusunun_100._Yilinda_Turkiyede_Bebek_Olumleri_Durum_Raporu.pdf. Accessed July 9, 2025.
7. Doğan P, Bal Yılmaz H. The effect of safe sleep and sudden infant death syndrome training on the knowledge of mothers. J Turk Sleep Med 2023;10:129-36. [CrossRef]
8. Fleming PJ, Blair PS, Pease A. Sudden unexpected death in infancy: Aetiology, pathophysiology, epidemiology and prevention in 2015. Arch Dis Child 2015;100(10):984-8. [CrossRef]
9. Fernandes SC, de Luca F, Fonseca SMBVP, Oliveira FSDFLC, Areias MHFGP. Sudden infant death syndrome: What healthcare professionals and parents know about how to prevent it in Portugal. Yale J Biol Med 2020;93(4):475-85.
10. Fisher RE. Family-centered care of the infant. In: Hockenberry MJ, Rodgers CC, Wilson D, editors. Wong's essentials of pediatric nursing. St. Louis (MO): Elsevier Health Sciences; 2022. p. 330-7.
11. Filiano JJ, Kinney HC. A perspective on neuropathologic findings in victims of the sudden infant death syndrome: The triple-risk model. Neonatology 1994;65:194-7. [CrossRef]
12. Erdoğan Ç, Turan T. Risky behaviors of mothers with infants on sudden infant death syndrome in Turkey. J Pediatr Nurs 2018;38:e2-6. [CrossRef]
13. Newberry JA. Creating a safe sleep environment for the infant: What the pediatric nurse needs to know. J Pediatr Nurs 2019;44:119-22. [CrossRef]
14. Frey E, Hamp N, Orlov N. Modeling safe infant sleep in the hospital. J Pediatr Nurs 2020;50:20-4. [CrossRef]
15. Chang CT, Shunmugam P, Abdul Aziz NA, Abdul Razak NS, Johari N, Mohamad N, et al. Exploring Malaysian mothers' plans on sleeping arrangement with their newborn. J Paediatr Child Health 2020;56(3):426-31. [CrossRef]
16. Zeren E, Şener Taplak A, Polat S. Creating a safe sleep environment for babies: What are the practices performed by mothers? J Health Res 2022;36:323-33. [CrossRef]
17. Burrell TD, McDonald EM, Mahoney P, Musci RJ, Shields W, Gielen A, et al. Content of infant safe sleep counseling and maternal reported practices in an urban clinic. Acad Pediatr 2019;19:801-7. [CrossRef]
18. Efe E, İnal S, Balyılmaz H, Çetin H, Turan T, Altun E, et al. Nurses' and paediatricians' knowledge about infant sleeping positions and the risk of sudden infant death syndrome in Turkey. HealthMED 2012;6:140-47.
19. Elwasefy SA, Ebrahem GGS, Said DA, Salih SAAM. Effect of preventive updating guidelines on improving nurses' knowledge and practice toward sudden infant death syndrome in neonatal intensive care unit. Int J Nurs Didact 2019;9:21-30. [CrossRef]
20. Yikilkan H, Unalan PC, Cakir E, Ersu RH, Cifcili S, Akman M, et al. Sudden infant death syndrome: How much mothers and health professionals know. Pediatr Int 2011;53(1):24-8. [CrossRef]
21. Bartlow KL, Cartwright SB, Shefferly EK. Nurses' knowledge and adherence to sudden infant death syndrome prevention guidelines. Pediatr Nurs 2016;42(1):7-13.
22. Helaly NM. Assessment of neonatal nurse' knowledge and practice about sudden infant death syndrome risk reduction. Int J Novel Res Healthc Nurs 2020;7:753-62.
23. Aksoy A, Yilmaz DV. A new service model to increase community health: Preconceptional care and the nurse's role. J Educ Res Nurs 2019;16:60-8. [CrossRef]
24. Barsman SG, Dowling DA, Damato EG, Czeck P. Neonatal nurses' beliefs, knowledge, and practices in relation to sudden infant death syndrome risk-reduction recommendations. Adv Neonatal Care 2015;15:209-19. [CrossRef]
25. Isezuo KO, Adamu A, Jiya FB, Ibitoye PK, Onankpa BO, Sani UM, et al. Knowledge of sudden infant death syndrome and recommended sleep practices for infants amongst doctors and nurses: A multicentre study in Sokoto, Sokoto State, Nigeria. Borno Med J 2018;15:1-9. [CrossRef]
26. Cho JA, Sohn M, Lee S, Ahn YM. Knowledge on sudden unexplained infant death-related safe sleep practices and infant cardiopulmonary resuscitation in pediatric nurses. Child Health Nurs Res 2020;26(4):454-62. [CrossRef]
27. Soliman ASA, Abd-Elmonem HH, Ismail SS. Assessment of nurses' performance regarding infant sleep position on sudden infant death syndrome at neonatal intensive care units. Assessment 2022;5:55-68. [CrossRef]
28. Hodges NL, Anderson SE, McKenzie LB, Katz ML. Certified nurse-midwives' knowledge, attitudes, and behaviors about infant safe sleep. J Midwifery Womens Health 2018;63:196-204. [CrossRef]
29. Chong DSY, Yip PSF, Karlberg J. Maternal smoking: An increasing unique risk factor for sudden infant death syndrome in Sweden. Acta Paediatr 2004;93:471-78. [CrossRef]