

## Awareness of sudden infant death syndrome and choice of infant's sleep position among mothers in Enugu, Southeast Nigeria

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### ABSTRACT

**Background:** Sudden infant death syndrome (SIDS) has been identified as a common cause of death among infants. However, in countries that introduced risk reduction and safe sleep campaigns, there has been a significant decline in SIDS-related deaths. Unfortunately, there has been little interest in SIDS by researchers in Nigeria. **Objective:** The aim of the study was to determine the level of parental awareness and awareness of the risk reduction measures about SIDS in Nigeria and to further determine the level of practice of the measures. **Materials and Methods:** This was a hospital-based cross-sectional study conducted over a 6-month period from April 2016 to September 2016 in the Well Baby Clinic of Enugu State University Teaching Hospital, Enugu. Four hundred and one respondents were enrolled, and interviewer-based questionnaires administered. Results were presented as percentages. IBM Statistical Package for the Social Sciences version 20 was used for data analysis and statistical significance was set at  $p < 0.05$ . **Results:** A total of 49 (12.2%) of the 401 respondents claimed to have heard of SIDS, but only 5/401 (1.2%) had good or some knowledge of SIDS. Mothers with higher educational qualification were more likely to have heard of SIDS ( $p = 0.002$ ,  $\chi^2 = 12.892$ ). There was a significant association between mother's knowledge of SIDS and laying of infants in a back-to-bed position during sleep ( $p = 0.000$ ,  $\chi^2 = 12.610$ ). **Conclusion:** Knowledge of SIDS among mothers in Enugu is poor. It is hoped that this study will generate further public discourse and awareness of this significant cause of infant mortality, to reduce preventable deaths associated with it. More efforts should be geared toward creating awareness of SIDS and its associated risk factors through electronic media, social media, and health talks in developing countries.

**Key words:** Enugu, Sleep position, Sudden infant death syndrome

Sudden infant death syndrome (SIDS) is defined as the sudden unexpected death of an infant, with onset of the fatal episode apparently occurring during sleep [1]. A key feature of SIDS is that it remains unexplained after a thorough investigation, including performance of a complete autopsy and review of the circumstances of death and the clinical history [1]. It is one of the three subsets of sudden unexpected infant death (SUID) which is the death of an infant that occurs suddenly and unexpectedly, and whose cause of death is not immediately obvious before investigation. The other two subsets of SUIDs are death from unknown cause and accidental suffocation/strangulation in bed [2].

Globally, SIDS resulted in ~15,000 deaths in 2013 down from 22,000 deaths in 1990 [3]. In the USA, SIDS is a leading cause of infant death and took the lives of ~1500 children in 2013 [3,4]. This represents a dramatic reduction, after the identification of the prone sleeping position as a major modifiable risk factor, which led to the introduction of the "Back to sleep" or "Reduce

the risk" campaigns in 1994 [5-7]. International trends across 15 countries also revealed a similar decline after the introduction of risk reduction and safe sleep campaigns [8].

The poor socioeconomic conditions and ignorance that provide the background for SIDS are common in Nigeria, yet there is a shortage of data from our national statistical records with little interest concerning this significant cause of mortality shown by researchers in Africa [4,9,10]. This study sought to assess parental awareness of SIDS in Southeast Nigeria. To the best of our knowledge, there is a dearth of published work on SIDS in Nigeria. It is hoped that this study will stimulate further interest in SIDS and risk reduction campaigns to reduce preventable deaths associated with it.

### MATERIALS AND METHODS

This was a hospital-based cross-sectional descriptive study conducted over a 6-month period from April 2016 to September

2016 in the Well Baby Clinic of Enugu State University Teaching Hospital, Parklane, Enugu. This tertiary health facility serves as a referral center offering specialized medical services to residents in Enugu state and its environs. Mothers were consecutively enrolled for the study using purposive sampling method, while those who refused consent were excluded from the study. The aim of the study was to determine the level of parental awareness and awareness of the risk reduction measures about SIDS in Nigeria and to further determine the level of practice of the measures.

A structured questionnaire was administered by trained research assistants. Ethical approval for the study was obtained from the health research and ethics committee of Enugu State University Teaching Hospital and informed consent was obtained from the participants.

The study variables were collected into the relevant sections of the questionnaire. In the first section, predictor variables which included sociodemographic features of participants such as age, ethnic group, religion, educational level, and occupation were collected. The second section of the questionnaire collected information that assessed respondents' level of (a) knowledge and awareness of SIDS in Nigeria, (b) the level of awareness of SIDS risk reductions measures, and (c) the level of practice of risk reductions measures.

The parameters that assessed the knowledge and awareness of SIDS included: (i) Whether the respondents had ever heard of SIDS (categorized as yes or no), (ii) source of information about SIDS (information provided by the respondent), and (iii) knowledge of SIDS (categorized as none, partial, and adequate) based on the following key words from the definition of SIDS: Infant, unexpected, sudden, sleep, and no known cause. (The mention of 4–5 of the key words was regarded as adequate knowledge; 2–3 words as partial; and 0–1 as none).

The parameters that assessed the level of awareness of SIDS risk reductions measure among those who had heard of SIDS included: (i) Knowledge of risk factors for SIDS (categorized as yes or no or do not know for the following risk factors: Sleeping on the tummy; bed-sharing with child; and parents smoking at home), (ii) knowledge of actions to be taken for an infant that dies suddenly (categorized as yes or no or do not know for the following options: Taken to the hospital; reported to the police; sent for autopsy; and taken to church/traditional healer), (iii) awareness of "back-to-sleep campaign" (categorized as yes or no or do not know), and (iv) awareness of Coroners Act of Nigeria [11] (categorized as yes or no or do not know).

The parameters that assessed the level of practice of risk reductions measures included: (i) Personal experience of any infant death (categorized as yes or no), (ii) sex of the infant (categorized as male or female), (iii) what the death was attributed to (information provided by the respondent), (iv) what was done for the child (information provided by the respondent), (v) best position for an infant to sleep (information provided by the respondent), (vi) whether the respondent usually sleeps on the same bed with their infants (categorized as yes or no), (vii) whether any one smokes in the house (categorized as yes or no), and (viii) recommendations about the best way to educate people about SIDS (information provided by the respondent).

All the data obtained were recorded and analyzed using the IBM Statistical Package for the Social Sciences (SPSS) version 21 (SPSS Inc., Chicago, IL). Continuous variables were reported as mean, median, and standard deviation while categorical variables were reported as the frequency and percentage of subjects with a particular characteristic. Chi-square was used to test for significance between categorical variables. Statistical significance was set at  $p < 0.05$ . Results were presented in tables and prose.

## RESULTS

There were a total of 401 respondents, all females. Most of them (94.3%) were from Igbo tribe and virtually all (99.0%) were Christians. The mean age was  $28.2 \pm 10.1$  years and the age distribution is shown in Table 1. All the women had some level of formal education, with 27 (64.1%) having tertiary education. Three hundred and fifty-two (87.8%) of the 401 respondents surveyed had never heard of SIDS while 49 (12.2%) claimed to have heard of it. When asked to describe, 2 (4.1%) of the 49 respondents adequately described SIDS while 3 (6.1%) had partially correct description of SIDS. The remaining 44 (89.8%) gave a wrong description of SIDS. Mothers with higher educational qualification were more likely to have heard of SIDS ( $p = 0.002$ ,  $\chi^2 = 12.892$ ). Some of the description by respondents included; "Death of children you can do nothing about" – CD (54 years), "Sudden death of an infant due to inability to breath properly during sleep" – IJ (32 years), "Death of a baby due to overexposure at night" – KL (52 years), and "Baby die during sleep due to spiritual attack" – OP (44 years).

Of the 49 mothers who claimed knowledge, their sources of information are shown in Table 2.

A total of 31 mothers had witnessed infants that died in their sleep (M:F=1.4:1) without previously being known to be ill.

**Table 1: Characteristics of respondents (n=401)**

Age range	≤20 years	21–30 years	31–40 years	41–50 years	>50 years
Frequency (%)	40 (10.0)	202 (50.4)	138 (34.4)	17 (4.2)	4 (1.0)
Educational status	No formal education	Primary	Secondary	Tertiary	
Frequency (%)	0 (0.0)	15 (3.7)	129 (32.2)	257 (64.1)	
Occupation	Civil/publicservants	Traders	Skilled workers	Professionals	Unemployed
Frequency (%)	103 (25.7)	94 (23.4)	41 (10.2)	29 (7.2)	134 (33.4)
Number of children n=391	1–2	3–4	5–6	7 and above	
Frequency (%)	250 (63.1)	109 (27.9)	28 (7.2)	4 (1.0)	

Of this number, 5 (16.1%) attributed it to witchcraft, 1 (3.2%) each to providence and illness while the rest 24 (77.4%) to unknown factors. The decision taken on these infants was to bury immediately (61.3%), taken to hospital for confirmation of death (25.8%), conduct an autopsy (3.2%), and unknown (9.7%).

The positions respondents usually lay their infants during sleep were explored. The highest proportion of respondents (184, 45.9%) normally laid their child on the side during sleep. One hundred and eighteen (29.4%) preferred the prone while 46 (11.7%) favored the supine positions, respectively. The remaining 52 (13.0%) had no known preference. Those with adequate or partial knowledge of SIDS, 5/5 (100.0%) were more likely to lay their infants in this position compared to those with no knowledge of SIDS, 41/396 (10.3%). There was a significant association between mother's knowledge of SIDS and laying their infants in the best sleeping position recommended to prevent SIDS ( $p=0.000$ ,  $\chi^2=12.610$ ). Education of respondents ( $p=0.546$ ,

$\chi^2=3.068$ ), age of mothers ( $p=0.219$ ,  $\chi^2=5.749$ ), and number of children ( $p=0.136$ ,  $\chi^2=11.064$ ) had no significant association with laying the infant in a back-to-bed position, Table 3.

Most of the mothers (368, 91.8%) preferred to sleep on the same bed with their infants. A total of 41 (10.2%) respondents had smokers in their homes but none smokes inside the house. Majority of respondents believed that the best way to educate the public on health issues such as SIDS was through traditional electronic media such as television and radio 372/893 (41.7%). Others included health talks in hospitals 210/893 (23.5%), health talks in churches and communities 149/893 (16.7%), social media and/or internet 111/893 (12.4%), and print media such as newspapers and pamphlets distribution 51/893 (5.7%).

## DISCUSSION

The knowledge of SIDS is very poor among mothers surveyed in Southeast Nigeria. Despite the scarcity of data from the national statistical records concerning SIDS, the risk factors that predispose to SIDS are common in Nigeria, and therefore, SIDS may be a significant but under-reported cause of infant mortality. This observation is consistent with reports from studies in Nigeria [12-14]. However, it is at variance with what was reported in developed countries [15]. This lack of knowledge of SIDS among our study population is worrisome as SIDS is ranked as one of the leading causes of unexplained death in children below 1 year of age [15]. This finding may be related to the prevailing high illiteracy rate, poor access to antenatal care in health facilities, and lack of active effort at SIDS prevention campaign strategies in most developing countries such as Nigeria [14].

**Table 2: Sources of information of the respondents that have heard of sudden infant death syndrome**

Source	Frequency (%)
Health worker	9 (18.4)
Friends	11 (22.4)
Social media	3 (6.1)
Mass media	5 (10.2)
Internet	9 (18.4)
School	7 (14.3)
Books	2 (4.1)
Others	2 (4.1)
Total	49 (100.0)

**Table 3: Mother's demographic features and sleep position preference for their infant**

Demographics	Routine sleep position		Total	$\chi^2$	p-value
	Back to bed	Others			
Maternal education	n=46	n=355	n=401	3.068	0.546
None	0 (0.0)	14 (100.0)	14		
Primary	2 (18.2)	9 (81.8)	11		
Secondary	12 (9.7)	112 (90.3)	124		
Tertiary	32 (12.7)	220 (87.3)	252	6.114	0.106
Number of children	n=45	n=346	n=391		
1-2	35 (14.0)	215 (86.0)	250		
3-4	6 (5.5)	103 (94.5)	109		
5-6	3 (10.7)	25 (89.3)	28		
≥7	1 (25.0)	3 (75.0)	4	12.610	0.000
Adequate or partial knowledge of sudden infant death syndrome	n=46	n=355	n=401		
No	41 (10.3)	355 (89.7)	396		
Yes	5 (100)	0 (0.0)	5	5.749	0.219
Age of mother (years)	n=46	n=355	n=401		
≤20	5 (12.5)	35 (87.5)	40		
21-30	29 (14.4)	173 (85.6)	202		
31-40	9 (6.5)	129 (93.5)	138		
41-50	2 (11.8)	15 (88.2)	17		
>50	1 (25.0)	3 (75.0)	4		

Knowledge of SIDS or lack of it among the mothers surveyed was noted to influence their choice of sleep position of their infants. Majority of the respondents who had never heard of SIDS or those who have heard of it but without adequate knowledge of SIDS preferred prone sleeping position to supine position recommended by the safe-to-sleep campaign [16]. This is rather bothersome as prone position has been found to be a major risk factor for SIDS in several studies [12,17-19]. Although the reasons for their preference for prone position were not explored in this study, the previous study [12] found that mothers perceive the position as being comfortable for their babies and believe it reduces the risk of aspiration and choking.

Our study noted that majority of mother's preferred laying side by side with their infants during sleep. Although several studies [12,16,19] had documented bed-sharing as a recognized risk factor for SIDS, these studies also showed that this practice promotes breastfeeding and affords mother's the opportunity to monitor their baby more closely. There are still controversies [20,21] regarding the contribution of bed-sharing to SIDS. However, until more is known, it is recommended that infants share a room with their parents but not on same bed to prevent sleep-related infant death [16].

It was further noted that some mothers agreed that there were people who smoked cigarettes around their homes. Although parental smoking and not proximity smoking have been recognized as one of the risk factors for SIDS, smoking no matter where around the home with an infant should be strongly discouraged. This verdict agrees with the findings of the previous studies [16,22]. It is, therefore, vitally important that families with infants are educated regarding the increased risk of sudden infant death and the need to avoid and/or discourage smoking around the home area.

Finally, a preponderance of the respondents in this study who had witnessed sudden death of healthy infants believed that any infant that dies suddenly should be buried immediately with only about a third preferring to take the child to the hospital for further evaluation. The reason for this decision might be related to the finding in this study which noted that most mothers attributed sudden deaths in infants to extraneous forces. This might partly explain why the diagnosis of SIDS is almost non-existent in clinical practice in many developing countries.

A complete autopsy is a key component of making the diagnosis of SIDS. However, majority of the respondents did not believe that an autopsy should be done for an infant that died suddenly. This might reflect the poor knowledge of the Coroners Act of Nigeria [11] among the respondents in addition to the poor knowledge of SIDS as noted in this study. Under the Coroners Act in Nigeria, reports about such deaths should be made by health practitioners to the coroner or the police for death scene investigations by the pathologist [11,14,23]. However, most cases of SIDS in our environment are rushed first to hospital and thereafter labeled as "dead on arrival" due to factors such as poor coordination between emergency medical services and

law enforcement agencies [14]. Furthermore, poor autopsy rates have also been attributed to cultural, religious, financial, and bureaucratic issues [24].

## CONCLUSION

Knowledge of SIDS among mothers in Enugu is poor. More efforts should be geared toward creating awareness of SIDS and its associated risk factors through electronic media, social media, and health talks in developing countries. The major limitations of the study were as follows: Nationwide survey was not possible, due to financial constraints. Furthermore, as a cross-sectional study, we could not analyze maternal awareness over a period.

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