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**NURSES' KNOWLEDGE ON SUDDEN INFANT DEATH
SYNDROME AND RISK FACTORS MANAGEMENT**

Final thesis of the bachelor's study programme "Nursing" (state code 6121GX006 (N))

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SUMMARY

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Purpose of the work: To determine nurses' knowledge on sudden infant death syndrome and management of risk factors.

Research objectives:

1. To examine nurses' knowledge on SIDS.
2. To examine nurses' knowledge on the safe sleep position for infants.
3. To determine nurses' actions and recommendations for management of SIDS risk factors.

Research methodology: The quantitative study was carried out in Transzoia referral hospital Kitale from 2022 December 12th until 2023 March 15th. The research instrument used was the author's own questionnaire consisting of 22 questions. All data was stored in Google Forms.

The target samples of the study were nurses who worked in all departments at Transzoia government hospital. With the hospital data repository, we hoped to include all nurses from the hospitals who met the requirements. There was a total of 197 nurses at the study sites and 63 nurses (31.98%) nurses actually responded to the survey.

Conclusions of the work:

1. Nurses had good knowledge on SIDS environmental risk factors, maternal risk factors, American academy of pediatrics recommendation and infant sleep environment. Lack of consistency in nursing knowledge and practice about sound infant sleep was noted. 2. "Back to Sleep", a campaign by the AAP is the recommended safe sleep practice. Basing on nurses' knowledge on infant sleep position the majority of nurses considered lateral/side to be the safest sleep position in relation to its effect of reducing the risk of SIDS. Practical observation should play a significant part in this effort to increase knowledge and give parents role models for improved practice. 3. On nurses actions and recommendation in management of SIDS risk factors, majority of nurses were highly confident in their understanding of SIDS and provided effective education on SIDS-related safe sleep practices and infant feeding. Re-evaluation on the parent's knowledge and practice about SIDS was often performed.

ABBREVIATIONS

SIDS	Sudden infant death syndrome
SUID	Sudden unexplained infant death
AAP	The American Academy of Paediatrics
SUIDI	Sudden Unexplained Infant Death Investigation
CDC	The Centres of Disease Control and Prevention
K-SSSP	Knowledge of SUID-related safe sleep practices
PSA	Parental substance abuse
UTIs	Urinary tract infections
GBS	Group B streptococci
PTI	Preterm infants
ARDS	acute respiratory distress syndrome
TOI	Tissue oxygenation index
MAP	Mean arterial pressure
ASSB	Accidental suffocation and strangulation in bed
CONI	Care of Next Infant

INTRODUCTION

Following multiple research studies, the sudden and unexplained death of a baby younger than a year is known as Sudden Infant Death Syndrome (SIDS). SIDS, a subset of sudden unexpected infant death (SUID) is the first cause of mortality in the first year of life (excluding the neonatal period) in advanced countries [1]. SIDS is the third leading cause of infant death in the world, 2018. SUID which includes SIDS cause was not obvious before investigation [1]. Another researcher identifies SIDS to cot or crib death since the death of the child has no underlying medical conditions hence a healthy baby. This kind of death is unexplained even after an autopsy is performed [2]. According to the USA Centres for Disease Control and Prevention (CDC), SIDS remains the leading cause of death, in infants aged 1 month to 1 year in the United States of America, (USA) 2020 [3]. The leading cause of deaths were associated with birth defects, preterm birth and low birth weight, maternal pregnancy complications, sudden infant death syndrome and injuries such as suffocation [3]. Known risk factors for infant suffocation included prone and side sleeping, soft bedding, bed sharing, inappropriate sleep surfaces (including sofas), and exposure to tobacco smoke which had counteractive measures of prevention including breastfeeding, pacifier use, room sharing, and immunizations [3]. Since the majority of the risk factors for SIDS are related to the infant's environment and sleep posture, the American Academy of Paediatrics (AAP) recently updated the standardised infant sleep environment and sleep position guidelines in hospital settings to reduce the rate of SIDS [4].

Another research outcome showed that countries with preventive campaigns for avoiding prone position in infants during sleep have been successful in reducing the prevalence of infants sleeping in such positions and have estimated a 30% to 50% decrease in the mortality associated with SIDS [5]. This is because supine position does not increase the risk of choking and aspiration [4, 5]. Only newborns with certain upper airway problems, such as type 3 or 4 laryngeal clefts, should be placed in a prone position during sleep if the danger of death from gastric reflux illness outweighs the risk of SIDS [4]. In an attempt to eradicate sudden deaths of infants, different researchers have found different suggestions and views regarding the AAP infant sleep guidelines. While some researchers argued that the reason for the association between SIDS and prone sleeping position is unknown, others have thought that the mechanism is likelihood of suffocation by rebreathing

or/and airway obstruction on a particular type of cot, mattress, bedding or clothes [6]. A Swedish study conducted in 2017 looked at whether parents who had recently given birth followed SIDS prevention guidelines from maternal and child healthcare specialists. The result was that only 1.3 percent of parents put their newborns to sleep in a prone position, indicating that parents largely follow national SIDS prevention recommendations. Despite this, 14.3 percent still put them in the lateral position, a percentage that increased with the age of the child at 5.6 percent and 23.6 percent, respectively, at 3 months and 5 months of age, presumably indicating a less stringent adherence to the instructions as the infants grew older [7].

All these arguments indicated a gap in knowledge on SIDS, risk factors and prevention mechanisms to manage the untimely deaths of infants. For instance, a recent study conducted in Portugal in 2020 to assess the knowledge of parents and healthcare professionals about SIDS and its risk factors indicated that the majority of risk factors were associated with preventable actions [8]. Ensuring that parents are well informed about SIDS prevention should help reduce its incidence. The results showed that there was still a large portion of parents that had never even heard of SIDS at 31.6 percent. For those parents who are aware of what SIDS is, only 8.7 percent answered correctly to at least 75 percent of the questions about SIDS risk factors. Many parents mentioned healthcare professionals as one of their main sources of information about SIDS [8].

Justification of the study

In Africa, it is unclear how much SIDS contributes to infant mortality. There has been incredibly little research that has attempted to assess the prevalence or incidence of SIDS in Africa, and even fewer have looked at the risk factors for SIDS. Although amendments have been made in the AAP protocol of practice on infant sleep environments and position guidelines in hospital settings to reduce the rate of SIDS [4], there is still a great impact that health practitioners should play in order to manage the mortality rate associated with SIDS. Nurses play a vital role as health educators. Infant mortality is significantly influenced by SIDS; therefore, paediatric nurses have the responsibility to inform parents about SUID prevention techniques. The goal of health education is to provide information to parents on prevention strategies aimed at health promotion and maintenance. As a result,

they need to be competent, good communicators, confident and caring [9]. AAP guidelines also emphasise health professionals' role in educating parents regarding SUID and safe sleeping environments [6]. In high-income nations, sudden infant death syndrome (SIDS) is widely acknowledged as the biggest preventable cause of newborn mortality; yet little is known regarding the prevalence of SIDS in Africa let alone Kenya. To cover this gap, it was necessary to conduct research that answered three main objectives.

Purpose

To analyse nurses' knowledge on sudden infant death syndrome and management of risk factors.

Objectives

1. To examine nurses' knowledge on SIDS
2. To examine nurses' knowledge on the safe sleep position for infants.
3. To determine nurses' actions and recommendations for management of SIDS risk factors.

1. LITERATURE REVIEW

1.1. SIDS diagnostic criteria

The designation sudden infant death syndrome (SIDS) was first introduced in 1969 to call attention to a cohort of children with comparable clinical signs whose deaths occurred suddenly in the postnatal era [10]. SIDS is the term used to describe the abrupt death of a sleeping baby who had looked to be doing well. A pathological examination's findings, even those from auxiliary testing, cannot establish the cause of death [11]. The criteria include infants up to one year of age, but the majority of SIDS deaths—roughly 95%—occur in the first six months of life, with a peak incidence in newborns between the ages of two and four months [12]. Only in 1971[13] was "sudden infant death" accepted as an official diagnosis on death certificates. The word was given a special code by the International Classification of Diseases of the World Health Organization in 1979 (coding number 798.0) [13]. The term's applicability rests on the process of elimination, and it is typically used when there is no known cause of death or contributing variables. In looking at the incidence of SIDS since the start of safe sleep initiatives, the prevalence of SIDS has dramatically decreased to currently between 0.2 and 0.5 per 1,000 live births in the majority of countries [14], from as high as 2 to 6 per 1,000 live births historically [15]. It is also crucial to remember that there has been a change in diagnostic thinking recently, and the use of the term SIDS is becoming more and more contentious. In spite of the fact that cases meet the criteria for SIDS, many clinicians are increasingly putting cases into other categories and using terminology like "undetermined", "unknown", "unascertained", or "ill-defined" instead of using the term as a diagnostic [16]. When diagnosing the cause of death of an infant as SIDS, there are no diagnostic characteristics that can be used to link a SIDS death to a specific cause. Therefore, applying the term "SIDS" involves a process of elimination. The term "SIDS" is used when no known cause of death or contributory factors can be identified [16]. This opens up a wide range of interpretations for how and when to use the word, especially in light of the fact that not all SIDS instances have the same traits. In order to standardise data collection, improve uniformity across various medical examiners offices, and thereby make the classification of the cause of death more uniformed, investigators are strongly encouraged to use the Sudden

Unexplained Infant Death Investigation (SUIDI) reporting forms developed by the Centres for Disease Control [16].

1.2. Risk factors for SIDS

Risk factors for SIDS can be classified into modifiable and non-modifiable clusters. The resulting cause of death was believed to be multifactorial in the sense that more than one risk factor correlated resulting in the death of an infant. Wedgwood initially proposed the multiple contingency hypothesis in 1972 [17]. From his analysis he concluded that the occurrence of three overlapping variables at once increased the risk of SIDS. Other researchers went further to understand the theory behind the hypothesis. The "Triple Risk Model" for SIDS, which Filiano and Kinney established in 1994 [18], is currently one of the most widely accepted models in the area. Similar to earlier hypotheses, the Triple Risk Model postulates that a combination of interconnected and overlapping causes rather than a single common pathway is to blame for SIDS.

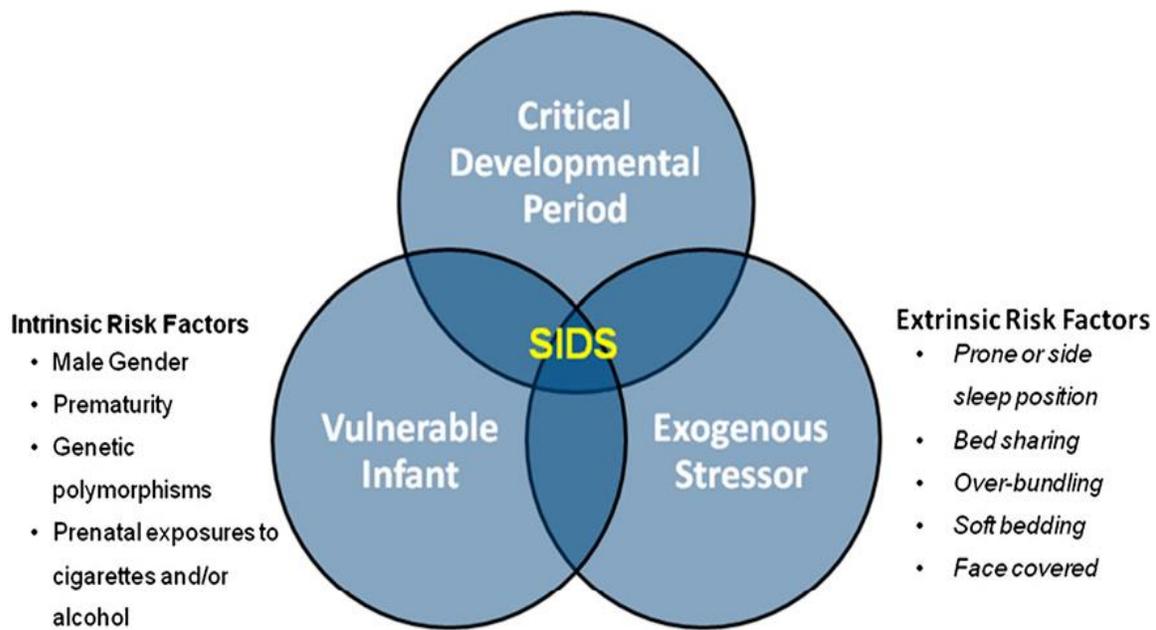


Figure 1 The triple-risk model for SIDS. Factors contributing to the vulnerability (bottom left circle) may include intrinsic risk factors. The exogenous stressors (bottom right circle) are the extrinsic risk factors for SIDS [19].

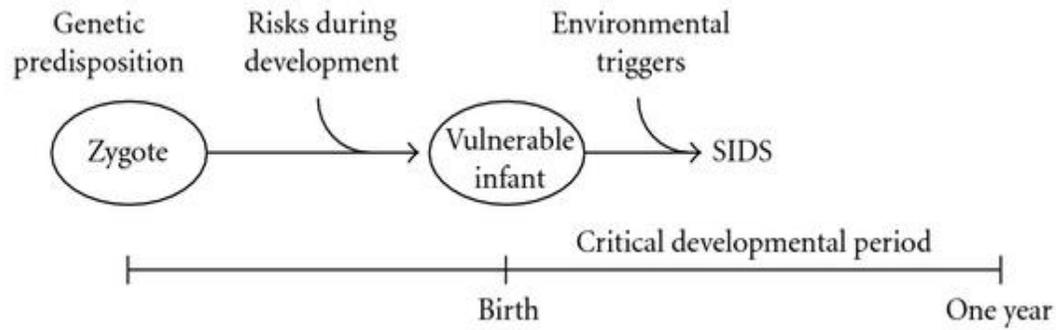


Figure 2 Triple risk model in the sudden infant death syndrome (SIDS). (a) Visualization of the triple risk model after Courts and Madea [20].

1.2.1. Maternal risk factors

Maternal level of education association to SIDS has been studied in different literatures. Sudden Infant Death Syndrome has not been much studied in major parts of the world, with research being done mainly in the American and European continents. This is a clear indication that there is a low or lack of knowledge amongst the majority of parents on the syndrome. The mother's low educational level and socioeconomic status negatively affects the outcome of SIDS reduction campaigns [21]. A study carried out in Iran (2015) showed that most risk factors were associated with parental education level with a direct positive linear correlation regression. Maternal education less than high school yielded 55.23 percent relative to SIDS, those with high school education at 35.87 percent while those with College education was at a low of 8.88 percent. The outcome spearheaded the importance of promotional and educational campaigns in countries where the incidence of SIDS is high or unknown so as to guide health professionals and parents regarding preventive measures [22].

In addition to providing guidance to parents, relatives, and caregivers regarding exposure to risk factors, the development of studies to determine the knowledge that families have about SIDS may support nursing practice regarding preventive measures by primary care professionals and in the hospital environment (neonatal ICUs, nursery, and wards) [21].

Maternal age also plays a role in SIDS. According to earlier studies, being a young mother increases the chance of SIDS [23]. This can be attributed to the readiness of a mother to care for an offspring. Teenage mothers are more likely to have postpartum depression,

unfavourable pregnancy problems, and inferior educational growth [24]. In a recent cohort study in Taiwan (2021) where the proportion of teen pregnancies remains higher than that in some European countries, newborns of mothers under the age of 20 had a 2.81 times higher risk of SIDS than infants of mothers over the age of 20 even after controlling for confounding factors that indicate the occurrence of SIDS. Additionally, the results indicated that a crucial risk factor for SIDS is a small gestational age, which is more common in children whose mothers are under 20 years old [25].

Maternal substance abuse (SA) has been linked to the occurrence of SIDS. Offspring mortality especially in infancy is linked to parental alcohol and drug use/ abuse. Parental substance abuse was linked to higher rates of all-cause and natural infant mortality as well as external-cause mortality in children aged 1 to 9 years. Infants with parental SA had a 130–280 percent higher risk of SIDS than newborns without parental SA [26]. The strongest prenatally modifiable risk factor for SIDS in developed countries is maternal smoking [27]. Smoking cigarettes while pregnant raised the possibility of premature birth, poor birth weight, and infant mortality [28]. In the brainstems of SIDS infants, abnormalities in key neurotransmitters, such as serotonin and its receptors, have been widely documented [29]. These serotonergic abnormalities in significant brainstem nuclei of SIDS infants have been associated with maternal smoking from as early as the first trimester [30]. However, the associations between SIDS incidences and smoking are dose-dependent on both the quantity of cigarettes smoked during pregnancy and the length of postnatal smoke exposure. Even for heavy cigarette smokers, stopping smoking and doing so early in pregnancy was linked to a lower risk of premature birth [28].

In the recent years, Anderson together with co-authors (2019) conducted a retrospective, cross-sectional study to assess the relationship between SUID and self-reported maternal smoking before and during pregnancy. It was concluded that the risk of SUID increased drastically between none smoking and smoking one cigarette per day during pregnancy. For every additional cigarette smoked per day from 1 to 20 cigarettes raised the likelihood of developing SUID by 0.07; after 20 cigarettes, the connection was even higher. It was important to note that the probability of developing SUID increased with an increased number of cigarettes smoked per day [31].

1.2.2. Pregnancy-related risk factors

There are a few pregnancy-related risk factors that have been linked to an increased chance of SIDS even if the precise origin of the condition is still unknown. Urinary tract infections (UTIs) are the most prevalent type of infection during pregnancy and the second most common condition affecting expectant mothers after anaemia [32]. An estimated 5–10 percent of pregnant women experience some sort of UTI [33]. Preterm delivery, low birth weight, or maternal systemic infection are all significantly elevated risks for major maternal and fetal problems due to pregnancy-related adaptive changes in the urinary tract that predispose to the development of UTIs [34]. Untreated UTI, and specifically pyelonephritis, can have dangerous side effects including systemic infections: preterm labour, preterm birth acute respiratory distress syndrome (ARDS), sepsis, acute renal failure, and maternal or fetal death. The most common reason for maternal deaths during pregnancy and after delivery is systemic illness [35]. The clinical type of pregnancy-related UTI that is characterised by the presence of Group B streptococci (GBS) in urine culture deserves special consideration since it occurs in 2-10 percent of pregnant patients. GBS bacteriuria is strongly associated with a higher risk of early membrane rupture, preterm labour, and newborn systemic infection [36].

1.2.3. Infant-related risk factors

Preterm infants and recent illnesses of the infant were also highlighted in the triple effect of SIDS. The Combined effects of cigarette smoking and alcohol consumption on perinatal outcome is premature infants and low birth weight amongst other congenital conditions on the infant [28]. According to WHO definition, preterm birth is a birth of an infant born alive before the 37th week of pregnancy is completed (WHO 2018) [37]. Approximately five percent to eighteen percent of infants worldwide are born preterm each year, and this figure is rapidly increasing. In addition, preterm birth problems are one of the leading causes of death in children under the age of five [37]. Premature infants are more likely than term newborns to experience a variety of illnesses, including sudden infant death syndrome (SIDS). The main risk factor for SIDS has been attributed to anamnestic data such as prematurity or low birth weight, physiological abnormalities like abnormalities of the

central nervous system, abnormalities of the respiratory system, and abnormalities of the cardiovascular system [38].

As the English man said “history have a way of repeating itself”, a key point that should not be left a touched is the recurrent sudden unexpected death in infancy. After a previous SUDI incidence, the likelihood of a recurrence in the same family is high [39]. In the UK, the Care of Next Infant (CONI) program is frequently used to assist families with children who were born after an infant died suddenly and unexpectedly (SUDI). The concerns that grieving parents have with regards to future offspring after losing one child are addressed by CONI [40]. A recent literature highlighted those parents who continued to smoke and exposed infants to hazardous co-sleeping situations, were directly leading to or contributing to the death of six siblings. Despite this finding, SUDI parents need support to improve parenting skills and reduce risk to subsequent infants dying in an unexplained circumstance [39].

Additionally, study on newborns and mothers from industrialised nations showed that history of breastfeeding and use of pacifiers was linked to a lower risk of several diseases [41]. A meta-analysis by John M D Thompson et al (2017) on the significance of breastfeeding duration on SIDS demonstrated that breastfeeding in general protects against SIDS. The analysis's findings showed that a minimum of two months nursing period cut the risk of SIDS in half [42]. For this protection to be granted, breastfeeding does not need to be exclusive since it is unknown how long nursing must continue for a protective benefit to occur. However, nursing exclusively has a larger impact [41, 42]. Additionally, nursing in any form and duration is preferable to no breastfeeding at all for protecting against SIDS [43].

Several case-control studies have demonstrated a link between pacifier use and a decreased risk of SIDS [44]. The use of pacifiers has been associated with pain management during minor procedures in the emergency room. However, to lower the risk of SIDS, the AAP advises giving pacifiers to newborns as soon as they begin to fall asleep [43, 45]. Although it should be avoided until a baby is one month old in breastfed newborns, the use of pacifiers appears to reduce the incidence of sudden infant death syndrome [46].

1.2.4. Sleep environment: infant sleep practice

Death from SIDS happens in the sleep stage with focus on infant unintentional suffocation as a health issue. Suffocation is a type of hypoxia caused by a lack of oxygen as a result of a breathing interruption brought on by obstructions to either the exterior or internal airways. In 2016, there were more than 11,400 newborn and toddler deaths worldwide (ages 1 month to 59 months) that were apparently caused by accidental asphyxia [47], with China accounting for 28 percent of the total with nearly 3200 reported deaths in infants [48]. This brings about the importance of accessing the environment infants are put to sleep. A systematic retrospective case analysis in Manitoba conducted between 2009 and 2018 found a total of 145 newborn fatalities with no known medical causes and documented contributions from unsafe sleeping conditions. To concur with the triple risk model, 96 percent of newborns had several risk factors, and all infants had at least one recognized risk factor [49]. Sudden unexpected infant death (SUID) is a subgroup of accidental suffocation and strangulation in bed (ASSB) whose mechanisms are varied and include suffocating by soft bedding or overlaying by an adult or kid as a result of bed sharing. Pillows, beds, blankets, and toys were the items that were most frequently linked to baby ASSB [50].

1.3. Nurses knowledge on safe sleep positions for infants.

Preterm newborns are at much higher risk of SIDS, which is caused by prone sleeping. Reduced cerebral tissue oxygenation index (TOI) and mean arterial pressure (MAP) are linked to prone sleeping in term newborns [51]. Extrinsic risk factors of SIDS merged with other risk factors makes an infant susceptible to death. The most common vulnerability exposure to SIDS is the sleep position of infants. Young children who died from unintentional mechanical asphyxia were found to be lying face down-prone. A decrease in SIDS incidence has been linked to public health initiatives that initially encouraged non-prone positioning in the 1980s and later supine positioning, which only started in the 1990s in many Western countries. The link between sleeping in a prone position and an increased risk of SIDS has been verified by further research [52]. Recent amendments of campaigns such as the Back to sleep campaign published by the AAP [4,43,53] highlights that infants should be placed for sleep in the supine position (completely on the back) by every caregiver

until they are one-year-old in order to lower the risk of SIDS. Side sleeping is not recommended or safe.

Since an infant's trachea is on top while they are resting on their back, the National Institutes of Health (NIH) study revealed that the risk of aspiration was lower among patients in the supine posture. This demonstrates that babies do not aspirate when they vomit while they sleep and that resting on their back to allow for more comfortable breathing helps to prevent SIDS [43]. However, significance influence to this practice may have been as a result of observing medical staff lay newborns on their sides in hospital nurseries may be a parent's first introduction to baby sleep routines. Infants are frequently placed on their sides to help the amniotic fluid more rapidly exit the infant's airway, according to nurse staff [54]. Additionally, studies have shown that prolonged supine positioning is protective against sudden infant death syndrome due to the lower arousal threshold and more frequent awakenings, despite the detrimental consequences on musculoskeletal and motor development [55].

In a recent study in South Korea (2020), it was necessary to investigate what nurses know about SUID-related safe sleep practices in order to create and implement an educational program on baby safe sleep practices. The research was conducted to measure paediatric nurses' knowledge of SUID-related safe sleep practices (K-SSSP) and infant cardiopulmonary resuscitation (K-ICPR). Retrospectively, the accurate answer rates for the K-SSSP and K-ICPR were 62.6 percent and 62.5 percent from a total of 136 paediatric nurses who participated in the survey. On SUID, 76 nurses had undergone training and were knowledgeable on the syndrome [56].

Another study on healthcare providers' knowledge, attitudes, and counselling on numerous child-related injuries was also carried out in Croatia. Paediatricians, family doctors, as well as community nurses, were among the participants. The views toward safety were higher among paediatricians and community nurses. All providers had more risk-averse views about safe sleeping positions. Paediatricians and community nurses reported providing the most patient counselling [57]. Similarly, a survey about safe sleep knowledge and practices was distributed to nurses and other perinatal health care team members in a level III maternity program to ascertain how well-versed perinatal nurses, nursing assistants, doctors, and support staff are in the safe sleep practice implementation on the mother-baby

unit. From 144 samples, 86 percent of the participants were nurses. They had substantial understanding of safe sleep guidelines, and 74 percent said they had adjusted their sleeping arrangements at least once each week during one shift. The two alterations that were made most frequently, at least once a week, were taking the infant away from a caregiver who was sleeping at 30 percent and taking things out of the bassinet at 26 percent response [58].

During their acute illness, newborns who require neonatal critical care are frequently laid prone. Prone position was rated as the best general sleep position for preterm newborns by 65 percent of the 157 neonatal nurses working in Level III and IV NICUs in the state of New York, followed by either prone or side-lying (12%). At the time of NICU discharge, the nurses' assessments of the infants' readiness for supine sleep position were inconsistent. Supine (40%) was the most popular sleep position for full-term newborns [59]. It can therefore be concluded that nurses have a vast knowledge on the required and recommended sleep position of infants in order to avoid or minimise the risk of SIDS occurrence. Lack of knowledge and lack of confidence were found to be substantially connected in a correlational study on nurse practitioners' newborn safe sleep practices, which could lead to ineffective methods of informing parents about infant safe sleep practices [60].

1.4. Nurses' actions and recommendations for management of SIDS risk factors.

Informing parents and caregivers about SIDS risk factors and prevention measures is a crucial part of the job of nurses and there is an expanding body of writing that examines their recommendations and activities. The majority of published research on nursing strategies for reducing SIDS focuses on techniques used with populations of healthy newborns. For the past years, nurses have been acknowledged as essential agents in the fight against SIDS. Although they are well-versed in the risk factors for SIDS and preventative methods, they still require continual education and training to boost their confidence in communicating consistent safe sleep advice to parents [61]. In order to promote healthy sleep behaviours, nurses may encounter obstacles linked to cultural views, family preferences, and organisational policies. Healthcare organisations must make SIDS prevention a top priority in their services and give nurses the tools and support they need to effectively educate parents

about safe sleep practices. The elements that influence early baby sleep are quite complicated and include aspects of the kid, the parent, and the environment. Several studies have demonstrated that the ideas and elements around safe infant sleep also affect the growth of healthy infant sleep habits. As a result, these factors are intertwined and ought to be discussed along with parents [61].

To investigate and describe NICU nurses' understanding of SIDS risk-reduction strategies, safe infant sleep intervention modelling before discharge, and SIDS risk reduction inclusion in parent education a survey in Atlanta state indicated that the majority of nurses (85%) recognized the SIDS risk-reduction techniques for sound sleep recommended by the AAP. NICU nurses used a variety of media to inform parents about SIDS and prevention techniques. After release, 73 percent of the nurses spoke directly with the parents, 53 percent gave them printed materials, and 14 percent showed them videos [62]. Although there have been infrequently implemented long-term education campaigns in South Korea, there has been occasional conduct of SIDS preventive education [60].

In maternal-newborn units, nurses advised parents on secure sleeping arrangements. Yet, a comprehensive assessment of 16 SIDS studies found that some nurses continued to advise mothers to posture their babies incorrectly while they slept out of concern for aspiration [63]. It might be simpler for health professionals to build reliable relationships with new families when they provide parents with clear, fact-based guidance. Parents may be more likely to find advice and recommendations relevant to them when respectful partnerships are created [64]. Several methods, which should be dependable and informed, might be used to spread advice and recommendations. A telephone survey for the SIDS Risk Reduction Education Program conducted before and after in selected Chicago neighbourhoods having at least 86% black residents indicates that more black and white women responded that a doctor or nurse had advised them on the best way to put their newborns to sleep, and all three groups agreed that putting the baby to sleep on its back was the recommended posture [65].

Despite the fact that the emphasised safe sleep recommendations appear to be well known and advised, research reveals that parents typically develop their own practices in their homes. This is especially true when it comes to sharing the sleep surface. Family, friends, and society, as well as advertising and the Internet, all have an impact on parents

[66,67,68]. In relation to this, a survey was conducted in South Dakota to evaluate paediatricians' and family practitioners' knowledge of safe sleep recommendations for infants. Survey questions assessed their beliefs regarding risk factors for SIDS and their recommendations for safe sleep environments provided to parents/caregivers. 98 percent felt the importance of discussing SIDS with every parent and 80 percent of them indicated a need within their profession to have further information on the topic of SIDS [69].

According to data from Uganda, using eHealth apps to identify patients who are at a high risk of post-discharge mortality and arranging follow-up appointments and brief counselling after discharge can boost the demand for follow-up care by 14 times are both promising [70,71]. Other studies also recommended measures including appropriate control of pregnancy and perinatal period. Pregnant women should obtain regular prenatal care [5,72].

Significant SIDS risk factors include maternal smoking during pregnancy and exposure to second-hand smoke after delivery (Moon et al., 2021). Nurses can inform parents about the dangers of smoking before, during, and after pregnancy and can offer advice on how to stop smoking. According to a study by Veisani, et al. (2019), nurse-led smoking cessation treatments were successful in lowering the proportion of newborns exposed to second-hand smoke otherwise known as passive smoking [73].

Breastfeeding benefits both infants and mothers and has been connected to reducing the risk of Sudden Infant Death Syndrome (SIDS). Infants should only be fed breast milk until they are six months old, according to a 2003 World Health Organization (WHO) recommendation. Nonetheless, breastfeeding rates are still less common than is advised. The first two weeks following birth are critical for supporting breastfeeding. The midwives' and maternity nurses' assistance is required during this time to support breastfeeding. According to a comprehensive evaluation of the research, postnatal midwives and nurses place a high importance on providing breastfeeding assistance and teaching. Nonetheless, there are differences in how a midwife approaches and assists a breastfeeding woman [74]. In a study conducted in the United States of America, it was discovered that nursing for at least two months was linked to a 50 percent lower risk of SIDS. This study included 998 controls and 333 SIDS cases, and it discovered that nursing for less than two months had no appreciable

effect on lowering the incidence of SIDS. Nurses gave recommendations and support, educating the nursing mothers on the benefits of breastfeeding [75,76].

2. RESEARCH METHODOLOGY

2.1. Research organisation

The study was an anonymous quantitative study design using closed ended questionnaires aimed to analyse nurses' knowledge on sudden infant death syndrome and management of risk factors. Research was carried out between December of 2022 and March of 2023. The cross-sectional study design is a survey design that collects data from a sample within a particular period. This research was conducted in Transzoia region of Kenya. Transzoia County is a county in the former Rift Valley Province of Kenya, situated 380 kilometres northwest of Nairobi between the Nzoia River and Mount Elgon. The capital and main town, Kitale, is located in the centre of the region occupying 2,470 square kilometres. Participants of this study were selected from the hospital's database. Kitale County Referral Hospital, formerly known as the Kitale District Hospital, is a level 5 ministry of health hospital situated in Transzoia county. Transzoia referral hospital is a NHIF accredited hospital providing a 24-hour Inpatient and Outpatient service with a bed capacity of 250 beds. Training programs are also offered to families, caregivers, teachers, and volunteers to promote health awareness.

2.2. Research ethics

Approval was sought from the rightful authorities (The medical superintendent) of Kitale county hospital on the aim of the study. He was also made aware of the procedures involved in the study and the benefits of participation. The research was issued an approval letter allowing the research to take place (REF: KTL/KCH/04/2022). Participation was voluntary. Informed consent was included as part of the questionnaire wherein filling up the questionnaire indicated that the study participant willingly agreed to take part in the study. To maintain the confidentiality of respondents, access to questionnaires will only be provided by the researcher and the supervisor of this research study. The distribution of the links for the questionnaires will be unknown to result in the anonymity of respondents. Respondents' names were not used during the study.

The Biomedical Research Ethics Committee of the Lithuanian University of Health Sciences (BEC-TVS(M)-160) granted this study full ethical approval. An informed consent form was attached alongside a proposal letter sent to the heads of administration of the institution under research explaining the purpose and nature of the study.

2.3. Selection of subjects

Participants consisted of all nurses from the hospital's database. The design allows the researcher to collect the opinions and views of 197 respondents. Being a self-voluntary participation, the response rate was 31.98%, with a total of 63 participants (sample size N = 63).

An invitation and agreement to participate in the research were sent online via the questionnaires. Questionnaires were sent to the medical superintendent to be distributed via WhatsApp and emails to nurses and health care professionals to contribute to the study. Data were collected online using anonymous questionnaires on google form platform.

The inclusion criterion to participate in this study that participants should meet include:

- (a) ability to read and understand English
- (b) willingness to provide online consent
- (c) working in the specified hospital

2.4. Characteristics of subjects

A total number of 63 participants took part in the study. The age group of participants was between 21 years and 59 years with a mean of 30.8 years. The largest age group of participants was found in the under 30 years' groups at 66.7 percent (n=42) (Table 1).

Following participants' education background assessment, 58.7% (n=37) of nurses had associate diploma education, with 34.9% (n=22) of nurses having a bachelor's

degree education background. On the other hand, only 6.3% (n=4) of nurses had a master's degree program (Table 1).

The majority of respondents were found to be working in the maternity department at 30.2% (n=19) response rate with 22.2% (n=14) working as general nurses. Prevention of mother to child transmission (PMTCT) nurses and comprehensive care clinic nurses were the least participants at 6.3 % (n=4) and 4.8 % (n=3) responses respectively (Table 1)

Years of clinical experience varied from 0 to 30 years. The nurses that were equally parents were 63.5% (n=40) whereas 74.6% (n=47) participants had worked with children during their clinical practice (Table 1).

Table 1 *Participants social demographic characteristics.*

General Characteristics of Participants (N=63)		
Characteristics	Categories n(%)	
Age(years)	Mean	30.8
Education background	Masters	4(6.3)
	Bachelors	22(34.9)
	Associate diploma	37(58.7)
Department	Maternity	19(30.2)
	General nursing	14(22.2)
	Paediatrics	10(15.9)
	Public health	8(12.7)
	Administration	5(7.9)
	PMTCT	4(6.3)
	CCC	3(4.8)
Clinical experience	Years	0-30
Parent	YES	40(63.5)
	NO	23(36.5)

Worked with children	YES	47(74.6)
	NO	16(25.4)

2.5. Research methods and tools

A self-developed questionnaire was used which was approved by the supervisor. The questionnaire had 22 questions specifically chosen to enable comparisons of different views and knowledge nurses had on SIDS.

The questionnaire consisted of four main parts. The first part of the questionnaire focused on questions related to the socio demographic characteristic of the study groups. The second part of the questionnaire focused on knowledge nurses had on SIDS risk factors while part three identified sleep position as the main risk factors and analysed nurses practise on infant sleep.

position with regards to the AAP guidelines. Lastly, part 4 measured the specific recommendation and management strategies nurses have adopted while raising awareness of SIDS in Kitale, Kenya. All the questions were composed of closed-ended questions.

2.6. Data analysis

Data collected through the survey were reviewed to check whether the responses were complete, and it was ascertained that the percentage of missing data was 0% for each variable. Data was entered into Excel Version. Consistency checks and data cleaning were done, and data was exported through SPSS 29.0. for analysis. Basic descriptive statistics to describe demographic background information and categorical variables were presented in frequencies and percentages. To test for normality in age distribution, data was not normally distributed according to the Kolmogorov-Smirnov test which gave a significant value of ($p < .001$). The significance level was set at $p < 0.05$.

Bar charts and tables were used to display the distribution of categorical and continuous data graphically.

3. RESULTS

This chapter presents an analysis of the knowledge of nurses on SIDS risk factors in Kitale, identifying the main challenges faced by parents, guardians, and caregivers in raising children from a tender age especially in terms of sleep practice and assessing the management strategies practised by nurses to ensure SIDS reduction.

3.1 Nurses' knowledge on SIDS

The first objective of this study was to determine nurses' knowledge on SIDS as exhibited in different literature. Results showed that slightly more than a half (68.3%, n=43) knew that encouraging tummy time when the infant was awake and under observation reduced the risk of suffocation and SIDS.

Those who answered correctly to the effect of breastfeeding and infants sleeping in the same room as parents in reducing the risk of SIDS were 85.7% (n=54) respectively whereas very few nurses (27.0%, n=17) were aware of the role pacifiers play in reducing the risk of SIDS or the effect of placing infants to sleep on a soft mattress with only 39.7% (n=25) answering correctly to the action increasing the risk of SIDS.

A good number of nurses (69.8%, n=44) understood that placing soft objects such as pillows and stuffed toys in the baby's cot was inadequate as it increased the risk of SIDS probably from accidental suffocation. Low birth weight of infants played a vital role in predisposing an infant to SIDS as correctly answered by 88.9% nurses (n=56).

The majority of nurses (90.5%, n=57) and (93.7%, n=59) were knowledgeable on the fact that recent illness of infants and those born prematurely had the highest rate for increasing the risk of SIDS respectively. Table 2 illustrates the results.

Table 2 *Nurses knowledge on actions and behaviours effect on the risk of SIDS.*

Factor/Action	Increase risk	Reduce risk	No idea
	%(n)	%(n)	%(n)

Encouraging tummy time when the infant is awake and observed (infant to lay on stomach as they play)	28.6(18)	68.3(43)	3.2(2)
Breastfeeding	11.1(7)	85.7(54)	3.2(2)
Pacifiers	33.3(21)	27.0(17)	39.7(25)
Placing infants to sleep in a soft mattress	39.7(25)	52.4(33)	7.9(5)
Placing soft objects such as pillows and stuffed toys in the crib	69.8(44)	28.6(18)	1.6(1)
Infants to sleep in the same room as their parents	3.2(2)	85.7(54)	11.1(7)
Infants to sleep in the same bed as their parents	44.4(28)	42.9(27)	12.7(8)
Low birth weight of infant	88.9(56)	6.3(4)	4.8(3)
Recent illness of infant	90.5(57)	6.3(4)	3.2(2)
Prior loss of siblings to SIDS	68.3(43)	17.5(11)	14.3(9)
Premature infant	93.7(59)	4.8(3)	1.6(1)

Correct answers are marked in **bold**.

Table 2 explains that nurses were well knowledgeable on SIDS and its risk factors. However, little was known on the effect of pacifiers.

In determining the knowledge nurses had regarding SIDS reduction effects of environmental factors as stipulated in the American Academy of Paediatrics policy, for each variable 87.3% (n=55) nurses responded correctly to smoking during pregnancy and

overheating of the room respectively as the main SIDS risk reduction recommendations on environmental risk while only 49.2% (n=31) nurses knew about bed sharing with infants and addition of fluffy comforters to the baby's bed for warmth and comfort to be in accordance to the AAP guidelines. More than half of the participants (57.1%, n= 36) for both smoke exposures after birth and adding toys to the crib and 65.1% (n=41) on sleeping on the couch risk factor were unaware if was an AAP recommendation. 12.7% (n=8) were unsure if bed sharing and sleeping on the sofa was specifically a recommendation from AAP to reduce the risk of SIDS respectively. (Table 3)

Table 3 *Nurses knowledge on AAP recommendations for SIDS reduction.*

Environmental risk	Yes %(n)	No %(n)	Unsure %(n)
Avoid smoke exposure in pregnancy	87.3(55)	6.3(4)	6.3(4)
Smoke exposure after birth	38.1(24)	57.1(36)	4.8(3)
Bed sharing with infants	49.2(31)	38.1(24)	12.7(8)
Avoid overheating infant. /Over bundling	87.3(55)	7.9(5)	4.8(3)
Soft mattress	57.1(36)	36.5(23)	6.3(4)
Adding toys to the crib(baby's bed)	36.5(23)	57.1(36)	6.3(4)
Adding fluffy comforters to keep warm	49.2(31)	46.0(29)	4.8(3)
Sleeping on the sofa/couch	22.2(14)	65.1(41)	12.7(8)

Highlighted values in **bold** are the majority responses

All the above listed variables in table 3 were in the AAP recommendations for SIDS and were crucial risk factors. One third of nurses incorrectly chose adding toys to the crib as a variable not listed in the AAP guidelines.

Maternal factors associated with increasing the risk of SIDS were poor prenatal care and parental (especially maternal) substance abuse with 96.8% (n=61) nurses' response each. Majority of nurses (85.7%, n=54), (82.5%, n=52) and (76.2%, n=48) correctly answered that respiratory tract infection, low socioeconomic status and young age of the mother contributed to the increase of SIDS. 76.2% nurses (n=48) were well informed and correctly answered that improved standard prenatal care helped reduce the incidence of SIDS. The effect of age maturity of the mother in relation to SIDS was unclear yielding only 19% (n=12) correct responses. (Table4)

Table 4 *Nurses knowledge on maternal risk factor of SIDS*

Maternal factors	Increase risk %(n)	Reduce risk %(n)	No idea %(n)
Reproductive tract Infections	85.7(54)	6.3(4)	7.9(5)
Young age	76.2(48)	12.7(8)	11.1(7)
Low parity -pregnancy intervals	60.3(38)	23.8(15)	15.9(10)
Increase in age	58.7(37)	19.0(12)	22.2(14)
Poor prenatal care	96.8(61)	3.2(2)	0.0(0)
Low socioeconomic status	82.5(52)	9.5(6)	7.9(5)
Standard post-natal care	19.0(12)	76.2(4.8)	4.8(3)
Substance abuse (tobacco, alcohol, opiates)	96.8(61)	1.6(1)	1.6(1)

Correct answers are marked in **bold**.

It was unclear for nurses to determine the effect of increase in age/maturity had to do with SIDS in whether the experience of a mother improves or deteriorates as they grow older.

The Infant's sleep place that was frequently highlighted by the majority of nurses 66.7% (n=42) as the best option to where an infant should sleep was in the same room as the parent but on a separate bed. Results on what items can be added in a babies' cot, nurses indicated that nothing is acceptable to add to the baby's bed to ensure good sleep, comfort and prevent SIDS (44.4%, n=28) (Figure 3).

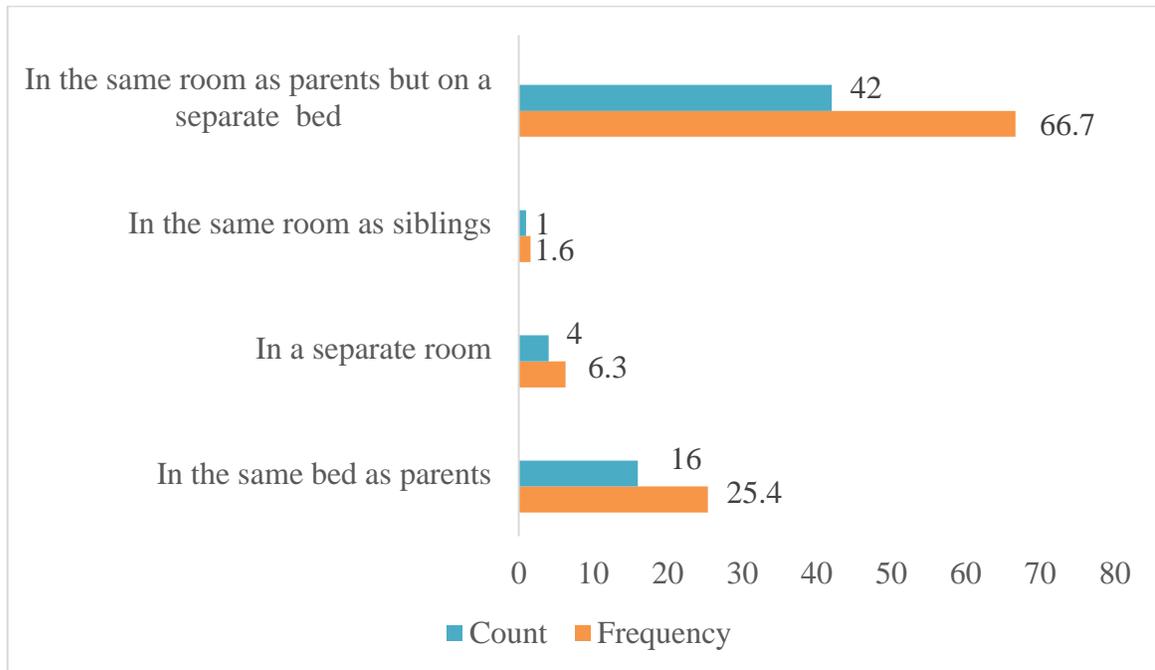


Figure 3 Nurses knowledge on Sleeping place of the newborn

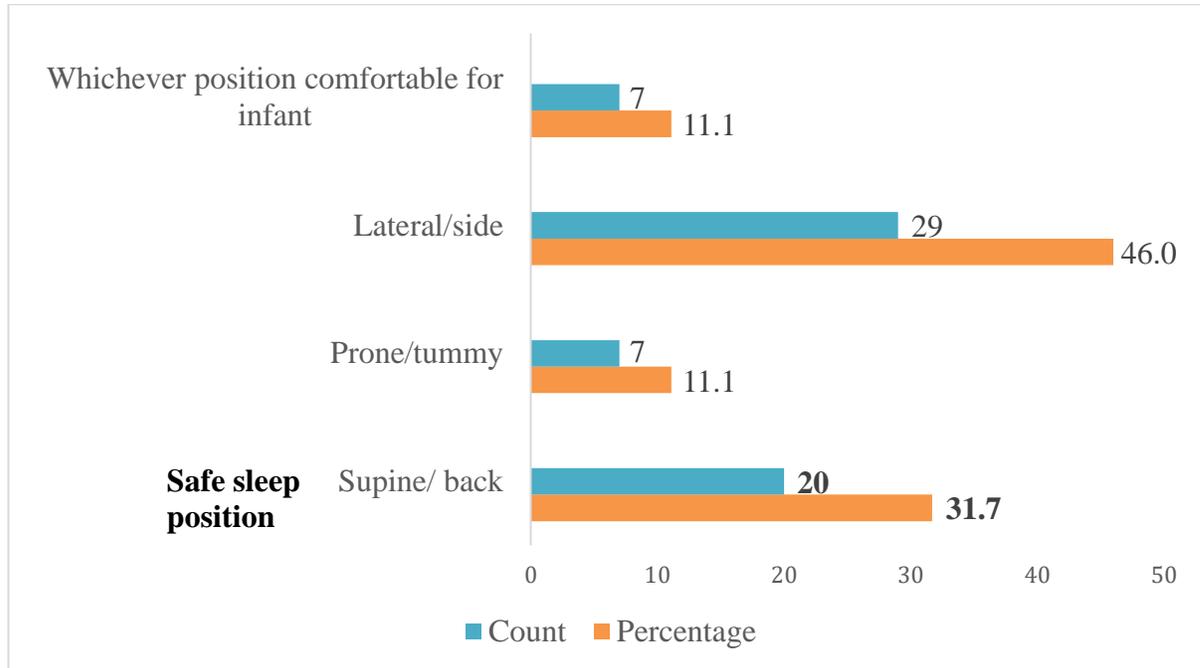
Sleeping in the same room with an infant is a standard practice in most developing countries which may be attributed to the economic status of an individual. However, most parents also prefer the mother to sleep with the infant in the same bed. Baby cots are considered a luxury affordable to a particular class of individuals.

3.2. Nurses' knowledge on the safe sleep position for infants

“Back to Sleep”, a campaign by the AAP is the recommended safe sleep practice. When assessing the participants' knowledge on the choice of infant sleep position, the

majority of nurses (46%, n=29) considered lateral/side to be the safest sleep position. 11.1% (n=7) nurses knew that any position comfortable for the baby including prone position is acceptable sleep position.

Only 31.7% (n=20) answered correctly to supine/back is the best sleep position as recommended by AAP (Figure 4).



Correct sleep position results are highlighted in **bold**

Figure 4 Nurses knowledge on safe sleep position

The adaptation of side sleep position came about from a myth of flat headedness caused by back sleeping and the risk of aspiration.

To determine if the choice of sleep position is independent (not related) or related to parental status of nurses, non-parametric Pearson’s Chi square test was used to analyse the results since the variables were not equally distributed. The asymptomatic significant p-value=0.58 is greater than alpha =0.05, then null hypothesis is accepted which means that preference of choice in safe sleep position is not dependent on parental status of the nurses. This implies that despite being parents with nursing professional background, participants still did not practice safe sleep position as recommended by AAP taskforce. (Table 5)

Table 5 *Nurses knowledge on parenthood and safe sleep position cross tabulation*

	Lateral/side	Prone/Tummy	Supine/Back	Any
Parents- (n)	20	3	12	5
%	69.0	49.9	60.0	71.4
Not parents- (n)	9	4	8	2
%	31.0	57.1	40.0	28.6

Correct sleep position is marked in **bold**

In the above table, majority of nurses who were parents choose any sleep position comfortable to the infant as the best safe sleep position.

Placing a healthy infant on its “back” for sleeping was linked to increasing the risk of aspiration as answered by the majority of nurses (58.7%, n=37). The most common and influential personal attitude on the set safe sleep recommendation was that the set recommendation on risk reduction makes a positive difference in preventing SIDS yielding 80.9% (n=51) responses. (Figure 5)

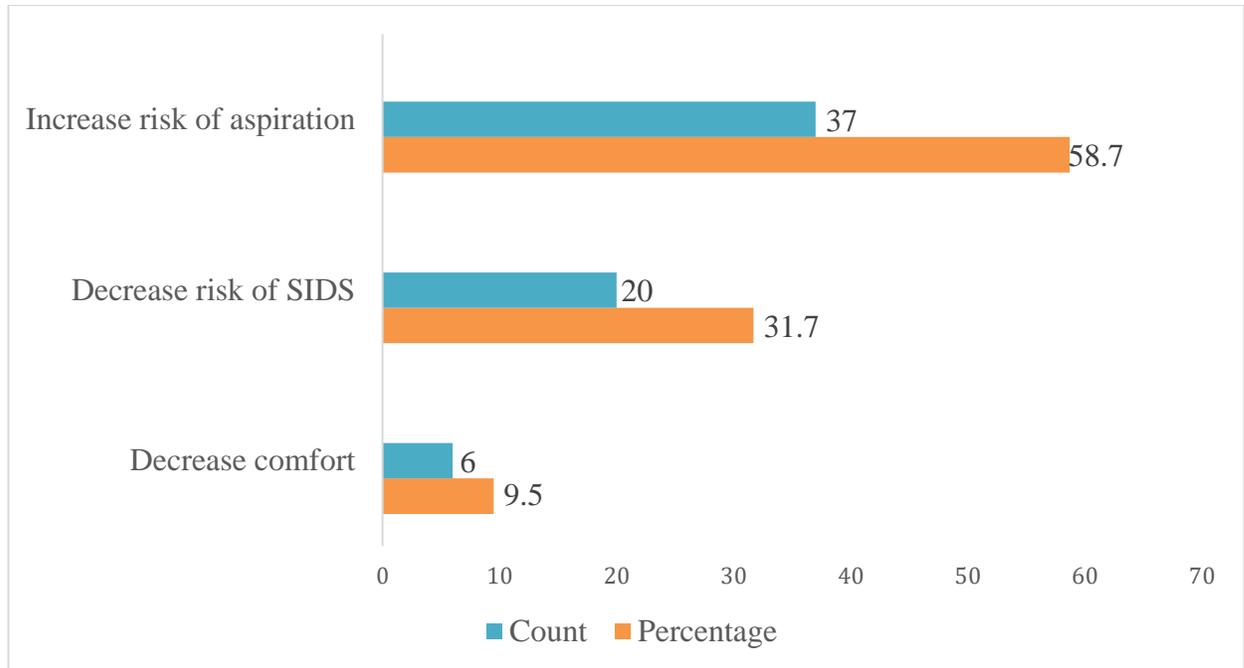


Figure 5 Nurses knowledge on the effect of infants sleeping on their back

Following the above illustrated table5, predetermining factor that might have contributed to the above result may have been from experience. Clinical experience was the common factor that influenced nurses' choice of positioning a healthy infant for sleep.

3.3. Nurses' actions and recommendations for management of SIDS risk factors

As discussed in the literature earlier, nurses have the responsibility to inform and educate parents about SUID prevention techniques. Personal evaluation on nurse's competence to advice about SIDS was carried out. The lowest confidence level corresponded to a score of 1, and the highest confidence level to a score of 10. The competence level was grouped into three categories: from 0 to 4 as low competence level, 5 being the average considered as moderate competence level and from 6 to 10 as highly competent. The majority of nurses 81.0% (n=51) were highly confident in their understanding of SIDS and capability of providing education with regards to the same. Only 11.1% (n=7) of the nurses

had moderate confidence while 7.9% (n=5) had little to no confidence in themselves to partake in any educational activity (Table 6).

Table 6 Nurses competence levels towards providing education on SIDS

Competence level	Transformed variable	Sample size (n)	Percentage (%)
Low	1	5	7.9
Moderate	2	7	11.1
High	3	51	81.0

Deliverance of education to parents on SIDS-related Safe Sleep Practices was often done on infant admission or post-natal care or when nurses had a pregnant woman as a patient with a 36.5 and 34.9 percent participant response rate respectively.

The channels used to deliver education to parents on management of SIDS were orally during routine check-ups and postnatal care at 76.2% (n=48).

During education sessions, almost all (92.1%, n=58) of nurses answered ‘YES’ to whether they ask mothers/ caregivers about the sleep environment of infants. (Table 7)

All the nurses with the exception of one (98.4%, n=62) educate on the choice of infant feeding whether breastfeeding or bottle-feeding during education sessions on SIDS. (Table 7)

Table 7 Nurses educational practice on sleep environment and feeding

ACTION	YES n (%)	NO n (%)
Ask mothers/caregivers about sleep environment for infants	58 (92.1)	5 (7.9)
Educate on infant feeding	62 (98.4)	1 (1.6)

It can be noted that despite some participant not being confident in their capacity to educate parents on SIDS, nurses provide education on infant feeding and sleep environment.

Re-evaluation on the parent's knowledge and practice about SIDS was often done when parents came for postnatal care at the health post as answered by 52.4% (n=33) nurses. A minor fraction of participants (3.2%, n=2) thought that there is no need for re-evaluation of parents' knowledge and sleep practice.

4. DISCUSSION

The average percentage of accurate answers for nurses' knowledge of SIDS and safe sleep practices from earlier research in South Korea was 62.6%, which is lower than the safe sleep environment knowledge scores that have been reported for nurses from other nations. The SUID mechanism (95.6%), exposure to cigarette smoking (94.1%), independent use of bed and bedding (94.1%), and hard bed surfaces (91.9%) were the items for which more than 90% of the replies were accurate [56]. According to Barsman et al. (2015), the average proportion of accurate replies was 74.6% in a USA research on safe sleep habits in relation to new-born sleep death [77]. From my study, bed sharing and soft mattresses were accurately identified as 49.2% (n=31) and 57.1% respectively, with exposure to cigarette smoking correctly identified at 87.3%.

In Kacho's (2015) research, 64% of nurses said they felt competent when they gave anticipatory advice on expanding back-to-sleep rules and practices [60]. These results imply that nurses in our study were less certain in their own knowledge of healthy sleep habits and in educating parents about this subject than nurses in Western nations. However, later research done by Hodges et al. (2018), 82% of nurse-midwives reported feeling secure in performing their job responsibilities linked to a safe workplace [76]. Similar results were portrayed in comparison to my study where 81.0% (n=51) of the nurses were confident enough to give education on SIDS.

Molina AL et al. (2022) performed a crib audit to examine compliance with the AAP's suggestions made to improve compliance with safe sleep guidelines for hospitalized new-borns at a children's hospital. The parts of the guidelines that applied to hospitalization were concentrated on, among other things, the location of sleep, sleeping alone, the position of sleep (supine or prone), and extra objects in the crib. The right elements were: sleeping in a crib or in the arms of an alert adult; sleeping alone; resting supine; and having no other objects in the crib. These factors improved safe sleep adherence overall to 84% [78]. Similar variables were analysed in our questionnaire research. However, variables compared differently on my data where nurses believed that sharing a bed with parents was the best option. The majority of nurses, however (46%, n=29), believed that the lateral sleep posture was the safest. Additionally, majority of our respondents felt that there shouldn't be any more objects in the crib, which was the only area where they came to a consensus.

The impact of the supine vs non-supine (prone or side) sleep position on healthy neonates was evaluated by a comprehensive analysis of randomized trials and observational research. The inclusion criteria showed, with low- to very low-certainty evidence, that the supine sleep position would lower the risk of SUDI compared to non-supine position [79]. According to this research statistical analysis, the majority of nurses (58.7%, n=37) who participated in my study, sleeping a healthy new-born on its "back" was associated with increased risk of aspiration.

Using a survey with a response rate of 48%, it was determined what attitudes, knowledge, and actions neonatal nurses had towards the recommendations for lowering the risk of sudden infant death syndrome (SIDS). In accordance with the research, 53% of nurses strongly felt that SIDS prevention recommendations can be helpful. In contrast to 28% who regularly or frequently gave parents written information on SIDS, 63% of nurses frequently spoke with parents about it. [77] Similar findings were made in my study, where the majority of nurses (76.2%, n=48) informed parents about SIDS verbally or orally during normal post-natal care visits.

Wilhelm T. and Bensch S. (2015) conducted a research to evaluate the new-born nurse's awareness of SIDS prevention characteristics and to illustrate various procedures utilized by nurses and within neonatal units for SIDS prevention and counselling. Of the 165 individuals who were nurses, 33% (n=54) thought breastfeeding was highly important [80]. My research revealed that 62 nurses (98.4%) said parents needed to be informed about proper baby feeding techniques.

Study Limitations:

Finding participants for the study took the researcher a prolonged period of time to get adequate respondents. The researcher assumes that the obstacles came about due to Kenya's developing state in the technological industry and the inadequate resources to access mobile data since Wi-Fi is not readily available locally. Additionally, this results to the study not being the best representation from the entire population.

CONCLUSION

1. majority of participants answered correctly about SIDS to encouraging tummy time when the infant was awake and observed, infants to sleep in the same room as their parents, and breastfeeding to be factors that help reduce the risks while other factors: placing soft objects such as pillows and stuffed toys in the crib, infants to sleep in the same bed as their parents, low birth weight of infant, recent illness of infant, prior loss of siblings to SIDS, and premature infant increased the chances of SIDS occurrence. The AAP recommendations guidelines were known by majority of nurses. Knowledge on maternal factors in relation to SIDS was correctly answered by majority of nurses.

2. Basing on nurses' knowledge on infant sleep position very few answered correctly to supine/back is the best sleep position as recommended by AAP while the majority of nurses considered lateral/side to be the safest sleep position in relation to its effect of reducing the risk of SIDS.

3. Basing on nurses' actions and recommendation in management of SIDS risk factors, the majority of nurses were highly confident in their understanding of SIDS and capability of providing education. Deliverance of education to parents on SIDS-related Safe Sleep Practices and infant feeding was often done on infant admission or post-natal care or when nurses had a pregnant woman. Majority of nurses also performed re-evaluation on the parent's knowledge and practice about SIDS.

RECOMMENDATIONS

For head of nursing department:

1. To strengthen nurses' knowledge and confidence in order to teach parents of newborns about SIDS and safe sleep settings, paediatric nurses should be provided a systematic and professional education in the first place.
2. It is imperative that hospital rules supporting safe sleep be updated, and that nurses and parents receive more training on SIDS prevention. Additionally, guidelines, pamphlets, and films should be created in order to remove obstacles to parental education.

For nurses:

1. To actively participate in future health promotion research in order to give a clear insight for further precise improvement and recommendations.
2. To follow set guidelines and improved their knowledge so as to provide adequate care for infants and organise classes for families to educate them on how to prevent SIDS.

For future researchers:

1. For more accuracy and insight on matters related to SIDS, larger multicentre studies or responses are needed to provide further information on SIDS attitudes and practices.
2. The research should focus primarily on paediatric and neonatal nurses to allow for easy comparison of findings. respondents being neonatal nurses.

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ANNEX

Annex 1



LIETUVOS SVEIKATOS MOKSLŲ UNIVERSITETAS
BIOETIKOS CENTRAS

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Medicinos akademijos (MA)
Pirmosios pakopos studijų programa – Slauga
(studijos užsienio kalba)
IV k. studentui Harriet Kemunto Mesa
Darbo vadovė doc. Alina Vaškelytė
LSMU Slaugos klinika

2022.M.30

BEC-SL(B)-39

DĖL PRITARIMO TYRIMUI

LSMU Bioetikos centras, įvertinęs Harriet Kemunto Mesa pateiktus dokumentus, studento tiriamajam darbui tema „Nurses' knowledge on sudden infant death syndrome and risk factors“ pritaria*.

dr. Eimantas Peičius

* Pastaba: šis pritarimas neatleidžia tiriamąjį mokslinį darbą vykdančių asmenų nuo prievolės laikytis Bendrojo duomenų apsaugos reglamento nuostatų ir nuo atsakomybės gauti nacionalinio arba regioninio bioetikos komiteto leidimą, jei toks leidimas būtinas pagal LR Biomedicininų tyrimų etikos įstatyme numatytus reikalavimus.

Annex 2**QUESTIONNAIRE**

Dear participants, you are invited to participate in a research assessment on nurses' knowledge on sudden infant death syndrome and management of risk factors. This online survey will take about 3-6 minutes to complete. This survey is absolutely voluntary and anonymous. The results will be presented in a generalised form of scientific purpose only. Your confidentiality is highly respected and guaranteed to the degree permitted by the technology being used. Submission of the survey will be interpreted as your consent to participate.

If you have any question or comments about the research, please contact the principal investigator, Harriet Mesa via mail at harrymesa08@gmail.com

SECTION 1**Demographics**

1. What is your age? _____

2. What is your highest level of education?
 - Doctorate
 - Masters
 - Bachelors
 - Associate diploma

3. Which department are you currently working under? _____

4. How many years of clinical experience do you have? _____

5. During your clinical practice in the past one year, have you ever worked with infants?
 - YES
 - NO

6. Are you a parent?

YES

NO

SECTION 2

Knowledge

7. What effect does the below mentioned behaviours have on the risk of SIDS?

Factor/Action	Increase risk	Reduce risk	No idea
Encouraging tummy time when the infant is awake and observed(infant to lay on stomach as they play)			
Breastfeeding			
Pacifiers			
Placing infants to sleep in a soft mattress			
Placing soft objects such as pillows and stuffed toys in the crib			
Infants to sleep in the same room as their parents			
Infants to sleep in the same bed as their parents			
Low birth weight of infant			
Recent illness of infant			
Prior loss of siblings to SIDS			
Premature infant			

8. According to American Academy of Pediatrics policy, which of the following are SIDS risk reduction recommendations on environmental risk: (Check in the box)

Environmental risk	Yes	No	Unsure
Avoid smoke exposure during pregnancy			
Smoke exposure after birth			
Bed sharing with infants			
Avoid overheating infant./Over bundling			
Soft mattress			
Adding toys to the crib(baby's bed)			
Adding fluffy comforters to keep warm			
Sleeping on the sofa/couch			

9. What effect does the following maternal factors associated with the risk of SIDS?

Maternal factors	Increase risk	Reduce risk	No idea
Reproductive tract Infections			
Young age			
Low parity (inter-pregnancy intervals			
Increase in age			
Poor prenatal care			
Low socioeconomic status			

Standard post-natal care			
Substance abuse (tobacco, alcohol, opiates)			

10. Where should an infant sleep?

- In a separate room
- In the same room as siblings
- In the same bed as the parents
- In the same room as parents but on a separate bed

11. What is acceptable to add to the baby's bed to ensure good sleep, comfort and prevent SIDS?

- Soft pillow
- Extra cover for extra warmth
- Few toys to play with
- None of the above.

SECTION 3

Sleep position

12. According to your Knowledge of SIDS-related safe sleep practices and AAP recommendation "Back to Sleep" which of the following do you consider safe sleep position:

- Supine/back
- Prone/tummy
- Lateral/side
- Whichever position that seems comfortable for the infant

13. Which sleeping arrangement has a relationship with SIDS

- Co- sleeping

- Soft bedding accessories
- Sleeping on couch and chair
- Sleeping in separate room from infant
- All the above

Other_____

14. Placing a healthy infant on its “back for sleeping will:

- Increase risk of aspiration
- Decrease comfort of infant
- Decrease the risk of SIDS

15. What is your personal attitude on the set safe sleep recommendation?

- Supine sleep position over time leads to a flat head in infants.
- I follow all the SIDS risk reduction policies regardless of my attitude.
- Supine position leads to developmental delay in infants
- Recommendation on risk reduction makes a positive difference in preventing SIDS.

16. Which of the following factors influence your choice of positioning a healthy infant for sleep?

- Policy
- Clinical experience
- Research

SECTION 4

Action on management

17. On a scale of 1-10 (10 being highly competent and 1 incompetent), do you consider yourself as a qualified person to advise about SIDS? Mark your answer in the empty box.

1. _____10

18. When do you deliver education to parents on SIDS-related Safe Sleep Practices?

- On infant admission or post-natal care
- Only when parents ask
- When I have a pregnant woman as my patient
- I do not routinely provide SIDS education

19. How do you deliver education to parents' management on SIDS?

- Orally, during routine check-ups (postnatal care)
- Prints
- Videos
- None

20. When providing SIDS education sessions, do you ask mothers/ caregivers about the sleep environment of infants?

- YES
- NO

21. Do you educate on the choice of infant feeding (breastfeeding or bottle feeding) during education sessions on SIDS?

- YES
- NO

22. How often do you evaluate the parent's knowledge and practice about SIDS?

- Once a month
- When they come for postnatal care at the health post

Every time I encounter a mother during my service delivery

Evaluation is not necessary,

Other: _____

Thank you for the answers and your time!

LITHUANIAN UNIVERSITY OF HEALTH SCIENCES
 MEDICAL ACADEMY
 FACULTY OF NURSING

HARRIET KEMUNTO MESA №: 171680

(Student's name and surname, student ID No)

DECLARATION OF AUTHOR CONTRIBUTION AND ACADEMIC INTEGRITY

2023

Bachelor thesis Nurses' knowledge on sudden infant death syndrome (SIDS) and risk factor management.

(Title)

topic, scope of research (mark the appropriate line with an "x" and fill in):

<input checked="" type="checkbox"/>	I formulated and defined independently based on personal observations: (Indicate your previous research in this area, other sources and research that helped formulate the problem, goals and objectives of the thesis)
	<i>I followed previous research articles to view the styles and then formulated my own copy.</i>
<input type="checkbox"/>	I chose from the proposed supervisor or other scientists, lecturers: (Indicate the name and surname of the researcher or lecturer):

During the collection and evaluation of the material and the preparation of the final thesis, I was consulted by researchers, lecturers, and specialists. Their contribution to the preparation of the thesis:

When collecting the material, I used the following tools and infrastructure of the Lithuanian University of Health Sciences (if you used them, mark them; specify the percentage expression: if tools and infrastructure owned by other people were not used – 100 percent, if used – indicate the size of the University's share):

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I confirm that my final bachelor's thesis is independently written, the submitted material is not plagiarized, falsified, the research data is not falsified, the work is not duplicated. Citations from other sources used directly or indirectly are marked in the literature references. The contribution of other persons (if any in the work) is clearly declared. I confirm that the work is written in the correct English language.



(Signature)

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(Student's name, surname)