https://doi.org/10.33472/AFJBS.6.6.2024.357-363

African Journal of Biological Sciences

Research Paper Open Access

"A COMPARATIVE STUDY TO ASSESS THE PAIN IN SUPINE VERSUS SITTING POSITION DURING INTRAMUSCULAR INJECTION AMONG INFANTS FROM SELECTED IMMUNIZATION CLINICS AT SANGLI, MIRAJ, KUPWAD CORPORATION AREA".

Mrs. Steny PD [1], Dr. Mrs. Aparna Kale[2]

[1]M.Sc. Nursing (Paediatric Nursing), Bharati Vidyapeeth (Deemed to be University) College of Nursing, Sangli, Maharashtra, India 416414.

[2]Professor and HOD Pediatric Nursing Department Bharati Vidyapeeth (Deemed to be University), College of Nursing, Sangli, Maharashtra, India 416414

Article History
Volume 6,Issue 6, 2024
Received:17 Feb 2024
Accepted : 19 Mar 2024
doi: 10.33472/AFJBS.6.6.2024.357-363

ABSTRACT

Background Positioning the babies while administering intramuscular vaccinations in a comfortable position. This study is aimed to assess the pain in supine versus sitting position during intramuscular injection among infants from selected immunization clinics. **Method:** A descriptive observational study group methodology was employed in this investigation. By using the purposive sampling strategy, 60 samples were chosen. The NIPS pain scale was utilised in this investigation to assess the severity of the pain. **Results:** In the supine position, 66.7% of the babies experienced mild to moderate pain during vaccination, compared to 33.3% of those who experienced severe pain. In the sitting posture, 40% of the babies experienced mild to severe discomfort, and 60% of them experienced little to no pain. Infants in the supine position had an average mean pain score of 4.3, whereas those in the sitting posture had an average mean pain score of 2.4. This test has a T-value of 21.3. The null hypothesis is disproved due to the modest corresponding p-value (less than 0.05). Infants substantially experienced more pain on an average when lying flat as opposed to when they were sitting up. Thus, it is clear that newborns experience substantially less discomfort while receiving intramuscular injections when seated than in sleeping position.

Introduction

Paediatrics is the area of medicine that deals with the wellbeing and medical treatment of newborns, young children, and teenagers from birth to the age of 18. The Greek words "pais" (meaning "child") and "iatros" (meaning "doctor or healer") are combined to form the word

"paediatrics," which means "healer of children." The medical specialty of paediatrics only began to emerge in the middle of the 19th century. The father of paediatrics is regarded as Abraham Jacobi (1830–1919). [1]

The Latin word infants, which means "unable to speak" or "speechless," is the source of the English word "infant." Children undergo a variety of invasive medical procedures (like vaccinations) as part of routine and specialised health care. By the time they are six years old, children should have received about 29 intramuscular vaccination injections, according to recommendations made by the US Centres for Disease Control and Prevention in 2005.[2] These experiences are distressing and anxiety-inducing, especially for younger children, who show greater distress than older children.[2]

The standard WHO-recommended vaccines that protect against tuberculosis, diphtheria, tetanus (including neonatal tetanus through immunisation of mothers), pertussis, polio, measles, hepatitis B, Haemophilus influenza type b (Hib), Rota virus, and pneumococcal vaccines are given to children under the age of five in the majority of developing countries. Each year, these immunisations prevent more than 2.5 million infant deaths. 3 Sometimes restraint is necessary to reduce the risk of injury before administering medicine to a youngster. However, the parent needs to be confident they can confine the child for long enough to prevent harm. Children believe injections are really painful. Even with the best preparation, a youngster has a hard time understanding that the discomfort of an injection only lasts a short while. [3]

In clinical practise, parents frequently comfort their infants by holding them because they are worried about the discomfort their children may experience after immunisations. Holding can be used to distract and calm young children and decrease their reactions to uncomfortable procedures. The World Health Organisation (WHO) recommends that carers hold infants and young children while they receive vaccines. 4 As a result, the ideal posture is still unknown. When small children are kept upright, the acute pain from the immunisation injection is less severe. The best placement for newborns who are still in the early stages of development is unclear. [4]

It has not yet been examined to compare holding in an upright position to a supine position. Because it is crucial to determine the most beneficial position for easing immunisation discomfort in young infants, this study looked at two positions to lessen acute pain in 2- month-old newborns. The findings can guide scientifically supported strategies to decrease the iatrogenic pain caused by immunisations. Vaccination is one of the most frequent and unpleasant procedures. Even after the anguish of childhood has subsided, the physiological and behavioural responses to vaccination might be impacted. Studies on the effects of various medical, psychological, and physical treatments on infant vaccination pain have been conducted. Consuming sweet-tasting liquids like sucrose or glucose can help to lessen the acute pain associated with injections. Breastfeeding has also been shown to have analgesic effects but giving best position is nonpharmacological measure. [5]

Material and Methods

Quantitative research approach with Two group experimental post-test study design was used in this study. The study conducted from selected immunisation clinics in Sangli, Kupwad Corporation area. The study enrolled total 60 infants. For conducting the study permission was obtained from Institutional ethical committee and from hospital authority from selected

hospitals for the study. Informed written consent was obtained from parents/ caregivers and assent was taken. 60 children fulfilling **inclusion criteria** Mothers who are willing to participate in this study • Full-term infants. • Infants receiving their first dose of Penta vaccine at the vastus lateralis site **Exclusion criteria** • Children who are having pain, skin infections, skin peeling, or any skin lesions at the vastus lateralis site • Infant with a history of severe seizures or any other nervous system problem.

Sample size calculation

Sample size was calculated by using power analysis statistical formula. Sample size was 60 in which 30 were in sitting position and 30 in supine position. The Purposive sampling technique was used.

Procedure

The researcher gathered the essential information after receiving the required approvals from the relevant authorities and informed consent from the mothers of the babies. one phase's data collection Infants who were born at full term were chosen by the researcher and split into two groups. During the Penta vaccination, Group I infants were placed in the supine position, and Group II infants were placed in the sitting up position. The NIPS Pain Scale was used to determine the degree of pain.

The outcome of the study was observed during the vaccination with the help of NIPS Pain Scale.

Statistical analysis

Statistical analysis was done based on the objective of the study, frequency, percentage, mean, SD were calculated to Comparison of pain levels during intramuscular injection in infants in supine and sitting positions. Paired t- test is calculated to get comparison of the pain score between infants with supine and sitting positions during intramuscular injection.

Section I: Level of Pain during intramuscular injection among infants in the supine position

Section II: Level of pain during intramuscular injection among infants in the sitting position

Section III: Comparison of pain levels during intramuscular injection in infants in supine and sitting positions

Section IV: Two sample t-test for the comparison of the pain score between infants with supine and sitting positions during intramuscular injection.

Table 1: Level of Pain during intramuscular injection among infants in the supine position n=30

Level of Pain	Supine position	
	Frequency	%
Mild to no pain	0	0.0%
Mild to moderate Pain	20	66.7%
Mild to moderate Pain	10	33.3%

Table 1 shows that 66.7% of the infants in the supine position had mild to moderate pain. and 33.3% of them had severe pain.

Table 2: Level of pain during intramuscular injection among infants in the sitting position n=30

Level of Pain	Sitting position	
	Frequency	%
Mild to no pain	18	60.0%

Mild to moderate Pain	12	40.0%
Mild to moderate Pain	0	0.0%

Table 2 shows that 60% of the infants in the sitting position had mild to no pain, and 40% of them had mild to moderate pain.

Table 3: Comparison of pain levels during intramuscular injection in infants in supine and sitting positions.

Level of Pain	Supine position		Sitting position	
	Frequency	%	Frequency	%
Mild to no pain	0	0.0%	18	60.0%
Mild to moderate Pain	20	66.7%	12	40.0%
Mild to moderate Pain	10	33.3%	0	0.0%

Table No. 3, 33.3% of newborns in the supine position reported severe pain, compared to 66.7% who had mild to moderate discomfort. 40% of the babies in the sitting posture and 60% of those without experienced minor to no discomfort. It suggests that the newborns in sitting positions experienced less discomfort during intramuscular injection than the infants in supine positions.

Table 4: Two sample t-test for the comparison of the pain score between infants with supine and sitting positions during intramuscular injection. n=30+ 30

Positions	Mean	SD	t	p-value
Supine	4.3	0.5	21.3	0.000
Sitting	2.4	0.5		

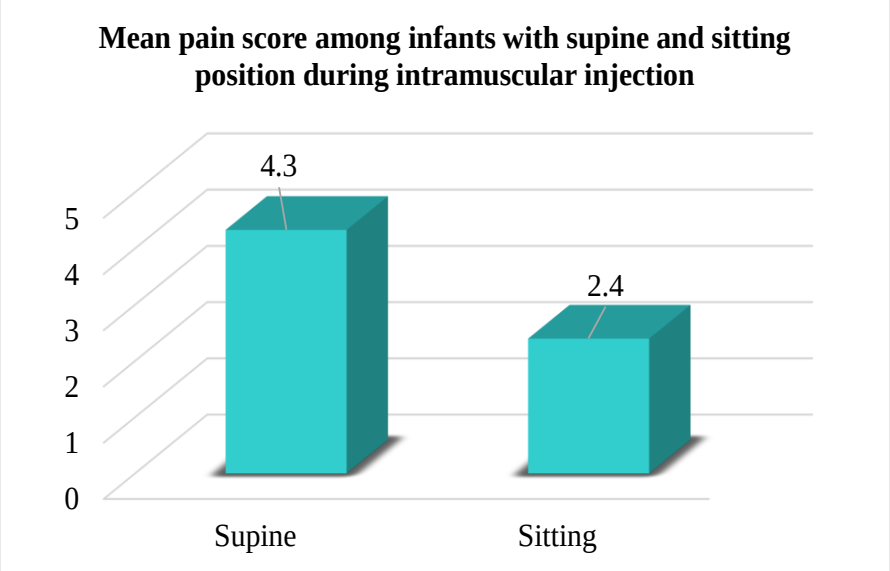

Fig 1- comparison of the pain score between infants with supine and sitting positions during intramuscular injection

Researcher applied two sample t-test for the comparison of the pain between infants with supine and sitting position during intramuscular injection. Average mean pain score in infants with supine position was 4.3 which was 2.4 for infants with sitting position. T-value for this test was 21.3. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. Average pain score among infants in supine position was significantly higher than that in sitting position. It is evident that the pain among infants during intramuscular injection is significantly less in sitting position.

Discussion

1.Discussion on level of pain during intramuscular injection among infants in the supine position Findings revealed that according to NIPS facial expression, 66.7% of the infants in the supine position had mild to moderate pain, and 33.3% of them had severe pain. It was observed that there were 30 babies in grimace, vigorous cry, and irritability, and 20 babies in restrained arms. The state of arousal was fussy in all 30 babies.

2. Discussion on level of pain during intramuscular injection among infants in the sitting position Findings revealed that 60% of the infants in the sitting position had mild to no pain, and 40% of them had mild to moderate pain. As the children were not much irritable and the cry was not vigorous (whimper in 21 babies and 9 babies did not cry), it was observed that the breathing pattern was relaxed for 30 babies, the state of arousal was awake in 2 babies, and fussy in 28 babies.

3. Discussion on the comparison of the pain between infants in the supine and sitting positions during intramuscular injection Finding show that 66.7% of the infants had mild to moderate pain, and 33.3% of them had severe pain in the supine position. In the sitting position, 60% of the infants experienced mild to no pain, and 40% of them had mild to moderate pain. It indicates that the infants in the sitting position during intramuscular injection had less pain as compared to the infants in the supine position.

The present research's findings matched those of a comparable study carried out by Mrs. R. Florine Dayana of Tamil Nadu's DR.M.G.R. Medical University in Chennai as a partial satisfaction of the criteria for the master's degree in nursing. effectiveness of lying down versus sitting up in reducing babies' pain perception after intramuscular vaccination at particular hospitals, The research methodology used was quantitative. A multiple-group experimental design includes two group designs. 60 people make up the sample. Group II's mean post-test value was 2.76, as opposed to Group I's mean post-test value, which was 3.16. The computed 't' value was 10.95, indicating a statistically significant difference between lying down and sitting up during intramuscular vaccination. [6]

Implication

A study finding have an implication for nursing practice, nursing administration, nursing education, nursing research.

Nursing Practice

The paediatric nurse can utilise the sitting position as a simple, cost-effective, non-pharmacological procedure for the baby’s receiving vaccination as well as a painful procedure in their clinical area of practise.

Nursing Administration

The study's findings recommend using the sitting position as a non-pharmacological intervention during vaccination, and it is necessary to create a strategy and set of guidelines for doing so in immunisation clinics. additionally, to intramuscular injection in the ward, and they were expected to participate in in-service training and a new demonstration of intramuscular injection for infants in the sitting position.[7]

Nursing Education

- The nursing faculty will demonstrate and take feedback from the student.
- Nurses should learn the skills of giving intramuscular injections to infants during vaccination in the sitting position.
- The nurse educator will teach the staff nurses about the effect of sitting position on reducing pain during intramuscular injections and make them practise this method in the ward and immunisation clinics.[8]

Nursing Research

- Through workshops, the study's findings can be shared with NICU nurses and student nurses.
- The study's findings will be broadly interpreted by doing more replications in a variety of contexts with a sizable population.

Conclusion

The p-value for the comparison of pain between babies in the supine and sitting positions during intramuscular injection in the current study has been shown as [p=0.000] which is less than 0.05, indicating that there is a difference in pain between the two groups, and the null hypothesis is thus rejected. It is clear that the babies' mean pain score during intramuscular injection is much lower when they are in the sitting position. Therefore, the sitting position was successful in minimising discomfort during vaccination. Additionally, it has been found that sitting down enhances emotional stability and lessens pain perception sense of security on the mothers laps familiar environment. Therefore, it can be applied in clinical settings.

Financial Support and Sponsorship- Nil.

Conflicts of Interest- There are no conflicts of interest.

References

1) https://www.news-medical.net/health/What-is-Pediatrics.aspx
2) Kristjánsdóttir Ó, Kristjánsdóttir G. Randomized clinical trial of musical distraction with and without headphones for adolescents' immunization pain. Scandinavian Journal of Caring Sciences. 2011 Mar;25(1):19-26.
3) Cohen LL, Cousins LA, Martin S. Procedural pain distraction. Oxford textbook of paediatric pain.2013:553
4) Jang, Emily; Zhimanov, Ekaterina; Parsh, Bridget EdD, RN, CNS. Minimizing immunization injection pain in children. Nursing 51(3):p 13-14, March 2021. | DOI: 10.1097/01.NURSE.0000734008.07791.
5) Florine Dayana R. Effectiveness of supine Versus sitting up position on reduction of pain perception during intramuscular immunization among infants at selected hospitals,

Marthandam (Doctoral dissertation, Sri K. Ramachandran Naidu College of Nursing, Sankarankovil).

6) Varghese SS, Kale AB. A study to assess the effectiveness of swaddling on pain among neonates undergoing heel lancing procedure in neonatal intensive care units. Amarjeet Kaur Sandhu. 2018 Oct;10(4):143
7) Lanjekar MH, Kale MA. A study to assess the effectiveness of origami therapy on anxiety towards hospitalization among children admitted in pediatric wards of selected hospitals from sangli, Miraj and Kupwad corporation area. Journal of Pharmaceutical Negative Results. 2022 Nov 5:1169-73.