SJIF Impact Factor: 6.711

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 9.
Issue: 7
Page N. 243-249
Year: 2025

Original Article www.wjahr.com

KNOWLEDGE AND PRACTICE AMONG SAMPLE OF MOTHERS ATTENDING TO AL-IMAMAIN AL-KADHMEIN MEDICAL CITY BAGHDAD TOWARD SUDDEN INFANT DEATH SYNDROME

[*1]Yasameen Yousuf Yaseen and [2]Sina'a Kareem Abdullah

[1,2]Baghdad- Al-Karkh Health Directorate, Baghdad, Iraq.

Article Received date: 14 May 2025 **Article Revised date:** 03 June 2025 **Article Accepted date:** 24 June 2025

***Corresponding Author: Yasameen Yousuf Yaseen**
Baghdad- Al-Karkh Health Directorate, Baghdad, Iraq.

ABSTRACT

Background: Sudden Infant Death Syndrome (SIDS) refers to the unexpected and unexplained death of an infant under one year of age, occurring outside the perinatal period and remaining unexplained even after a complete autopsy, investigation of the death scene, and review of clinical history. **Objectives:** This study aimed to evaluate the level of knowledge and practices of mothers regarding SIDS and to identify the socio-demographic factors influencing their awareness and behaviors. **Patients and Methods:** A cross-sectional study was carried out at Al-Imamain Al-Kadhmein Medical City involving 300 mothers. A structured questionnaire was used, consisting of three sections: socio-demographic information, knowledge about SIDS risk factors, and reported sleep practices for their children. Data were analyzed using the Pearson Chi-square test to determine associations, with significance set at $P < 0.05$. **Results:** Among the 300 participating mothers, 35.3% demonstrated good knowledge of SIDS, 53.7% had average knowledge, and 11% had poor knowledge. Regarding practice, 42% of the mothers followed appropriate sleep practices for their infants, while 58% exhibited poor practices. Several socio-demographic variables such as maternal education, number of children, occupation, and the source of health information significantly influenced both knowledge and practice levels. **Conclusions:** The findings highlight an overall unsatisfactory level of knowledge and practice related to SIDS among the studied mothers. The results underscore the urgent need for targeted educational interventions that focus on improving maternal awareness and promoting safe sleep practices to reduce the risk of SIDS.

KEYWORDS: Knowledge, Practice, Mothers, Sudden Infant, Death, Syndrome.

INTRODUCTION

Sudden Infant Death Syndrome (SIDS) is defined as the sudden and unexpected death of an infant under one year of age that remains unexplained even after a comprehensive investigation, including a complete autopsy, a detailed examination of the death scene, and a review of the clinical history of the child.[1] The incidence of SIDS varies widely between developed and developing countries. Unfortunately, there is a lack of data on the prevalence of SIDS in Iraq and other Middle Eastern countries. In contrast, industrialized nations reported 15,617 deaths attributed to SIDS, with a rate of 34.9 per 100,000 live births. Among these, Japan recorded the lowest incidence, while New Zealand reported the highest.[2] One of the most significant risk factors for SIDS is placing an infant in the prone sleeping position, which increases the risk of re-breathing exhaled gases, asphyxia, overheating, and reduced arousability. Additional environmental risk factors include soft or loose bedding, head coverings, bumper pads, and parental bed-sharing with infants.[3] Prenatal exposure to tobacco smoke has also been linked to increased vulnerability to SIDS due to its effects on hypoxia response, arousal mechanisms, and the infant's autonomic and cardiovascular functions.[4] Although the exact cause of SIDS remains unknown, several contributing risk factors have been identified. Infants who sleep in the prone position are at greater risk than those placed supine.[5] Public health campaigns like "Back to Sleep" have significantly reduced prone sleeping from 70% to about 14.5% and cut the SIDS rate by more than half/.[6] Additional risks include prematurity and low birth weight, which predispose infants to respiratory complications due to underdeveloped pulmonary systems.[3] On the other hand, certain protective measures—such as

breastfeeding, pacifier use during sleep, and placing the baby in a separate but nearby sleeping area—have been shown to lower the risk of SIDS.[7] A safe sleep environment, free from soft objects like pillows, plush toys, and bumpers, and maintaining a room temperature between 18°C and 20°C, is also recommended. Furthermore, routine vaccinations and pacifier use are associated with decreased SIDS incidence.[8] These findings underscore the importance of educating parents—particularly mothers—about the risk and protective factors associated with SIDS.[9] Many caregivers rely on advice from trusted individuals like female relatives or friends and may disregard evidence-based guidelines if contradictory. Therefore, healthcare providers, especially postpartum nurses, have a crucial role in modeling and reinforcing safe sleep practices to prevent SIDS.[10] **Aim of the Study** to assess the level of knowledge and practices among mothers regarding sudden infant death syndrome. And to identify socio-demographic factors that influence maternal knowledge and practices related to SIDS.

METHOD

A descriptive cross-sectional study was designed to achieve the objectives of assessing mothers' knowledge and practices regarding Sudden Infant Death Syndrome (SIDS). The study was conducted over a six-month period, from January 1st to June 30th, 2024, at Al-Imamain Al-Khadhmain Medical City in Baghdad, Iraq. Data collection was performed through direct interviews during working hours, with three field visits per week, each lasting four hours. A total of 300 married Iraqi mothers were recruited using a convenient sampling method from the outpatient clinics of pediatrics and obstetrics & gynecology departments. Inclusion criteria included being an Iraqi national, aged 18 years or older, currently married, and having at least one child under the age of one year. Mothers who did not meet these criteria were excluded from the study. Data were gathered using a structured, pre-tested questionnaire, which was divided into three parts. The first part collected sociodemographic data, such as maternal and infant age, education level, occupation, number of living children, parental smoking, prematurity, and previous knowledge about SIDS. The second part assessed knowledge about risk factors for SIDS, including infant sleeping position, soft bedding, overheating, pacifier use, bed-sharing, and smoke exposure. The third part focused on the sleep practices followed by mothers for their infants. A pilot study involving 10 mothers was conducted to evaluate the feasibility of the questionnaire and estimate the time required, which ranged between 15–20 minutes. Ethical approval was obtained from the Arab Board of Health Specializations, and official permission was granted by the Baghdad Health Directorate and the medical city administration. Informed verbal consent was obtained from all participants. Data were analyzed using SPSS version 25. Descriptive statistics summarized the data, while Chi-square and independent t-tests were applied for analysis. Knowledge and practice were scored, categorized, and interpreted using predefined scoring criteria. A p-value < 0.05 was considered statistically significant.

RESULTS

The current study included 300 married mothers with mean age 29.1 ± 4.8 years while mean age of their infants was 4.7 ± 3 months. Included mothers had high school education (26%), Bachelor's degree (23%), primary education (20%) or Master/PhD (3%). The majority of mothers were housewives (77%), 47% of mother had 1-2 children, 28% had more than 4 children and 25% had 3-4 children. Fathers were smokers in 52% of included participants. Preterm children were reported in 21% of participants. Forty- seven percent of mothers previously heard about SIDS and the most common source of information was social media content and website (61.7%). As shown by (**Table 1**).

Table (1): Demographic data of included participants.

Age of mothers in years	Mean ± SD	29.1 ± 4.8	
	Range	19 - 42	
Age of the infants in months	Mean ± SD	4.7 ± 3	
	Range	1 - 11	
		No.	**%**
Educational level of mother	Primary	60	20
	Secondary school	78	26
	Bachelor's degree	96	23
	Master/PhD	9	3
	Illiterate	57	19
Mother occupation	Housewife	231	77
	Working	69	23
Number of children	1-2	141	47
	3-4	75	25
	> 4	84	28
Does any of the parents' smoke?	Father	156	52
	Mother	0	0
	Both	0	0

	None	144	48
Marital status	Married	300	100
	Divorced	0	0
	Widow	0	0
Was your child born preterm (<37weeks) or with low birth weight (<2.5kg)?	Yes	63	21
	No	237	79
Have you ever heard about SIDS?	Yes	141	47
	No	159	53
If yes, Source of information? No=141	Social media content, website and television	87	61.7
	Written information (books. leaflet)	12	8.5
	Friends or relatives	27	19.1
	Health professional	15	10.6

Participants 39% correctly know that sleeping position other than supine is considered as a risk factor. 51% of participants correctly know that using a pacifier at nap time and bed time is protective against SIDS. 92% of participants correctly know that overheating and head covering is a risk factor for SIDS. 87% of participants correctly know that smoking exposure during pregnancy and after birth is a risk factor for SIDS. As shown by (**Table 2**).

Table 2: Assessment of knowledge about risk factors of SIDS.

Which of the following do you think is a risk factor for SIDS?	Correct	Incorrect	Don't know
Sleeping position other than supine	117 (39%)	138 (46%)	45 (15%)
Soft objects and loose bedding	195 (65%)	84 (28%)	21 (7%)
Using a pacifier at nap time and bedtime	153 (51%)	114 (38%)	33 (11%)
Overheating and head covering	276 (92%)	21 (7%)	3 (1%)
Sharing the bed with the infant	243 (81%)	45 (15%)	12 (4%)
Smoke exposure during pregnancy and after birth	261 (87%)	18 (6%)	21 (7%)

Assessment of mother's knowledge about risk factors of SIDS revealed that 106 (35.3%) had good knowledge, 161 (53.7%) of mothers had average knowledge and 33 (11%) had poor knowledge. As shown by (**Figure 1**).

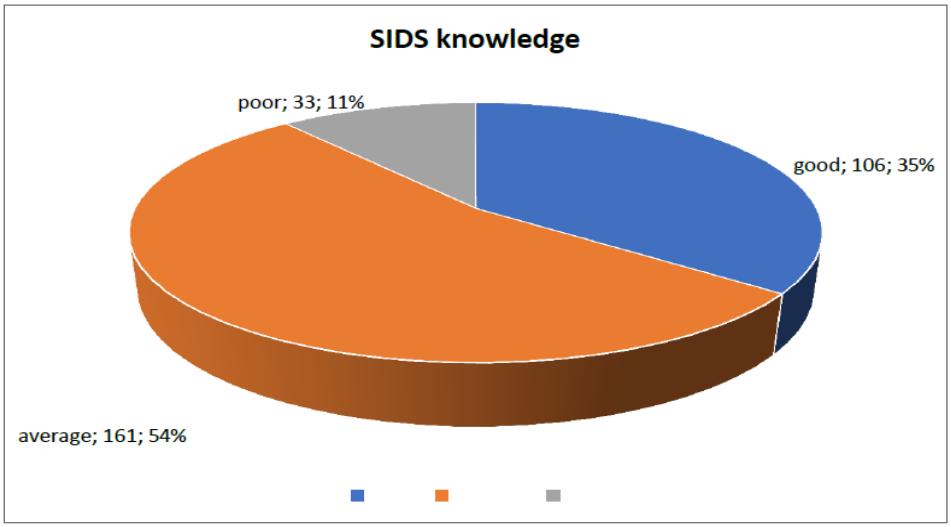

Figure (1): Knowledge level about SIDS in included mothers.

Regarding good practice, (100%) of participants are not used prone position for their infants, (90%) of

participants do not put a soft toy in the crib of their infants while sleeping, (100%) of participants are not used to put their infants separately on other room. Regarding poor practice, (74%) of participants were used a soft mattress in the bed of their infants. (69%) of participants were swaddled their infants. As shown by (**Table 3**).

Table (3): Assessment of sleep practice of participants.

		Yes	No.
How does the infant usually sleep?	1-Prone	0 (0%)	300(100%)*
	2-Supine	96(32%)*	204(68%)
	3-Side	216(72%)	84(28%)*
Do you use a sleeping sack?		15(5%)*	285(95%)
Do you put a pillow inside the baby‘s crib?		231(77%)	69(23%)*
Do you use a cot buffer?		96(32%)	204(68%)*
Do you use a soft mattress?		222(74%)	78(26%)*
Do you turn on air-conditioning (cold setting) when the child is sleeping in the summer?		129(43%)*	171(57%)
Do you turn on air-conditioning (hot setting) when the child is sleeping in the winter?		33(11%)*	267(89%)
Does the infant use a pacifier when he is sleeping?		126(42%)*	174(58%)
Is the infant swaddled in general?		207(69%)	93(31%)*
Does the infant have a soft toy in his crib while he is sleeping?		30(10%)	270(90%)*
Has the infant ever slept in a separate room from the parents or a caregiver?	Yes, it occurred before the age of 6 months	0(0%)	300(100%)*
	Yes, it occurred after the age of 6 months	0(0%)	300(100%)*
Has the infant ever co-slept with the parents in the same bed?	Yes, it occurred before the age of 4 months	54(18%)	246(82%)*
	Yes, it occurred after the age of 4 months	33(11%)	267(89%)*
Has the infant ever co-slept with a person (other than the parents) in the same bed?		15(5%)	285(95%)*
Has the infant ever co-slept with a smoker parent in the same bed?		24(8%)	276(92%)*

Answers marked by * are considered good practice

Assessment of mothers practice towards SIDS revealed that 126 (42%) had good practice while 174 (58%) of mothers had poor practice. As shown by (**Figure 2**).

Figure (2): Sleep practice level of participants' children.

Assessment of association between knowledge about SIDS and participants data revealed significant

association between mothers 'knowledge and educational level of mother, mother occupation, number of living children, preterm infant, previous information about SIDS and source of information about SIDS. P value (0.001), (0.013), (0.003), (0.010), (0.001), (0.006) respectively. As shown by (**Table 4**).

Table (4): Association between knowledge about SIDS and participant's data.

		Good No=106	Average N=161	Poor N=33	P value
Age of mothers	Mean ± SD	29.93±5.4	28.53±4.5	29.09±4.8	0.069[NS]
Age of infants	Mean ± SD	4.67±2.1	4.98±2.2	5.36±2.4	0.079[NS]
Educational level of mother	Primary	30(50%)	21(35%)	9(15%)	0.001 [S]
	High school	18(23.1%)	48(61.5%)	12(15.4%)	
	Bachelor's degree	40(41.7%)	53(55.2%)	3(3.1%)	
	Master/PhD	0(0%)	9(100%)	0(0%)	
	None of the above	18(31.6%)	30(52.6%)	9(15.8%)	
Mother occupation	Housewife	87(37.7%)	114(49.3%)	30(13%)	0.013 [S]
	Working	19(27.5%)	47(68.2%)	3(4.3%)	
Number of living children	1-2	46(32.6%)	83(58.9%)	12(8.5%)	0.003 [S]
	3-4	30(40%)	42(56%)	3(4%)	
	> 4	30(35.7%)	36(42.9%)	18(21.4%)	
Does any of the parents' smoke?	Father	61(39.1%)	80(51.3%)	15(9.6%)	0.330 [NS]
	Mother	0(0%)	0(0%)	0(0%)	
	Both	0(0%)	0(0%)	0(0%)	
	None	45(31.3%)	81(56.3%)	18(12.4%)	
Was your child born preterm or with low birth weight?	Yes	12(19%)	42(66.7%)	9(14.3%)	0.010 [S]
	No	94(39.7%)	119(50.2%)	24(10.1%)	
Have you ever heard about SIDS?	Yes	58(41.2%)	80(56.7%)	3(2.1%)	0.001 [S]
	No	48(30.2%)	81(50.9%)	30(18.9%)	
If yes, Source of information?	Social media	39(44.8%)	48(55.2%)	0(0%)	0.006 [S]
	Written information	4(33.3%)	8(66.7%)	0(0%)	
	Friends or relatives	6(22.2%)	18(66.7%)	3(11.1%)	
	Health professional	9(60%)	6(40%)	0(0%)	

Using Chi-square test

Assessment of association between practice about SIDS and participant's data revealed significant association between mothers 'practice and smoking of parents, preterm child and source of information about SIDS. P value (0.046), (0.001), (0.033) respectively. As shown by (**Table 5**).

Table (5): Association between practice about SIDS and participant's data.

		Good N=126	Poor N=174	P value
Age of mothers	Mean ± SD	29.34±5.1	28.89±4.7	0.417 [NS]
Age of infants	Mean ± SD	5.02±2.2	4.47±2.1	0.112 [NS]
Educational level of mother	Primary	27(45%)	33(55%)	0.461 [NS]
	High school	30(38.5%)	48(61.5%)	
	Bachelor's degree	42(43.8%)	54(56.2%)	
	Master/PhD	6(66.7%)	3(33.3%)	
	None of the above	21(36.8%)	36(63.2%)	
Mother occupation	Housewife	93(40.3%)	138(59.7%)	0.264 [NS]
	Working	33(47.8%)	36(52.2%)	
Number of living children	1-2	63(44.7%)	78(55.3%)	0.673 [NS]
	3-4	30(40%)	45(60%)	
	> 4	33(39.3%)	51(60.7%)	
Does any of the parents' smoke?	Father	57(36.5%)	99(63.5%)	**0.046 [S]**
	Mother	0(0%)	0(0%)	
	Both	0(0%)	0(0%)	
	None	69(47.9%)	75(52.1%)	
Was your child born preterm	Yes	42(66.7%)	21(33.3%)	**0.001 [S]**

or with low birth weight?	No	84(35.4%)	153(64.6%)	
Have you ever heard about SIDS?	Yes	60(42.6%)	81(57.4%)	0.855 [S]
	No	66(41.5%)	93(58.5%)	
If yes, Source of information?	Social media	33(37.9%)	54(62.1%)	**0.033 [S]**
	Written information	9(75%)	3(25%)	
	Friends or relatives	9(33.3%)	18(66.7%)	
	Health professional	9(60%)	6(40%)	

Using Chi-square test

DISCUSSION

This study explored the knowledge and practices of 300 married Iraqi mothers regarding Sudden Infant Death Syndrome (SIDS), highlighting several socio-demographic and behavioral factors. The mean age of participating mothers was 29.1 ± 4.8 years, comparable to similar studies in France and Saudi Arabia, where maternal ages were reported as 30.5 and 31.4 years, respectively.[11,12] Educational attainment varied among the mothers, with a significant portion having only high school or primary education. Compared to findings from Egypt, where over half the mothers had high school education and only 18% had university education, our results reflect a moderately educated group.[13] Conversely, the Saudi study reported a higher percentage of university-educated mothers, which may correlate with greater awareness of health-related topics.[12] This likely contributes to the observed differences in knowledge and practice across populations. The high percentage of housewives (77%) in our study aligns with Egyptian data (81.7%)[13], yet contrasts with the Saudi study, which reported a lower rate (57%) due to better employment opportunities linked to higher education levels.[12] About 47% of mothers had 1–2 children, a figure slightly lower than the primigravida rate reported in the French study (51%).[11] Smoking by fathers was reported in 52% of cases, closely matching Egyptian data (48.9%)[13], but significantly higher than the rate in Saudi Arabia (26.4%).[12] Only 21% of the infants were born preterm, in contrast to 4% reported in Saudi Arabia, potentially reflecting disparities in maternal care and education.[12] Moreover, 47% of our participants had prior knowledge of SIDS, which mirrors Saudi findings (49.3%)[12] but falls short of the 94.6% awareness in France, a difference likely attributed to stronger public health programs and better access to reliable information.[11]

Social media emerged as the primary information source (61.7%), consistent with findings in France and Saudi Arabia.[11,12] In Egypt, however, family and friends were the main sources, reflecting cultural differences in health communication.[13] Knowledge regarding SIDS risk factors was generally satisfactory, with the highest awareness related to overheating, smoking, and bed-sharing. This is consistent with French data[11] but exceeds awareness levels reported in Saudi Arabia.[12] Overall, 35.3% had good knowledge, a rate lower than in India (69.2%) but higher than in Egypt (4.4%).[13,14] Practice assessment revealed 42% of mothers had good sleep practices, similar to other Egyptian findings[13,15], yet lower than ideal. Factors such as education, prior knowledge, parental smoking, and preterm birth significantly influenced knowledge and practice. These findings align with multiple regional studies[12-14], emphasizing the critical role of maternal education and access to credible health information.

CONCLUSION

This research found 35.3% good knowledge, 53.7% moderate knowledge, and 11% bad knowledge. 42% of moms practiced SIDS well, whereas 58% did not. Mother knowledge was associated with educational level, employment, number of living children, preterm newborn, previous SIDS information, and source of SIDS information. The connection between mothers' SIDS practice and parents' smoking, preterm child, and SIDS information source was significant.

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