

Relationship between the position adopted by the infant during sleep and the prevention of sudden infant death

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ABSTRACT

Introduction: Sudden Infant Death Syndrome (SIDS) is a term used to describe the sudden and unexpected death of an infant under 1 year of age, where the definitive cause of death cannot be truly established, even after thorough investigation. Supine is recommended by the American Academy of Pediatrics (AAP) as part of a safe sleep routine for babies. However, prone position is contraindicated, as it is related to a higher mortality rate. **Method:** The search for references was carried out through the Virtual Health Library (VHL) platform and Scielo. The following descriptors were used: "Dorsal Decubitus" AND "Sudden Infant Death". The following filters were applied: full-text article; main subject "Sudden Infant Death"; language in Portuguese, English and Spanish and publications in the last 5 years (2018-2023). Thus, a total of 35 results were obtained, of which only 11 articles were selected. **Results and Discussion:** There are several modifiable factors related to sudden infant death, among them we have: caregivers of children who consume alcohol, tobacco and other drugs at home during the prenatal and postnatal periods; bed shared between babies and parents; overheating; presence of soft objects in the crib and loose bedding. Other important guidelines, which have level A of evidence, for the prevention of SIDS are: exclusive breastfeeding; avoid exposure to cigarettes during and after pregnancy, as well as marijuana, opioids, alcohol, and illicit drugs; Perform adequate prenatal care and correct immunization recommended for the child and do not use home cardiorespiratory monitors. Outside of sleep, it is recommended to disseminate and educate about safe sleep guidelines for children from the beginning of pregnancy, since 40% of mothers say they have not received such guidelines and 25% receive information that differs from that advised by the AAP. **Conclusion:** It is concluded that sudden infant death syndrome (SIDS) is related to the prone position. In the U.S., there are ethnic-racial disparities in SIDS mortality rates, associated with socioeconomic factors and lack of resources. It is crucial that public health services promote safe forms of sleep, such as the supine position, adequate feeding before sleep, and the use of flat surfaces without objects in the crib.

Keywords: Dorsal decubitus, Sudden death, Infant.

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INTRODUCTION

Sudden Infant Death Syndrome (SIDS) is a term used to describe the sudden and unexpected death of an infant under 1 year of age, where the definitive cause of death cannot really be established, even after thorough investigation (ANDERSON et al., 2021).

Annually, in the United States, about 3,500 infants die from sleep-related fatalities, including sudden infant death syndrome (MOON et al., 2022), which is the leading cause of post-neonatal mortality in the United States and the third leading cause of infant death overall (MAGED; RIZZOLO, 2018). These deaths, which occur mostly during the night, are associated with several factors, including bed sharing, infant age and ethnicity, food offered to the child, sleep environment and, especially, the position of decubitus (ANDERSON et al., 2021).

Supine is recommended by the American Academy of Pediatrics (AAP) as part of a safe sleep routine for babies. However, prone position is contraindicated, as it is related to a higher mortality rate in children aged 0 to 12 months (SANCHEZ et al., 2020), being acceptable in rare exceptions such as respiratory distress syndrome, airway abnormality, gastroesophageal reflux disease, babies undergoing phototherapy, among other cases, and even so, the prone position should be discontinued as soon as possible (GOODSTEIN et al., 2021).

Thus, the strong correlation between the decubitus positions and the sudden death of the infant is evident, which should be well detailed for better guidance of health professionals and caregivers responsible for these children. In view of the above, our objective is to evaluate the relationship between the supine position adopted by infants during sleep and the prevention of sudden death.

METHOD

The search for references was carried out through the Virtual Health Library (VHL) platform, using the following databases: Latin American and Caribbean Health Sciences Literature (LILACS) and Online System for Search and Analysis of Medical Literature (MEDLINE). Searches were also carried out on the SCIELO platform. The following descriptors were used: "Dorsal Decubitus" AND "Sudden Infant Death". The following filters were applied: full-text article; main subject "Sudden Infant Death"; language in Portuguese, English and Spanish and publications in the last 5 years (2018-2023). Thus, a total of 35 results were obtained. After the search, 11 articles were selected by reading the title and abstract and by excluding duplicates, which were read in full for the construction of this integrative review.

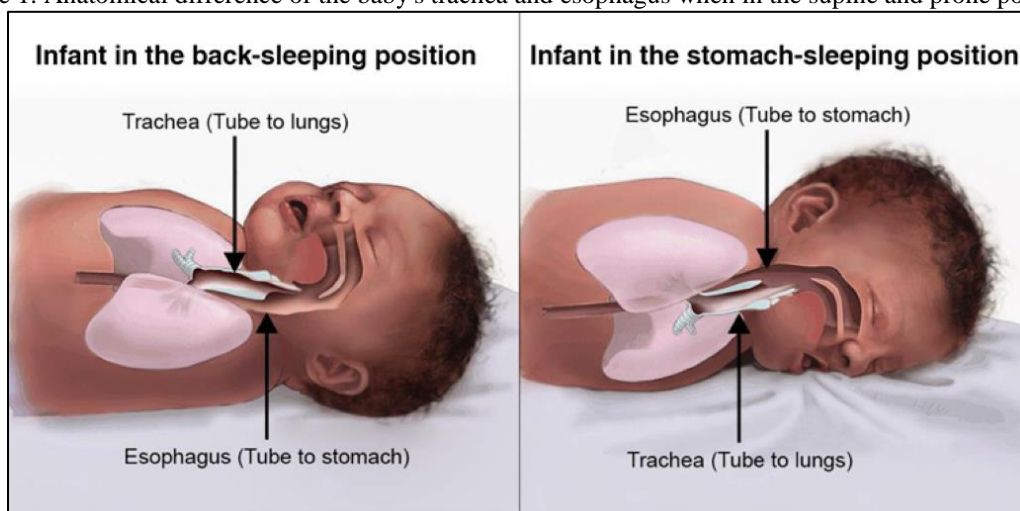
RESULTS AND DISCUSSION

There are several modifiable factors related to sudden infant death, including: caregivers of children who consume alcohol, tobacco, and other drugs at home during prenatal and postnatal periods

(JULLIEN, 2021); shared bed between babies and parents, as studies indicate that babies who sleep in the same bed as their parents are 10 times more likely to have a risk of SMS; infant prone sleep position (SCHAEFFER; ASNES, 2018); overheating; presence of soft objects in the crib (pillows, some toys that resemble pillows/cushions, bedspreads, duvets, etc.) and loose bedding (blankets and sheets not adjusted, etc.), since the latter can cover the head and cause obstruction of the child's external airway, leading to an increased risk of suffocation, CO₂ rebreathing and SIDS (JULLIEN, 2021; SANCHEZ *et al.*, 2020; FREY; HAMP; ORLOV, 2020). According to a 1987 case-control study, 74% of 128 SIDS infants were asleep in the prone position, compared with 44% of 503 control infants (MAGED; RIZZOLO, 2018).

In the meantime, prone sleep position is seen as the most important risk factor for SIDS (SPERHAKE; JORCH; BAJANOWSKI, 2018). Among the main pathophysiological mechanisms involved are: suffocation of the infant due to the closure of the airways when the infant face is turned downwards; the suffocation of the baby caused by the elevated diaphragm after a feeding of less than 3 hours before its positioning to sleep, in addition to the fact that, when in this position, the esophagus is anatomically located above the trachea, so any regurgitated or refluxed substance will concentrate in its opening, making it easier for the baby to aspirate and choke (Figure 1) (MOON *et al.*, 2022); overheating of the neonate and chronic hypoxia, since the prone position is associated with a sustained effect of heat production by the neonate and, therefore, there is an increase in the metabolic rate and the need for O₂, however, presenting concomitant hypoxia, due to the consequent reduction in cerebral perfusion due to the prone position with a consecutive increase in CO₂ inhalation and a decrease in O₂ (SPERHAKE; JORCH; BAJANOWSKI, 2018). Thus, the baby can only be allowed to remain in a ready position during wakefulness, supervised and controlled by the child's guardians, usually during the postprandial periods (SANCHEZ *et al.*, 2020).

Figure 1. Anatomical difference of the baby's trachea and esophagus when in the supine and prone positions.



Fonte: MOON *et al.* (2022)



In addition to the correct positioning of the baby, there are 5 steps to make the baby's sleep safer, they are: 1. Baby placed in supine position; 2. Baby sleeps alone, which can be in the same room as the parents, but in separate places; 3. Baby sleep on a flat, firm and straight surface; 4. There should not be any objects in the vicinity of the sleeping place, such as pillows, plush toys, quilts, blankets, etc.; 5. Baby dressed and covered so that limits the risk of overheating and suffocation. To warm the baby during the night, he should be dressed appropriately with appropriate clothing for the room temperature, and blankets should not be used due to the risk of suffocation (FREY; HAMP; ORLOV, 2020).

Other important guidelines, which have level A of evidence, for the prevention of SIDS are: exclusive breastfeeding; avoiding exposure to cigarettes during and after pregnancy, as well as marijuana, opioids, alcohol and illicit drugs; performing adequate prenatal care and correct immunization recommended for the child and not using home cardiorespiratory monitors. Outside of sleep, supervised tummy time when awake is recommended, as well as dissemination and education regarding safe sleep guidelines for children from the beginning of pregnancy (MOON et al., 2022), given that 40% of mothers claim not to have received such guidelines and 25% receive information that differs from that advised by the AAP (BURRELL et al., 2019).

Although simple, these recommendations are not always adopted, this is mainly due to health professionals, who are not always up to date on the correct positioning of babies and, therefore, fail to inform parents and guardians about this subject. According to a study conducted at the University of Chicago Medicine Eating Children's Hospital (UCM), which analyzed the adherence of caregivers and health professionals working in the pediatric service to safe sleep practices, it showed that the population tends to follow the practices observed in the hospital. Thus, if pediatricians and other health professionals do not respect safe sleep practices (SSP), there is a high probability that parents and/or guardians will replicate the behaviors and practices observed in maternity wards and hospitals outside hospital environments (FREY; HAMP; ORLOV, 2020).

In view of this reality, there are currently proposals to implement educational measures in maternity hospitals, neonatal ICUs and other hospital centers. An American study proposed to develop an educational initiative on safe sleep in an incub, the "Wake Project", for a period of 12 months, in order to prevent sudden infant deaths. To this end, interventions were carried out such as: nurses' education, cards to put in cribs, posters, feedback forms, small group discussions, among other activities. As a result, it was observed that multifactorial interventions significantly improved adherence to safe sleep practices among NICU nurses, also bringing greater dedication to cultural change on the part of the entire team, thus giving sustainability to the project (UDUWANA; GARCIA; NEMEROFISKY, 2020).



CONCLUSION

It is concluded that sudden infant death syndrome is closely related to the prone position, erroneously adopted by caregivers. In addition, it is worth noting the large ethnic-racial disparity in sleep-related infant mortality rates reported in the US. This discrepancy was related to the low socioeconomic status of families, as well as unemployment, housing instability, and domestic violence (MOON *et al.*, 2022). These reports attest that factors such as lack of access to economic, social, and educational resources are also related to the survival of these babies (MOON *et al.*, 2022) and, therefore, it is of paramount importance that forms of safe sleep are addressed in public health services, and it is then necessary to properly train professionals to instruct correct sleep measures such as the adoption of supine positions, feeding at least 3 hours before your sleeping position, use of flat surfaces, no presence of soft objects in the crib and loose bedding.



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