



ASSESSMENT OF KNOWLEDGE ,ATTITUDE AND PRACTICE TOWARDS INFANT SAFE SLEEP AMONG OF MOTHERS VISITING HEALTH CENTER IN ADDIS IS ABABA,ETHIOPIA

By Olani Urgessa (pediatrics resident)

Addis Ababa, Ethiopia
Jan,2025



Assessment of Knowledge, Attitude, and Practice Towards Infant Safe Sleep among of Mothers visiting public health center in Addis Ababa

By Olani Urgessa (pediatrics resident)

Advisor: Dr. Tewodros Guluma (MD, Associate Professor of Pediatrics and child health, Pediatrics cardiologist)

A Research Thesis to be submitted to the Department of Pediatrics for the Partial Fulfillment of the Requirements for Postgraduate Diploma in Pediatrics and Child Health

Addis Ababa, Ethiopia

Jan,2025

Acknowledgements

First and foremost, I want to express my gratitude to the Almighty God for allowing everything to happen.

Next, I want to thank Dr. Tewodros Guluma for his support and insightful comments and ideas. In addition, I would want to convey my gratitude to the Department of Pediatrics and Child Health, Saint Paul Hospital Millennium Medical College, for providing us with this learning experience.

Finally, I would like to thank Shogole health center, Milikiland Health Center, Woreda 8 Health Center, Woreda 9 Health Center and Addis Ketema Health Center staffs for their cooperation during data collection

Abstract

Background- SIDS is the most common cause of post neonatal infant mortality, accounting for 21% of all deaths between 1 mo. and 1 year. The most significant risk factors of sudden infant death syndrome (SIDS) are related to the infant's sleeping environment and position. Little is known about the burden of SIDS or the prevalence of these risk factors in Africa in general, Ethiopia, in particular. Our primary objective is to assess knowledge, attitude and practice towards safe infant sleep among of mothers in Addis Ababa, Ethiopia

Method- We conducted cross-sectional study with mothers of infants aged 1 year or younger visiting selected health centers in Addis Ababa, Ethiopia for infant vaccination. We used log-binary regression analysis to identify factors predictive of mothers' knowledge score, mothers' knowledge on infant sleep position, mother's infant supine sleep position practice and mothers' attitude score.

Result- Study was conducted with 376 mothers between July, 2024-January, 2025. prevalence of knowledge and practice on safe infant sleep is low. **On knowledge** substantial amount of mothers (73.1%) agree that SIDS/SUIDS can occur to health babies. Only 24% of interviewed mothers knew that babies should be put on their back during sleeping and only 45.5% of them have good (above mean) knowledge score on safe infant sleep questions. And mothers' knowledge score is associated with level of income and religion ($p < 0.05$). Only 17% of interviewed mothers got information from healthy personnel and 53% got information from their family. **On attitude** almost all of respondents (90%) have favorable attitude score ($\geq 70\%$) and only religion shows significant ($p < 0.05$) association with attitude score. **On practice-** 36.7% of respondents put their baby on the back sleep position. And 63% of them put their baby on side sleep position. Only 4.8% interviewed mothers do not share bed with their baby during sleep. Only 20% of them offer baby pacifier during bed time. Only religion and knowledge score is significantly ($p < 0.05$) associated with supine infant sleep.

Conclusion- There is huge gap on awareness of safe infant sleep among of respondents. Interviewed mothers have favorable attitude. There is a need of increased awareness on safe infant sleep in Ethiopia.

Table of Contents

1.Introduction	5
1.1 Background	Error! Bookmark not defined.
1.2 Statement of the Problem	7
1.3. Rationale of the Study	7
2. Literature Review	8
3. Objectives	10
3.1. General Objective:.....	10
3.2. Specific objectives:	10
4. Method and Material.....	10
4.1. Study area	10
4.2. Study design and period	10
4.3. Population	10
Source population	10
Study population	10
4.3. Sample Size and Sampling Procedure:.....	11
4. 4. Sampling Techniques.....	11
5. Study Variables	11
Independent variables:.....	11
Dependent Variable:	12
Operational definitions	12
5.1. Maternal knowledge, Attitude and Practice.....	13
6. Data Collection Methods and Instrument	13
7. Data Quality Control	13

8. Statistical Analysis.....	13
Ethical consideration.....	14
9. Results	14
9.1. socio Demographic Characteristics	14
9.2. Knowledge	15
9.3. Attitudes.....	17
9.4. Practices	17
10. Discussion.....	18
11. Strengths and limitations	19
12. Conclusion	19
References.....	21

1.Introduction

1.1. Background

SIDS -Cause assigned to infant deaths that cannot be explained after a thorough case investigation, including a death scene investigation, autopsy, and review of the clinical history (15)

SIDS is the 3rd leading cause of infant mortality in the United States, accounting for approximately 7% of all infant deaths. It is the most common cause of post neonatal infant mortality, accounting for 21% of all deaths between 1 mo. and 1 yr. of age (7). Every year in the United States, approximately 3500 infants die of sleep-related infant deaths, including SIDS (ICD-10), ill-defined deaths (ICD-10 R99), and accidental suffocation and strangulation (7). Studies suggest high rates of SIDS in Africa:3.7/1000 in South Africa ,2.5 /1000 in Niger, 0.2 /1000 in Zimbabwe (10). No data in Ethiopia.

The most significant risk factors of sudden infant death syndrome (SIDS) are related to the infant's sleeping environment and position (9). Other risk factors commonly associated with an increased risk of SIDS include little or no prenatal care, maternal age less than 20 years, prematurity or low birth weight, maternal smoking, poverty, low maternal education, single marital status and being black, maternal substance use, including alcohol, and cannabis use (9). It is informative that the risk factors for SIDS and other sleep-related infant deaths, such as accidental suffocation or strangulation in bed (ASSB), are very similar and hence difficult to parse based on clinical history (9). In a study of SUIDS death scene, were found prone in 61.1% of cases and were found on a sleep surface not designed for infants in 75.9%. The head or face was covered by bedding in 29.4%. A shared sleep surface was the site of death in 47.1 %. Only 8.4% of deaths involved infants found no prone and alone, with head and face uncovered (12). Similar unsafe sleeping practices occurred in the large majority of cases diagnosed as SIDS, accidental suffocation, and cause undetermined, and regardless of the diagnosis (12).

Over the years, public health campaigns have made critical strides in reducing infant mortality from SIDS by targeting major risk factors such as prone sleeping. These initiatives, including the “back to sleep” campaign in the U.S., have accounted for the more than 50% reduction in SIDS-related infant mortalities (9,7)

AAP recommends a safe sleep environment to reduce the risk of all sleep-related deaths. This includes supine positioning; use of a firm, no inclined sleep surface; room sharing without bed sharing; and avoidance of soft bedding and overheating. Additional recommendations for SIDS risk reduction include human milk feeding; avoidance of exposure to nicotine, alcohol, marijuana, opioids, and illicit drugs; routine immunization; and use of a pacifier (15,16).

Although several other countries have decreased prone sleeping prevalence to $\leq 2\%$, in the United States in 2010 (the last year for which these data were collected by the National Infant Sleep Position study, 13.5% of infants were still being placed prone for sleep and 11.9% were being placed in the side position. Among black infants, these rates were even higher: 27.6% prone and 16.1% side in 2010) (7). In Africa, near universal bed sharing of infants with parents (60-91.8%) and frequent use of the prone sleeping position (26.7 -63.8 %) (10). A study done in Jimma, Ethiopia (19) shows the practice of recommended

infant sleeping position (supine position) is 33.5% [95% CI (28.9% - 38.6%)) and another study done in Dessie, Ethiopia (8) shows supine infant sleep prevalence 38.3%, non-soft bedding 21.9%, and sleep arrangement 14.7%

To date, only a handful of studies, mostly from South Africa, have assessed the prevalence of SIDS risk factors in Africa. little is known regarding the prevalence of these risk factors in developing countries (9)

In order to reduce SIDS incidents, it is important to raise awareness and knowledge of safe sleeping environments for infants, increase compliance with the recommendations, communicate what is expected of parents, and provide a positive role model for parents and caregivers (11). Knowledge, attitudes, and practices (KAP) regarding various health promotion issues are keys (14) to the goal of behavior change (20) and are the rationale behind many campaigns to raise awareness. The “Back to Sleep” campaign was followed by a dramatic (65%) decrease in the incidence of infants placed prone to sleep (17) emphasizing the strong relationship between knowledge and practice.

In Ethiopia, there are two published researches around this topic one is done in Jimma, Oromia, Ethiopia (19); the practice of recommended infant sleeping position (supine position) in one study was 33.5% [95% CI (28.9% - 38.6%)]. Being married, residence, multiparity and having good knowledge of sleeping position were significantly associated with the practice of infant sleep position. Another study is in Dessie, Ethiopia (8), where prevalence of supine infant sleep is 38.5%.

In Ethiopia, there is no study on mothers KAP towards infant safe sleep. The study’s findings will help health care providers identify behavioral barriers and issues that prevent the adoption of safe sleep behaviors by parents and develop better-focused educational intervention programs

1.2 Statement of the Problem

To our knowledge there is no research done in Ethiopia on KAP of mothers towards sleep infant sleep particularly. But there are two researches done on in Jimma on knowledge and practice of safe infant sleep among of mothers at Jimma, Ethiopia (19) public health institutions and in Dessie, Ethiopia (8) on practice and risk factors of safe infant sleep. Considering important yet overlooked of the problem in developing countries in general and Ethiopia in particular this study will help researchers and stakeholders

1.3. Rationale of the Study

After initiation of the national Back to Sleep campaign in 1994 in US, the rate of SIDS progressively declined and then leveled off in 2001 at 0.55 per 1,000 live births (2,234 infants) (17).

The AAP recommends :It is essential that physicians, non physician hospital staff, and child care providers endorse and model safe infant sleep guidelines from the beginning of pregnancy; hospital staff should model and implement all safe infant sleep recommendations as soon as the infant is medically stable and well; staff in level 1 newborn units, mother–baby units, and pediatric inpatient units should

model and implement these recommendations beginning at birth and extending to 1 year of age; all physicians, nurses, and other clinicians, especially those who care for pregnant or lactating people and infants, should receive education on safe infant sleep and provide education beginning in the prenatal period; all state regulatory agencies should require that child care providers receive education on safe infant sleep and implement safe sleep; continue research and surveillance on the risk factors, causes, and pathophysiological mechanisms of sleep-related deaths, with the ultimate goal of eliminating these deaths altogether(19)

So, SIDS is public health important and gets strong attention from developed countries. But in low in developing countries less attention is given and much to be done. (12, 18)

In Ethiopia, much is not known about the magnitude and risk factors. This research will help as knowledge, attention creation and groundwork for subsequent researches.

Shed a light on magnitude of unsafe sleep practices and factors behind them.

2. Literature Review

Sudden infant death syndrome (SIDS) is defined as the sudden, unexpected death of an infant that is unexplained by a thorough postmortem examination, which includes a complete autopsy, investigation of the scene of death, and review of the medical history (15,16). SUIDs- generally includes that occur during sleep, including SIDS (ICD-10 R95), accidental suffocation and strangulation in bed (ICD-10 W75), and ill-defined deaths, also known as undetermined (ICD-10 R99). (15)

The triple risk model proposes that SIDS occurs when an infant with intrinsic vulnerability (often manifested by impaired arousal, cardiorespiratory, and/or autonomic responses) undergoes an exogenous trigger event (egg, exposure to an unsafe sleeping environment) during a critical developmental period (16).

Although several other countries have decreased prone sleeping prevalence to $\leq 2\%$, in the United States in 2010 (the last year for which these data were collected by the National Infant Sleep Position study), 13.5% of infants were still being placed prone for sleep and 11.9% were being placed in the side position. Among black infants, these rates were even higher: 27.6% prone and 16.1% side in 2010(7). In Africa on analysis of 32 peer-reviewed article, nine studies presented prevalence of estimates on bed sharing and prone sleeping, suggesting near universal bed sharing of infants with parents (60-91.8%) and frequent use of the prone sleeping position (26.7 -63.8 %) (10)

In Lusaka, Zambia; the sleep-related risk factors, bed sharing and side sleeping, were widely prevalent. 89.5% of respondents indicated that they share a bed with the infant during sleep, 73.0% preferred putting their baby on its side, and 19.9% preferred the prone position (9). Study done in Jimma, Ethiopia (19), the practice of recommended infant sleeping position (supine position) in this study was 33.5% [95% CI (28.9% - 38.6%)] and study done in Dessie, Ethiopia (8), shows prevalence of supine infant sleep position 38.5%.

In on another study in Israel, only 62.5% of participants knew that the baby should be put to sleep on their back during the daytime. Only 37.3% of the parents knew that breastfeeding is a protective factor against SIDS and only 41.4% knew that crib bumper pads around the baby's head should not be used in the infant's bed. In the same study, risk of the baby not being placing to sleep on their back was higher if the parents were older than the mean of 29 years (AOR = 0.36; 95% CI 0.16–0.82; $p < 0.05$), if the father smoked (AOR = 2.66; 95% CI 1.12–6.33; $p < 0.05$), if the parents did not trust the recommendations (AOR = 4.03; 95% CI 1.84–8.84; $p < 0.001$), if they were not committed to the recommendations (AOR = 2.83; 95% CI 1.21–6.60; $p < 0.001$), and if they shared a bedroom with the baby (AOR = 0.38; 95% CI 0.17–0.88; $p < 0.05$) (1).

One study done in Brazil showed, Maternal white skin color, higher family income and maternal schooling, advanced maternal age, maternal cohabiting with a partner, receiving counseling from health care professionals and non-bed sharing were associated with higher prevalence of infants sleeping in supine (5)..One above mentioned study done in Ethiopia, being married Adjusted odds ratio (AOR) 2.6; 95% CI (1.04-6.48)), residence (AOR 1.88; 95% CI (1.1-3.31)) multi gravidity (AOR 1.6; 95% CI (1.02-2.59)) and having good knowledge of sleeping position (AOR 1.55; 95% CI (1.01-2.38)) were significantly associated with the practice of infant sleep position (19).

In study done in Iraq, Al Najaf province, Participants as a whole (60%) stated that (40%) child doctors were the main information source they used to learn about SIDS (2). Descriptive cross sectional study done in SAU; among 506 participants, only 22.5% were found to receive education about safe practices from health care providers.). (21). In another study, participants described three consistent factors that influenced how newborn slept at home. The most frequently mentioned influence was other people followed by no body and images from sources such as books, pictures, television and, the internet (1)

This study will be done at selected Healthy centers, Addis Ababa, on knowledge, attitude and practices towards infant safe sleep among of mothers visiting public health center for vaccination in Addis city administration. It will add knowledge and help for planning of interventions.

3. Objectives

3.1. General Objective:

To assess knowledge, attitude and practice towards infant safe sleep among of mothers, visiting Health centers for vaccination or other child health visits

3.2. Specific objectives:

- To assess knowledge of care givers towards safe
- To assess attitude of care givers towards infant safe sleep
- To assess practices of infant safe sleep among of mothers
- To assess factors associated with knowledge, attitude and practices towards infant safe sleep among of mothers
- To identify major source of knowledge among of knowledgeable mothers

4. Method and Material

4.1. Study area

This research was done at selected public health Centre in Addis Ababa, Ethiopia. Addis Ababa is a capital city of Ethiopia and is the largest city in the country. According to the city administrative website, the city has 11 sub cities ,12 public hospitals and 111 public health centers, and a total population. of 4567857. The total mothers of ≤ 1 years infant who attended vaccination (EPI) in public health centers was more than 13500 per month.

4.2. Study design and period

A public health center based cross-sectional study was conducted and the study period was July 2024 – Jan,2025

4.3. Population

Source population-All mothers of under one year of children who attend childhood vaccination services at selected health centers in Addis Ababa city administration

Study population-All mothers of infants ≤ 1 year in selected Health centers who attended child vaccination sessions during the interview.

4.3. Sample Size and Sampling Procedure:

The sample size is determined by using the following formula.

$$n = \frac{Z^2 p(1-p)}{W^2}$$

n-the desirable calculated sample size

p = 33.5%(study done in public health institutions, Jimma, Ethiopia ;33.5% of mothers practice supine infant sleep)

z-is the value of the standard normal value (1.96)

At α level of 95 % confidence

W-margin of error = 0.05

Sample size will be $343 + 10\%$ (no respondents) =376(total sample size)

4. 4. Sampling Techniques

In this study, five health centers were selected from a total of 111 health centers within Addis Ababa city administration using a convenience sampling method. The selected health centers included Shogole Health center, Mikililand health center, woreda 9 health center, woreda 8 health center, and Addis ketema health center. These health centers were chosen from two sub cities: Addis ketema and Gulele. Proportional allocation was conducted for each selected health center based on their vaccination performance over the previous month. During the data collection phase, mothers of infants aged one year or younger who were attending vaccination at these health centers in Addis Ababa were interviewed. The interview was done to all mother who gave their consent and available at a time of interview until quota for the health center was filled.

5. Study Variables

Independent variables:

- Age, Marital status, Education level, Religion, Job, Level of income, Number of children, Sex of the child, Age of the child

Dependent Variable:

- Knowledge of infant safe sleep
- Attitude towards infant safe sleep
- practices of infants' safe sleep

Operational definitions

- **SIDS:** Cause assigned to infant deaths that cannot be explained after a thorough case investigation, including a death scene investigation, autopsy, and review of the clinical history
- **SUID:** A sudden and unexpected death, whether explained or unexplained (including SIDS), occurring during infancy.
- **Good knowledge score-** Above mean knowledge score
- **Bad knowledge score-**mean or lower than mean knowledge score
- **Good practice score-**above mean practice score
- **Bad practice score-**mean or below mean practice score
- **Favorable attitude score-**70 and above attitude score
- **Unfavorable attitude score-**less than 70 attitude score

5.1. Maternal knowledge, Attitude and Practice

Maternal knowledge was assessed through 7 knowledge questions, which were adopted in English from different published literatures (1,5,9) Each question responded with right answer was allotted a scoring of one and every wrong answer was given a score of zero. The total attainable score in knowledge questionnaire is 7. In order to identify a respondent as having good or poor knowledge, the group was divided into 2 categories based on the scores attained So, respondents who answered greater than the mean score of questions provided for them regarding knowledge were considered as having good knowledge. While those answers below the mean score are those with poor knowledge. maternal practice question was also assessed with the same manner with 6 questions taken from previous researches (1,5,9) with some modifications.

Maternal attitude was also assessed through 7 questions. And the answers calculated in percentage. Those mothers who answered greater or 70% were assigned as favorable attitude and those who answered less than 70% assigned as unfavorable (bad) attitude.

6. Data Collection Methods and Instrument

Data was collected by face to face interview using pre-tested structured questionnaires. The questionnaires were prepared in English, and translated to local languages (Amharic and Afaan Oromoo). The tool comprises socio-demographic, infant characteristics, which are pertinent to infant safe sleep according to previous studies. Knowledge, attitude and practice assessment questions derived from previous studies with modifications. For the data collection, 2 BSc nurses at each health center were selected, trained and supervised by the investigator.

7. Data Quality Control

The questionnaire was pretested in 10 % of the projected sample size to determine its reliability. The findings of the pre-testing were not used in the real trial. The lead investigator supervised data collection, and the acquired data was checked for accuracy and completeness regularly.

8. Statistical Analysis

Analysis was performed using the SPSS 25 statistical package. Initial analysis of descriptive statistics included frequencies of sociodemographic, knowledge, and practice, attitude, variables. Chi square analysis for independent variables was used to assess unadjusted associations between Age, Marital status, Education level, Religion, Job, Level of income, number of children, Sex of the child, Age of the child, knowledge score, source of knowledge, attitude score and infants sleep position and practice score. Attitude scales with were created after reliability tests with Cronbach's alpha above 0.7(0.75). A logistic regression was run for independent variables which showed statistically significant associations on unadjusted chi-square analysis to predict the outcome of variables: knowledge score, attitude score,

baby's sleep position, and practice score. The strength of association was evaluated using an odds ratio at a 95% confidence interval and a P-value $\leq .05$ was considered to declare significant associations.

Ethical consideration- Ethical clearance was provided by the Institutional Review Board (IRB) of Saint Paul Hospital Millennium Medical College. The study's aim was described, and each responder provided written informed consent. Data collectors and investigators protected the confidentiality of information by using code numbers rather than personal identifiers before and after data gathering.

9. Results

9.1. socio Demographic Characteristics

Three hundred seventy-six participants included in the study. With 100% response rate. Most of mother are within 20-29 years (70.5%), less than 20 years of age being about 3% and above 39 years is 0.8(3 mothers). Almost all of the respondents are married and live with their husband (99. 5%).Majority of the respondents are Christian (57%), followed by Muslim (43%) and 0 other religion. And majority of them have education level to primary level (54%); followed by secondary level (34%) and Higher education level (college, university...) is 14%. Most of the respondents have less than average income (77%),84% of them are housewife and others (17%) are either employed or engaging in private jobs. Most of infants are six month or younger (81%), male infants are 55% and female s are 45%.

Table 1 Description of study sample according to variables

Variables		Frequency	Percent (%)
Maternal age	<20	11	2.9
	20-29	265	70.5
	30-39	97	25.8
	≥ 40	3	0.8
Marital status	married	374	99.5
	single	1	0.3
	Divorced /widowed	1	0.3
Level of education	primary	196	52.1
	secondary	127	33.8
	Higher education	53	14.1
Level of income	Less than average	289	76.9
	average	86	22.9
	Above average	1	0.3
Religion	Christian	215	57.2
	Muslim	161	42.8
	others	0	0
Job	Housewife	315	83.8
	Employed	35	9.3

Table 2. Distribution of mothers answers to knowledge questions regarding safety sleeping for babies.

Knowledge Questions	Answers	Frequency	Percent
	Private work	26	6.9
Number of children	1	117	31.1
	2	115	30.6
	>=3	144	38.3
	Infant characteristics		
Age in month	<=6	305	81.1
	>=7	71	18.9
Sex of infants	Male	207	55.1
	Female	169	44.9

9.2. Knowledge

Table 2 presents parental knowledge of infant safe sleep with respect six questions. The data are presented in frequency and percent of answers. Correct answers are bolded. Binary logistic analysis done to independent variables which have chi-square significant outcomes with knowledge score. Most off interviewed mothers agree that SIDS can occur to healthy babies (73%). While 23.9% of them know that babies should be put over their back during sleep at night or day. And only 9% of respondents know that offering pacifier to babies during bedtime protects SIDS. Only 24% of the mothers know that breastfeeding is a protective factor against SIDS. Most them get the information from their family (53%) and only 17% from health professionals. Only 45.2% 95%CI (40.1%-50.1%) of participants have knowledge score of above mean (good knowledge) about safe infant sleep. Those Christian in religion has significantly higher mean knowledge score (28%) than those Muslim (22%; $P<0.05$). On binary logistic regression of independent variables and source of information, shows being Muslim associated with lower knowledge score (AOR=0.54 95% CI 0.34-0.84; $P<0.05$) whereas, having income level of average and above is significantly associated with higher knowledge score (AOR=1.87 ;95%CI 1.11-3.16; $p<0.05$).

1. Do you agree SIDS can happen to healthy baby?	1. agree	275	73.1%
	2. Not agree	63	16.8%
	3. I do not know	37	9.8%
2. How should a baby put to bed(sleep) during night/day?	1. On the back	90	23.9%
	2. On the side	110	29.3%
	3. As convenient to the baby	8	2.1%
	4. On the side or on the back	168	44.7%
3. What is the best way to cover your baby during sleep?	1. In heavy, free blanket	231	61.4%
	2. A thin free blanket	129	34.3%
	3. A thick, heavy blanket fastened under armpits and securely attached to the mattress	13	3.5%
	4. A thin blanket fastened under armpits and securely attached to the mattress	3	8%
4. How is breastfeeding and baby health and safety related?	1. No connection	23	6.1%
	2. Protective factor against SIDS and desirable if possible	90	23.9%
	3. Best nutrition for the baby and is not related to SIDS	45	12%
	4. Best nutrition for the baby but I do not know its relation to SIDS	218	58%
5. What do you think that using pacifier during bed time?	1. Increases the risk of death during sleep	84	22.3%
	2. Reduces the risk of death during sleep	35	9.3%
	3. I do not know	257	68.4%
6. Where did you get the information?	1. Health professionals	65	17.3%
	2. Social media	18	4.8%
	3. Family	199	52.9%
	4. peers	10	2.7%
	5. nobody	84	22.3%

Table 3. Outcomes of logistic regression—adjusted odds ratios (AORs) for associations between baby sleep position and other study variables

measures	Ref.-on the back only	Sleep Position—Not on the Back			
Variables		Sig.	AOR	95%CI Lower	Upper
Religion(Muslim=1,christian=0)	1	.000	.250	.146	.428
Level of education(1=primary,0=secondary and above)	1	.552	.855	.512	1.430
Job(1=housewife,0=employed/private)	1	.637	.856	.447	1.637
Level income(less than average=1,average and above=0)	1	.079	1.747	.937	3.258
Number of children(1=1,0=>2)	1	.067	1.619	.966	2.713
Age of the infant(<=6=1,>6=0)	1	.799	1.084	.584	2.010
Sex the infant(male=1,female=0)	1	.774	1.074	.658	1.754
Knowledge score(0-26=1,>26=0)	1	.000	.223	.137	.365
Source of information(health professionals=0,others=1)	1	.121	1.774	.859	3.665

9.3. Attitudes

Attitude of participants assessed with 7 questions after internal consistency checked. Attitude is scaled using Likert scale (1=strongly agree,2=agree,3=neutral,4=disagree,5=strongly disagree) for each questions. And attitude score percentage is calculated; favorable attitude is assigned for score 70% and above and unfavorable attitude is assigned to score of less than 70%. Accordingly, most participants have favorable attitude towards safe infant sleep (90%) and only 10% of them have unfavorable attitude towards safe infant sleep. Attitude score mean is 80.6%. there is significant attitude score difference between religion (Muslim 78.7% and Christian 82% $p<0.05$;0.04). Otherwise, no attitude score difference by age of the mother, number of children, level of education, source of information.

9.4. Practices

Seven questions were asked to assess maternal practices on safe infant sleep. 36.7% of respondents put their baby on back during sleep both during day and night time and 63% of them put their babies on the side to sleep. Only 4.8% of mothers do not share bed with their baby during sleep and only 10% of them uses rigid mattress for infants with a tight sheet.20.7% of participants do not use pillow. Most of participants responded there are no toys, shields and jewelry in the bed or on the infant while sleeping (69%).Only 18% of respondents offer pacifier during sleep. And all the respondents share room with their infant.

An additional logistic regression analysis (Table 3) predicts the adjusted odds ratios (AORs) (with confidence intervals) for not placing their baby to sleep on their back for each participants' response. Outcomes show that the risk of the baby not being placed to sleep on their back was higher if mother is Muslim (AOR=0.25;95% CI 0.1-0.43; $p<0.05$) and if mothers have lower knowledge score (AOR=0.22;95% CI 0.137-0.365; $p<0.05$).

10. Discussion

This study provides a unique perspective about current knowledge levels, attitudes, and practices regarding infants' safe sleep among mothers of Addis Ababa. It sampled 376 mothers from two sub cities of Addis Ababa, Ethiopia and included 5 healthy centers. Even though Addis Ababa city administration is vast with eleven sub cities and 111 health centers to fully represent; it is fair representation. The study's findings will help health care providers identify behavioral barriers and issues that prevent the adoption of parental safe sleep behaviors and thus develop better-focused educational intervention programs.

Looking at maternal knowledge, most of responders agree that SUIDS can occur to healthy babies (73.1%), indicating a high level of awareness of SIDS. This figure is higher than those from Zambia (9), where 67.6% (323/478) of survey respondents, reported that they knew someone or had heard of someone losing an infant suddenly and unexpectedly during sleep. And also higher than those from Israel (1), where 60.2% parents do not disagree that infant deaths never happen to healthy babies.

Only 24% of those sampled knew they had to put the baby to sleep on their back; however, this figure is better than those from Egypt (6), where only 21% of women stated that correct sleeping position for baby is supine position. Where these figures are almost similar to those from Brazil (5), where 82.1(95% CI 80.6-83.6) % of women stated that the correct sleeping position for a baby is the lateral or prone position. And much lower than those from Israel (1), where 82% of those sampled knew they had to put the baby to sleep on their back. Only 24% and 9.3% knows breastfeeding and offering pacifier during bedtime, respectively, protective against SIDS. This result may be explained by low knowledge on recommendations safe infant sleep.

Only 45.2% 95%CI (40.1%-50.1%) of participants have knowledge score of above mean (good knowledge) about safe infant sleep. This figure is almost similar to those of Jimma (19), where 45.5% of study participants had a good knowledge about sleeping position. More than half of interviewed mothers got the knowledge from their family (52.9%), which is a bit higher than those from Dessie, Ethiopia (8), where 49% of respondents got information from their family. Only 17.3% of interviewed mothers got information from health professionals. Which is a bit lower than those from Zambia (9), where 24.1% (115/478) of mothers indicated that they had ever been advised by medical personnel to put the infant to sleep on the back.

Knowledge about SIDS, risk factors and risk factor reduction is much better in developed countries consistently than developing countries. May be because many countries (esp. Westerns) adopted AAP recommendation and undertook several educational programs, and campaigns like "back to sleep" extensively. While little is done in developing countries, particularly Ethiopia.

Only 36.7% of respondents put their baby on back during sleep both during day and night time. This is a bit higher than those figures from Jimma, Ethiopia (19), where supine sleep practice is 33.5% and lower than study from Dessie town, Ethiopia (8) which is 38.3%. These reports are almost similar showing very low supine sleep practices in Ethiopia. It is also similar to those from in Egypt (6), where supine sleep position practice is 37%. It is much higher than those from Zambia (9), where only 6.7% reported putting babies to sleep on their backs, and much lower than Brazil (5), where 55.4% slept in supine position at 3 months, and in US where prone sleeping prevalence is 13.5%. 63% of respondents put their baby on the side to sleep which is known to be dangerous positions by different studies. This result is lower than those from Zambia, where 73% mothers of put their babies on their side to sleep this difference may be due to setting and cultural difference between the two study population. Almost all of mother's share bed with their baby during sleep (only 4.8% sleep alone), which is consistent with report from Zambia where only 5.6% babies sleep alone. Which is much lower than those from America, where room-sharing without bed-sharing 57.1%(4). Also an article review in Africa suggests that near universal bed sharing of infants with parents (60-91.8%) and frequent use of the prone sleeping position (26.7 -63.8 %) (10)

This difference can be explained by study setting, cultural difference and also obvious safe infant sleep knowledge difference. In this study knowledge score and religion is significantly($p<0.05$) associated with infant sleep position practice (*see table 3*). This finding is in line with study in Jimma, Ethiopia (19), where supine infant sleep is associated with knowledge score but no association with religion. There is no report showing an association between infant sleep position and religion to our knowledge. So, this finding give another area of study and intervention.

Almost all of the participants have favorable attitude (90%) and mean attitude score is 80.6. There is significant attitude score difference between Muslim and Christian (Muslim 78.7% and Christian 82% $p<0.05$). No association attitude score with other independent variables. As attitude is important to bring about behavioral change; this result shows their good opportunity for interventions.

11. Strengths and limitations

One of strength of this study –there are few studies done around this topic in Ethiopia and this study is significant contribution to literature in the country in particular and in Africa in general. There is no study, particularly, assessing knowledge, attitude and practices of mothers towards safe infant sleep in Ethiopia. Limitations: first, our findings come from one city in one country at one point in time and may not be generalizable. Study was done in Addis Ababa, Ethiopia which is urban, it not offers insight into the condition in rural settings. And also self-reported questionnaire does not necessarily describe the actual behavior of the study participants. Our study did not ask about preterm or low birth weight infants, which could be an important factor that might affect their safe sleep practices.

12. Conclusion

This study shows low knowledge about safe infant sleep among of mothers with above knowledge score of 45.2%. Only 24% of mothers know that babies should be on the back during sleep and only 17% got information about safe infant sleep from health professionals. And the participant's attitude towards safe

infant sleep is generally good. On practices only 36.7% mothers in the study put their baby on the back sleep position while 63% of them put on the side sleep position which is known to be the dangerous position by different researches. And almost universal bed sharing (only 4.8% no bed sharing)

Practicing of safe infant sleep recommendations is decreased the incidence of SIDS (e.g. “back to sleep” decreased risk of SIDS by half) in different reports. This study shows huge gap in knowledge and practice of safe infant sleep; and the association of practice of safe infant sleep with religion and knowledge score showing area of intervention. And also laying foundation for further studies

Therefore, endorsing recommendations and preparing interventional strategies is essential to increase safe infant sleep practices. All stakeholders should be involved to fill this yet overlooked gap in Ethiopia.

References

1. Anat Shatz 1, 2. L. J. 1. a. L. K. 3., 2021. Infants' Sleep: Israeli Parents' Knowledge, Attitudes.
2. Anon., 2012. Knowledge, Opinions, and Practices of Infant Sleep Position Among Parents. *CAPT Min S. Chung-Park, NC USN*, Volume I. 177.
3. Anu Sunny, L. S. A. R., 2027. Knowledge Regarding Safe Infant Sleeping Arrangements, among Mothers. Issue 12; December 2017.
4. Ashley H. Hirai, P. K. K. P. M. L. K. M. C. E. R. M. M., 2019. Prevalence and Factors Associated With Safe Infant Sleep Practices. Issue November 2019:e20191286, p. 144.
5. Bruna Gonçalves C. da Silva^{1*}, M. F. d. S., 2019. Prevalence and associated factors of supine sleep position in 3-month-old infants: findings from the 2015 Pelotas. *Silva et al. BMC Pediatrics (2019) 19:165*.
6. Eman Wardany Abdelaal Mohamed, F. E.-S. A., 2021. ASSESSMENT OF MOTHERS' KNOWLEDGE AND PRACTICES ABOUT THE PREVENTION OF SUDDEN INFANT DEATH SYNDROME. Volume 8..
7. Fern R. Hauck, R. F. C., 2022. Sudden Infant Death syndrome. In: *Nelson pediatrics*. s.l.:s.n., p. 2576.
8. Gedamu², D. G. a. S., 2021. Safe Infant Sleep Practices and Associated Factors Among Mothers Attending Vaccination Service at Dessie Town Governmental Health Care Facilities, 2021.
9. Godwin K. Osei-Poku^{1*}, L. M., 2022. Assessing infant sleep practices and other risk factors of SIDS in Zambia: a cross-sectional survey of mothers in Lusaka, Zambia. *Osei-Poku et al. BMC Pediatrics (2022) 22:660*.

10. Godwin, 2021. Asystematic review of the burden and risks factors of sudden infant death syndrome (SIDS) in Affrica.
11. Ibeziako NS, I. R. I. B., 2007. Issue J Trop Med. 2009;2009:283046..
12. JS, k., 2020. unsafe sleep practices and analysis of bedsharinngg among of infats dying suddenly and unexpectedly :results of of four years population based ,death -scene investigation study of sudden infant death syndrome and reelated deaths. *pediatrics 2000sep;106(3)*, , Volume 106(3).
13. Kim, H. & Pearson-Shaver, A., 2020. Sudden Infant Death Syndrome (SIDS). *Bookshelf ID: NBK560807*..
14. Launiala, A., 2009. How much can a KAP survey tell us about people's knowledge, attitudes and practices? Some observations from. *Anthropol. Matters 2009*, Volume 11.
15. Rachel Y. Moon, M. F. R. F. C. M. F. I. H. M. F., 2022. *Sleep-Related Infant Deaths: Updated:2022 Recommendations for Reducing infant death in sleep envorniment*, Virginia: AAP.
16. Rachel Y. Moon, M. F. R. F. C. M. F. I. H. M. F. a. T. T. F. O. S. I., 2022. Evidence Base for 2022 Updated recommendations for safe infant sleeping envorniment to reduce risk of sleep Releted Infant Death. *PEDIATRICS Volume 150, number 1, July 2022:e2022057991*, Volume 150.
17. Trachtenberg, F. et al., 2012. Risk factor changes for sudden infant death syndrome after. *Pediatrics 2012*, Volume 129, p. 630–638.
18. Turki Alahmadi, M. s. A. M. A. B. 2., 2020. Are Safe Sleep Practice Recommendations For infants being applied among of carregivers?. *Alahmadi et al*, Issue Issue 10.7759/cureus.12133.
19. Yetwale Aynalem, B. T. B., 2022. the practice of infant sleep position among mothers in Jimma town Public Health Institutions ,Jimma,Omoría South West Ethiopia,2022. Volume 10"1-7.

20. Zhao, X., 2020. Health communication campaigns: A brief introduction and call for dialogue.. *Int. J. Nurs. Sci.* 2020, 7, Volume 7, S11–S15..