

Interference of environmental factors in the sleep and rest of high-risk newborns

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ABSTRACT

The objective of this research was to learn about the experiences lived by nursing professionals related to the environmental factors that interfere with the sleep and rest of high-risk newborns in a neonatal intensive care unit. Field research was performed using a qualitative approach in a private hospital in the rural area of São Paulo. Data was collected from a recorded interview with 18 nursing professionals (13 nursing technicians and 5 nurses) that used three guiding questions. The responses were grouped, and the following key expressions and central ideas were extracted according to the proposed method of the Collective Subject Discourse, and this information originated the discourses that revealed the participants' concern about the need to minimize possible unnecessary exposure to lighting, noise and excessive handling as a way to contribute to the recovery of high-risk newborns.

Descriptors: Infant, Newborn; Intensive Care Units, Neonatal; Environmental Health; Nursing Care; Nursing.

Received: 03/28/2017.

Accepted: 02/28/2018.

Published: 09/21/2018.

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Suggest citation:

Pereira GB, Perciliano SEF, Binotto CCS, Tognoli SH, Eduardo AHA, Mendes AA. Interference of environmental factors in the sleep and rest of high-risk newborns. Rev. Eletr. Enf. [Internet]. 2018 [cited _____];20:v20a19. Available from: <https://doi.org/10.5216/ree.v20.46121>.

INTRODUCTION

In neonatal intensive care units (NICU), newborns (NB) have the opportunity to receive specialized and continuous medical care according to the type of health problem - classified as severe or at risk - with specific equipment and medicines, as well as access to other types of technologies for the purpose of determining the diagnosis and subsequent implementation of specific treatments⁽¹⁾.

By definition, the NICU has the purpose of increasing the survival of critical NB who need complex and specialized care⁽²⁻⁴⁾, emphasizing that new technologies, together with the qualification of the professionals that use them, are fundamental for the expected ideal outcome⁽⁵⁻⁶⁾.

However, the whole human and technological apparatus also contribute to making the environment stressful and highly stimulating for newborns, causing sensations of discomfort and pain, differing greatly from the uterine environment, which is silent, tranquil, dim and gentle⁽⁷⁻⁸⁾. These changes generate discomfort, stress, pain and adjustments in the stages of sleep for NB, which is fundamental for their homeostasis and recovery⁽⁶⁾.

The concern with noise interference in the NICU recovery process began in the 1970s, becoming increasingly important in 1980, because the comfort of newborns was identified as an important issue, as well as the implications of the professionals' performance related to the noise generated in the environment. In that decade, actions were implemented to minimize noise, light, handling of the newborn and extend time dedicated to rest⁽⁹⁾.

It is possible to affirm that these interferences can trigger detrimental changes to the newborns' thermoregulatory system, immune system, processes of production and release of hormones, and increase intracranial pressure⁽³⁾, besides provoking irritability and changes in heart rate, respiration and blood pressure levels that compromise their development and recovery in the hospital environment⁽¹⁰⁾.

Faced with this reality, the role of nurses becomes that of a coordinator of the care process, having the technical competence and scientific knowledge to recognize individual needs, plan and implement effective nursing care. All members of the nursing team should follow guidelines for the suitability of the environment for NB⁽¹¹⁾.

Thus, the objective of this study was to understand the experiences of nursing professionals related to the environmental factors that interfere with the sleep and rest of high-risk newborns in the NICU.

METHODS

Descriptive research using a qualitative approach performed at the neonatal ICU of a private hospital in the rural area of the state of São Paulo, Brazil.

The study participants were nurses and nursing technicians who worked in the neonatal ICU and agreed to participate in the study by signing an informed consent form. At least 12 months of experience in the selected field was established as an inclusion criterion, excluding those that after three attempts for an interview were no longer working in the field, were away from work activities indefinitely or on vacation.

To collect the data, an instrument was created containing items to characterize the participants regarding training and professional performance, in addition to a structured interview script made up of three open-ended guiding questions focusing on the experience of nursing professionals on the sleep and rest of high-risk newborns

hospitalized in a NICU. The creation of this instrument was based on the Collective Subject Discourse (CSD) methodology⁽¹²⁾.

The interviews were carried out on three consecutive days in the morning, afternoon and evening, as a strategy to approach nursing professionals, considering the work schedule in the field. Participants were invited to participate in the study, and upon agreement, an informed consent form was offered for reading and signing, and then the data collection stage was started. Each interview took place individually and in a private location. The responses were recorded by hand and transcribed completely after repeated readings.

The data were analyzed according to the CSD method, which determines to select methodological figures denominated key expressions, and central ideas in the interview transcripts for the construction of the CSD, based on the Theory of Social Representations⁽¹²⁾.

Ethical aspects of the research were met in accordance with the guidelines of Resolution 466/12 of the National Health Council⁽¹³⁾. It is noteworthy that this research was approved by a research ethics committee under opinion number 1.079.920.

RESULTS

Twenty-five nursing professionals were present at the study site, and were invited to participate in the study. Four did not meet the criterion of inclusion (length of service), one was on holiday, one was away from work and one professional refused to participate in the study. Eighteen professionals were included, being 72.2% (n = 13) nursing technicians and 27.8% (n = 5) nurses.

Regarding the characteristics of the participants, 100% were female, 80% (n = 4) of nurses had between one and five years of professional experience and 20% (n = 1) had between six and 10 years. Regarding the length of professional experience for nursing technicians, 92.3% (n = 12) had one to five years and 7.7% (n = 1) had more than 10 years.

The information obtained from nursing professionals through the three guiding questions gave rise to the CSD presented below.

The importance of sleep and rest for the recovery and development of high-risk newborns

Nursing professionals affirmed that sleep and rest are essential factors to minimize possible damages to the health of NB during the process of recovery and development in the neonatal ICU environment.

All babies have their moment of sleep. Sleep and resting are essential for the recovery, formation and development of newborns. It is good for babies to sleep in order to have good development and rapid recovery. Sleep and rest are very important for the development and growth of a child. When a child has restful sleep he or she will develop faster. It is important for neuropsychomotor development. Sleeping time is important for the neurological development of the newborn. Sleep contributes to the newborns' growth, weight gain and heat stability to avoid intracranial bleeds (CSD 1).

Lights and noise during the period of sleep and rest of high-risk newborns interfere with their development

Another fact highlighted by the professionals was the need to reduce and adapt the lighting and noise in the environment, providing moments of comfort and tranquility during the sleep of newborns in their process of recovery.

During the resting time of the infants we try to reduce as much as possible the brightness of the environment, noise and manipulation of the infants. Here we have the time to turn off the lights so they can have restful sleep. Whenever possible the lights are turned off for babies to sleep. Adequate lighting. Turn off all lights with the nurses' guidance. During the sleeping time during the day the lights are turned off, and the area is in absolute silence for minutes or even hours. Sleep and rest for some time, after the visits turning off the light and leaving the place calm and quiet (CSD 2).

Nursing professionals stated that external factors such as noise and excessive lighting in the neonatal ICU environment interfere with the holistic development of newborns.

The noise, brightness, talking too loudly, hitting the incubator, excessive lightness from not leaving sheets on top of the incubator, harm and end up interfering with or disrupting the development of the infants. We see this in the day to day (CSD 2).

It was also pointed out as a relevant fact the concern of nursing professionals regarding the noise coming from equipment used in the unit, which remains turned on all day.

Loud conversations, incubator alarms, monitors, ventilators, and respirators are too loud during sleep time (CSD 2).

Minimizing lighting, noise, handling and keeping a comfortable position not to interfere with the sleep and rest of newborns

The participants revealed that the care in keeping NB in a comfortable position in the incubator can impact their process of sleep and rest.

Beware of noise, dim the sounds of monitors, incubators, and ventilators, dim light, turn off the lights when possible, cover the incubator to minimize light, avoid slamming the incubator doors, avoid hitting the incubator so it does not interfere in sleep, and keep the infant in a comfortable position. We are implementing sleep time, a time where we turn off the lights and avoid talking too much. We do not turn off the light completely, just dimmer, so they realize that it is time to sleep. When they go home the mother will continue to do this to decrease not only the stimulation of pain but also the irritability of the baby (CSD 3).

Another concern pointed out by nursing professionals was in relation to the difficulties in keeping the environment in balance for the sleep and rest of NB, since there is a need for constant movements in compliance with the routines of the unit.

Sleep and rest are extremely essential in the neonatal intensive care unit. Yes, we know the importance and we try to comply every day in the best possible way, but we don't always succeed. There is no existing protocol. We struggle to preserve this sleep time because we must move the babies around due to our procedures. Most of the time here we cannot create a sleep time because of excessive noise in the environment. Handling of the babies is done every three hours. It is very complicated to maintain this state of sleep and wakefulness. Needing minimal handling, the infant will have sleep and rest at an interval of four hours (CSD 3).

The need for handling of newborns in order to follow procedures is pointed out by professionals as detrimental to their sleep and rest.

During hospitalization, infants are moved around excessively, invasive procedures are performed with no non-nutritive suction. Noise, luminosity, temperature, opening the incubator, and resting position in the incubator interfere with their sleep and rest (CSD 3).

The proposal to add care actions to NB was also a concern presented by the participants, with the purpose of reducing the moments of handling and maintaining a favorable environment for rest.

Group all the care in an integrated way as a team, at strategic times, grouped into a single time, to maintain NB without being handled for at least four hours of rest, performing non-nutritive sucking during the invasive procedures, sleep time has to be included in all

schedules, inside the curling incubator that helps infants to rest in the position they were inside the mother's womb, they will experience less stress and have better sleep and rest. In our unit we minimize care to every three hours in order to minimize handling and exposure of NB when possible and keep the room calm (CSD 3).

DISCUSSION

Environmental issues in healthcare are being increasingly discussed. It should be emphasized that the concept of health, defined by the World Health Organization as being not only the absence of disease but a condition of perfect physical, mental and social well-being⁽¹⁴⁾, in the current context has incorporated the importance of the environment in its design, considering the different types of exposure risk for the population.

The environment of the NICU is highly stimulating and aggressive due to the excesses of light, handling and constant noise, as well as necessary procedures performed that cause discomfort to children, either in the physical or emotional aspect, and compromise their health^(11,15).

Therefore, it is recommended to look into possible ways to reduce these factors and promote a therapeutic environment with minimal stress⁽¹¹⁾.

In this research, according to the comments of nursing professionals, NB are exposed to several factors that lead to sleep interruption, such as luminosity, excessive handling, temperature and noise present in the environment.

Lack of sleep compromises the central nervous system (CNS), triggering inappropriate functioning, such as response to changes in abnormal behavioral reactions. It is worth mentioning that sleep is responsible for the process of restoration of the organism, especially to the CNS, and the absence of this moment may be responsible for damage to health, compromising the proper functioning of the organism⁽¹⁶⁾.

Another problem revealed through the answers obtained was in reference to the excessive handling of NB, since frequent manipulations are often necessary in response to individual needs, and may influence the quality of sleep and rest needed for recovery.

This issue can be minimized by planning and organizing care in association with other professionals. Nursing professionals play a fundamental role in this organization, contributing directly to the balanced follow-up of the recovery of newborns through qualified care involving practice, knowledge and technological innovations⁽¹⁷⁾.

A study carried out with nine nursing technicians from a state hospital in São Paulo, Brazil, working in an NICU revealed a concern with the practice of individualized care for premature newborns. They consider it difficult to comply with this practice due to the high number of procedures, which make it difficult to implement rigid routines for sleep schedules, diaper changes and other practices, as guided by the patients' individual needs⁽¹⁸⁾.

Another issue pointed out by the research participants is related to verbal communication among team members in the day to day of the unit. According to literature on the subject, another issue involves the moment of the parents' visit, where the noise level is high and continuous and interferes with the growth and development of premature newborns since they are extremely sensitive. The noise present in the environment is considered to be one of the aggravating factors for recovering NB⁽¹⁹⁾. Research indicates that noise also interferes in the interaction of mothers with their newborns, increasing stress⁽¹⁵⁾.

This could be minimized through specific guidelines for professionals, parents and visitors in the unit, as ignorance and/or compliance with these practices may contribute to the development of health problems in

newborns. Nursing professionals represent the category that maintains the greatest amount of direct contact with and assistance to newborns, so it is important to investigate the noise related to the equipment present in this type of environment, guaranteeing the reliable interpretation of the noise and the minimization of the unnecessary activation of this audible device^(6,17).

According to research carried out in the NICU of a teaching hospital in the city of São Paulo, Brazil, other types of noise could be significant, such as the opening and closing of incubator doors, unit doors, protective covers for containers for waste disposal⁽¹⁰⁾. For participants in this study, careful opening and closing of these compartments and doors reduce noise in the environment and possible discomfort and damage in the development of high-risk newborns.

Another study carried out in two NICU rooms in a university hospital in São Paulo, Brazil, revealed that the noise identified by means of dosimeters installed in the environments is related to everyday care activities that are essential for the care of newborns and their family members. In view of the results obtained, the proposals presented to minimize the noise identified involved changes in the structure of the environment, scheduled maintenance for the equipment and guidelines for professionals. According to the authors, these proposals were fulfilled through the creation of a guideline at the site investigated⁽⁴⁾.

As for noise in an NICU, a study conducted at a university hospital in Rio de Janeiro, Brazil, to measure noise through dosimeters revealed that the high values of the noise identified in the environment included conversations, equipment and crying of newborns, especially in the morning due to the greater number of people in the unit and teaching activities, according to the investigated institution⁽²⁰⁾.

The authors of this study point out that technological resources may also be responsible for unfavorable changes in the newborns' development, causing unnecessary stimuli that occur in the environment during the care actions, requiring human care involving available technologies and practices.

Nursing professionals must act so that care activities do not jeopardize the development of newborns and, therefore must avoid unnecessary noise, reduce brightness, maintain adequate temperature and minimize excessive handling, expressing authentic, necessary and risk-free care.

Regarding the presence of noise and lighting in the unit investigated in this study, participants also revealed that it is possible during the 24 hours to create a few sleep times for the NB, providing in these periods a quiet and calm environment. According to the reports of nursing technicians working in an NICU in a state hospital in São Paulo, Brazil, the reduction of light and noise in the environment minimizes discomfort for newborns and provides a longer sleep period⁽¹⁸⁾.

This affirmation can also be attributed to the multi-professional support team that works in the NICU, since they should jointly seek actions and practices of care for high-risk newborns in order to guarantee quality care geared to the collective needs of the environment and individualized for each NB. The minimization of noise and adoption of actions aimed at patient safety should be a concern of all the members assisting NB in this type of environment⁽⁶⁾.

At the time of birth, premature newborns leave a position of warmth and security in the mother's womb and are placed in an incubator to receive the necessary care, which puts them in a favorable position for care, but distances the child from the affection of the parents⁽²¹⁾.

A study carried out in an NICU of a university hospital in the rural part of the state of São Paulo, Brazil, identified that the handling of premature newborns is still high, and protocols are needed to reduce it, and to group care activities⁽²¹⁾.

Among the possibilities, it is suggested that simple measures, which do not require financial investments, should be applied to reduce neonatal stress, such as covering the incubators to reduce brightness so as not to directly affect the newborn, comfortable positioning of NB and elaborating routines and procedures grouped with other members of the multi-professional team to reduce handling during the 24-hour period.

CONCLUSION

The results of this study revealed that nursing professionals recognize the importance of sleep and rest in the recovery and development of high-risk newborns in NICUs.

In interviews, environmental factors such as excessive brightness, noise, handling, and uncomfortable positioning are pointed out as conditions that interfere with the sleep and rest of high-risk NB in the unit selected for this study.

According to the participants, the measures suggested to minimize the factors pointed out involve changes in actions taken during care, such as reducing brightness and noise from equipment used, as well as implementing bed positioning models and reducing excessive handling.

Thus, it is essential that professionals working in this type of care be trained not only in the care provided, but also in meeting the needs of audio and visual comfort and avoiding excessive handling.

Simple routine readjustments such as grouping actions at the same time to reduce handling of the NB are considered humanized care that can strengthen patient safety during the treatment and recovery process.

Therefore, further studies in this type of care that is still under-researched is necessary for the construction and strengthening of practices aimed at reducing exposure of newborns to the environmental factors present in neonatal intensive care units.

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