The Effect of Different Positions of the Premature Babies upon their Pain Responses during Withdrawing Blood Samples.

Thesis

Submitted in Partial Fulfillment of the Master Degree in Pediatric Nursing

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Ashgan Ahmed

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List of Abbreviations

AAP : American Academy of Pediatric.

AGA : Assessment Gestational Age.

ADHD : Attention Deficit Hyperactivity Disorder.

Apgar : Appearance, Pulse, Grimace, Activity, and Respiration.

CNS : Central Nervous System.

EMLA : Eutectic Mixture of Local Anesthesia.

IASP : International Association for the Study of Pain.

LBW : Low Birth Weight.

LGA : Large Gestational Age.

Min : Minute.

NANDA : North American Nursing Diagnosis Association.

NPASS : Neonatal Pain, Agitation and Sedation Scale.

NICUs : Neonatal Intensive Care Units.

NIPS : Neonatal Infant Pain Scale.

NS : Nociceptive Specific.

SaO2 : Oxygen Saturation.

PCA : Patient Controlled Analgesia.

PIPP : Premature Infant Pain Profile.

SGA : Small Gestational Age.

WDR : Wide Dynamic Range.

WHO : World Health Organization.

UNICEF : United Nations International Children's Emergency Fund.

Operational Definitions

Pain

Is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage **(Varklan** & **Walden, 2010)**.

Prone position

Is a position of the body lying down and the head is always on one side. Prone positioning encourages the infants to work on using neck extension and promote flexion of the extremities **(East, 2000)**.

Supine position

Defined as a face up. With respect to the forearm, prone refers to that configuration where the palm of the hand is directed posterior, and the radius and ulna are crossed **(Sharma, 2013)**.

Preterm infant

Is defined either as the same as preterm birth or the birth of a baby before the developing organs are mature enough to allow normal postnatal survival **(Sharma, 2013)**.

Nociceptors

Sensory neurons that transmit pain impulses and respond to damage caused by mechanical, thermal and chemical **(Franck, 2003)**.

Pain threshold

The point at which the transmission of a pain stimulus begins. If the pain threshold is lowered, a weaker stimulus may be able to pain transmission **(Anand & Hickery, 2006)**.

Pain perception

The point at which a person becomes aware of the pain. Awareness of pain occurs in the central nervous system (thalamus and cerebral cortex) **(Kyle & Kluwer, 2008)**.

Pain tolerance

The degree of pain that a person can bear. Pain tolerance is influenced by psychological, social and cultural factors **(Porth & Matfin, 2009).**

Noxious stimulus

A noxious stimulus is one which is damaging to normal tissues **(Porth & Matfin, 2009).**

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Abstract

Aim of the work: To study the effect of different positions of the premature babies upon their pain responses during withdrawing blood samples. **Design:** Quasi experimental study design. **Setting:** This study was conducted at two Neonatal Intensive Care Units at the Hospital of Obstetrics and Gynecology affiliated to Ain Shams University and Menia El-qamh General Hospital in El-sharqia city. **Subjects:** composed of 100 preterm neonates (52 males, 48 females). **Tools:** 1) Medical records of basic data for preterm neonates. 2) Pain level assessment scale (Premature Infant Pain Profile). **The results:** showed that most of preterm neonates 94% in prone position were ≤6 degree of pain and 92% preterm neonates in supine position were from 13 to 21 degrees of pain degree. While, decreased in prone position this showed the prone position that affected positively on pain responses for preterm neonates than supine position. **Conclusion:** Based on the finding of the present study, it can be concluded that the prone position helps to relieve pain during blood sample withdrawal and affect positively the pain responses for preterm neonates than supine position. **Recommendation:** It is recommended to turn the position of neonates frequently should be a part of neonatal care protocol, prone positions are recommended to help in relieving pain, achieve maximum oxygen saturation and updated policies in neonatal intensive care units included oxygen and positioning should be part of caring.

Keywords: Preterm neonates, Prone position, Supine position, Pain, Painful procedures.

Introduction

Premature birth is defined either as the same as preterm birth or the birth of a baby before the developing organs are mature enough to allow normal postnatal survival. Premature infants are at greater risk for short and long term complications, including disabilities and impediments in growth and mental development **(Van OS et al., 2013)**.

About 13 million preterm neonates are born worldwide each year **(Beck et al., 2010)**. Maturity implies functional capacity, the degree to which the neonate's organ systems are able to adapt to the requirements of extra uterine life. Therefore, gestational age is more closely related to fetal maturity than birth weight **(Donnal & Wilson, 2005)**.

The rate of preterm neonates in Egypt is 21% of the total number of births, and returns the causes of premature birth to the mother developing diabetes, high blood pressure, preeclampsia, rheumatic heart disease, pregnancy in twin and the situation that is not normal for the fetus inside the uterus and placenta. Therefore, it is necessary to conduct regular screening during pregnancy because this helps to early diagnosis indicated by **the World Health Organization (WHO), (2013).**

Pain is a complex, subjective phenomenon. It is a protective mechanism, causing one either to withdraw from or to avoid the source of pain and seek assistance or treatment. The International Association for the Study of Pain **(IASP)** defined pain as "unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage." **(Patricia & Dorrie, 2013)**.

Preterm neonates staying in Neonatal Intensive Care Units **(NICU)** may undergo more than 10 painful procedures daily during the first 2 weeks of hospitalization to maintain survival **(Carbajal et al., 2008)**. These infants can perceive pain due to the development of nociceptors and the pathways of the functional peripheral nervous system **(Hall & Anand, 2005)**.

Repositioning of preterm neonates is a basic nursing care it includes putting neonates in supine, prone, fowlers and side lying position. Several studies demonstrated variable outcomes affected by different positions of preterm infants. Proper positioning may reduce the need for supplemental oxygen and mechanical ventilation. Therefore, prone position applied to help or support the preterm neonates to relive pain. This application can be supported by pillows, special beds. Position changes, which prevent the subsequent development of pain and reducing the acute pain, also increase the blood flow and prevent muscle contraction and spasms maintains normal

oxygen saturation is a priority in the nursing care **(Picheansathian et al., 2009)**.

Moreover, positioning preterm neonates in good body alignment, changing the position regularly and systematically are essential aspects of nursing practice. The prone position is a suitable positioning helps to maintain normal oxygen saturation, which is necessary for life. If oxygen saturation was reduced in the blood of neonates, further problems might arise, such as pulmonary artery hypertension resulting from hypoxia, pulmonary vasoconstriction, apnea, peripheral cyanosis and respiratory failure **(Balaguer et al., 2006)**.

Nurses play a key role in providing pain relief. The most commonly used nursing interventions of pain are physical, cognitive, and behavioral measures. In addition, administering medications or providing alternative therapies, the nurse's role involves measuring the patient's response to these therapies **(Patricia & Dorrie, 2013)**.

Above all, nurses continued to place preterm neonates in appropriate positions that could lead to labored breathing in many **NICUs** in Egypt. The nursing care of neonates requires close monitoring, and active nursing interventions, routine care like, putting neonates in proper position **(Wilson & Hockenberry, 2011)**.