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RESEARCH PAPER

# The Relationship between the Nurses' Training and Neonatal Pain Management in Jinnah Hospital, Lahore, Pakistan

**[1]Abida Aslam, [2]Zulekha Rafiq and [3]Munawrah Sultana**

1. Principal, College of Nursing, DHQ Jhelum, Punjab, Pakistan
2. Charge Nurse, Blood Bank Unit, DHQ Hospital, Bahawalnagar, Punjab, Pakistan
3. Nursing Instructor, AIMS College of Nursing, Faisalabad, Punjab, Pakistan

***Corresponding Author:** cnihfh@gmail.com

**ABSTRACT**

The objective of the study was to assess the relationship between the nurses' training and neonatal pain management. The term "neonatal period" refers to the period from birth to the first 28 days of a person's life. Pain management for newborns can help avoid both short- and long-term issues that may arise from untreated pain. A quiz-experimental study design was implemented in the Pediatrics Ward of the Jinnah Hospital, Lahore. A sample of 50 nurses was chosen by using purposive sampling with twenty-five nurses placed in the research group and twenty-five nurses in the control group. A structured research questionnaire was used to collect data. The SPSS version 26.0 was used to analyze the data. There were significant statistical changes between the pre-and post-application periods for the educational program on newborn pain management. The nurses' training program proved instrumental in improving neonatal pain management. It is also suggested that there is a need to more focus on the training of nurses.

**KEYWORDS** Neonatal, Nurses' Training, Pain Management

## Introduction

Neonates are born and spend the first twenty-eight days of their lives in the world. This is a crucial time since during this time they may experience complications including respiratory distress syndrome and hyperbilirubinemia (Wilson, 2019). Pain is invariably unpleasant and evocative. Even though a person cannot communicate their pain through speech, they may experience actual or potential tissue damage that results in pain that is unquestionably felt in a particular body area (Aydede, 2017). Neonatal who require early medical attention or who are sick are susceptible to procedural pain, which can result in frequent and severe pain experiences. Approximately fourteen painful procedures are performed on these newborns each day in hospitals (Bucsea and Riddell, 2019).

If pain is not sufficiently managed, a stressful atmosphere and a high volume of uncomfortable operations during hospital stays can result in both short- and long-term consequences. Procedural pain is still undertreated despite guidelines and evidence of discomfort in neonates. Time constraints and a lack of implementation of evidence-based knowledge are the main causes of this gap between research and practice (Balice et al., 2020).

## Literature Review

Nonetheless, there is increasing awareness of the significance of not only minimizing newborns' acute behavioral reactions to pain but also shielding the growing nervous system from long-term pain pathway sensitization and the potentially

detrimental effects of changed neural activity on the development of the central nervous system (Walker, 2014).

Increasing parental and nurse knowledge regarding the efficacy of non-pharmacologic therapies for procedural pain management in neonates is crucial, as many of these techniques were not seen as pain-relieving measures (Pölkki, 2018).

The judgments of well-managed pain among nurses were found to be substantially connected with training, the use of suitable and accurate pain tools, and clear and research-based protocols (Cong, 2013).

Nurses lack sufficient expertise in managing pain in neonates. There is a discrepancy between their mindset and behavior. Thus, educational initiatives are required to identify, evaluate, and treat neonatal discomfort (Muteteli et al., 2019).

**Material and Methods**

Using pre and post-assessments, a quasi-experimental study was carried out on a group of nurses in the ward of Pediatrics at Jinnah Teaching Hospital and used a 50-nude objective sample that was split into two groups of 25 samples. A comparison was made between the 25 nurses who participated in the educational program and the control group.

A group of eleven experts was granted validity, and they provided feedback and ideas regarding the appropriateness of the language used in each component of the study questionnaire, its correlation with the dimension of study variables assigned to it, and its appropriateness for the target demographic. Data from nurses were gathered, and five research participants who weren't in the initial sample took the test to evaluate the reliability of the questionnaire. The value of Cronbach's alpha was found to be 0.82.

The software program SPSS version 26.0 was utilized to carry out the statistical analysis. The distribution of the information is uniform. The independent sample t-test and analysis of variance (ANOVA) were utilized to look at differences in the variables depending on the demographics. For categorical variables, the data is displayed as a number (percentage), and for descriptive data, the mean standard deviation is presented. The threshold for statistical significance was set at p 0.05.

**Results and Discussion**

**Table 1**
**Background Characteristics of the Control Group**

| Age /years | Classification | Study | | Control | | *p-value* |
|---|---|---|---|---|---|---|
| | | Freq. | % | Freq. | % | |
| | 20-29 years old | 18 | 72.0 | 17 | 68.0 | *0.618* |
| | 30-39 years old | 3 | 12.0 | 3 | 12.0 | |
| | 40-49 years old | 4 | 16.0 | 4 | 16.0 | |
| | 50 and older | 0 | 0.0 | 1 | 4.0 | |
| | *Mean± SD* | *27.44 ± 7.492* | | *30.08 ± 8.592* | | |
| Gender | Male | 2 | 8.0 | 4 | 16.0 | *0.394* |
| | Female | 23 | 92.0 | 21 | 84.0 | |
| Education level | School Nursing | 21 | 84.0 | 20 | 80.0 | *0.738* |
| | Diploma in Nursing | 3 | 12.0 | 4 | 16.0 | |
| | Bachelor in Nursing | 1 | 4.0 | 1 | 4.0 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Years of experience | <5 years | 17 | 68.0 | 14 | 56.0 | *0.705* |
| | 5-10 years | 2 | 8.0 | 10 | 40.0 | |
| | >10 years | 6 | 24.0 | 1 | 4.0 | |
| Training sessions | No | 19 | 76.0 | 18 | 72.0 | *0.753* |
| | Yes | 6 | 24.0 | 7 | 28.0 | |

The results indicate that the average age of the study group's nurses is 27, with the age group's largest percentage of nurses (n=18; 72%) being between the ages of 20 and 29. Although the average age of the nurses in the control group is 30, the largest number of the nurses (n=17; 68% of the total) were found to be between the ages of 20 and 29. In terms of gender, the majority of nurses in the study group (n = 23; 92%) and control group (n = 21; 84%) were female. Regarding schooling, study participants in the control group (n = 20; 80%) and study group (n = 21; 84%) indicated that they were school nurses. According to years of experience-related findings, the study and control groups' nurses (n = 17; 68%) and (n = 14; 56%), respectively, had less than five years of experience. Regarding training sessions, the study group's nurses (n = 19; 76%) and the control group's nurses (n = 18; 72%) show no participation. The sample characteristics did not change significantly between the two groups (p>0.05).

**Table 2**
**Independent Sample t-test between the Study and Control Group responses at pre-post-test Knowledge related to Neonatal Pain Management**

| | Weighted | Mean | S.D | t-value | d.f | p≤ 0.05 | Sig |
|---|---|---|---|---|---|---|---|
| Pre-test Knowledge | Study | 1.09 | 0.915 | 0.322 | 48 | *0.749* | *NS* |
| | Control | 1.17 | 0.867 | | | | |
| Post-test Knowledge | Study | 2.75 | 0.656 | 6.571 | 48 | *0.000* | *HS* |
| | Control | 1.27 | 0.917 | | | | |

M: Mean, SD: Standard deviation, t: t-test, d.f: Degree of freedom, Sig: Significance, p: Probability value, HS: NS: No significant, Highly significant

This table demonstrates that, during the pre-test measurement period (p=0.749), there is no statistically significant difference between the study (M ± SD= 1.09±0.915) and control (M ± SD= 1.17±0.867) groups. At the post-test measurement period, there is a substantial statistical difference (p=0.000) between the study (M ± SD= 2.75±0.656) and control (M ± SD= 1.27±0.917) groups. When compared to the control group, the study group's replies showed improvement following the implementation of the program, as indicated by the statistical mean of the research data.

**Table 3**
**Significant Differences in Knowledge and Nurses Age (n=25)**

| Age | Source of Variance | Sum of Squares | d.f | Mean Square | F | *p≤ 0.05* |
|---|---|---|---|---|---|---|
| Pre-test knowledge | Between Groups | .754 | 2 | .377 | .428 | .657 No-sig. |
| | Within Groups | 19.377 | 22 | .881 | | |
| | Total | 20.132 | 24 | | | |
| Post-test knowledge | Between Groups | 1.406 | 2 | .703 | 1.732 | .200 No-sig. |
| | Within Groups | 8.927 | 22 | .406 | | |
| | Total | 10.333 | 24 | | | |

The results showed that, following the education program, there were no significant changes in nurses' knowledge of neonatal pain management between age groups at the pre-test (p=0.657) and post-test (p=0.200).

**Table 4**

**Significant Differences in Knowledge and Nurses Gender (n=25)**

| | Gender | Mean | S.D | t-value | d.f | *p≤ 0.05* | Sig |
|---|---|---|---|---|---|---|---|
| Pre-test knowledge | Male | .514 | 0.606 | 0.932 | 23 | *0.361* | No-sig. |
| | Female | 1.14 | 0.930 | | | | |
| Post-test knowledge | Male | 2.54 | 0.888 | 0.465 | 23 | *0.646* | No-sig. |
| | Female | 2.77 | 0.655 | | | | |

Results showed that, about male and female nurses, there were no statistically significant differences in nurses' knowledge of neonatal pain treatment at two points in time: the pre-test (p=0.361) and the post-test (p=0.646) following the education program.

**Table 5**
**Significant Differences in Knowledge and Nurses Education Level (n=25)**

| Education level | Source of variance | Sum of Squares | d.f | Mean Square | F | *p≤ 0.05* |
|---|---|---|---|---|---|---|
| Pre-test knowledge | Between Groups | 3.339 | 2 | 1.669 | 2.187 | .136 No-sig. |
| | Within Groups | 16.793 | 22 | .763 | | |
| | Total | 20.132 | 24 | | | |
| Post-test knowledge | Between Groups | .018 | 2 | .009 | .020 | .981 No-sig. |
| | Within Groups | 10.314 | 22 | .469 | | |
| | Total | 10.333 | 24 | | | |

The results showed that, following the implementation of the education program, there were no significant variations in nurses' knowledge of neonatal pain management with relation to education level at the pre-test (p=0.136) and post-test (p=0.981).

**Table 6**
**Significant Differences in Knowledge and Nurses Years of Experience (n=25)**

| Experience | Source of variance | Sum of Squares | d.f | Mean Square | F | *p≤ 0.05* |
|---|---|---|---|---|---|---|
| Pre-test knowledge | Between Groups | .250 | 2 | .125 | .138 | .872 No-sig. |
| | Within Groups | 19.882 | 22 | .904 | | |
| | Total | 20.132 | 24 | | | |
| Post-test knowledge | Between Groups | .356 | 2 | .178 | .392 | .680 No-sig. |
| | Within Groups | 9.977 | 22 | .453 | | |
| | Total | 10.333 | 24 | | | |

The results showed that, following the completion of the education program, there were no significant variations in nurses' knowledge regarding neonatal pain treatment according to years of experience at the pre-test (p=0.872) and post-test (p=0.680).

**Table 7**
**Significant Differences in Knowledge and Nurses Training Courses (n=25)**

| Training courses | Source of variance | Sum of Squares | d.f | Mean Square | F | *p≤ 0.05* |
|---|---|---|---|---|---|---|
| Pre-test knowledge | Between Groups | .086 | 1 | .086 | .099 | .756 No-sig. |
| | Within Groups | 20.046 | 23 | .872 | | |
| | Total | 20.132 | 24 | | | |
| Post-test knowledge | Between Groups | .018 | 1 | .018 | .041 | .841 No-sig. |
| | Within Groups | 10.314 | 23 | .448 | | |
| | Total | 10.333 | 24 | | | |

The results showed that, following the implementation of the education program, there were no significant variations in nurses' knowledge of training related to neonatal pain treatment at the pre-test (p=0.756) and post-test (p=0.841).

**Discussion**

The results indicate that the average age of the study group's nurses is 27, with the age group's largest percentage of nurses (n=18; 72%) being between the ages of 20 and 29. Although the average age of the nurses in the control group is 30, the largest number of the nurses (n=17; 68% of the total) were found to be between the ages of 20 and 29. In terms of gender, the majority of nurses in the study group (n = 23; 92%) and control group (n = 21; 84%) were female. Regarding schooling, study participants in the control group (n = 20; 80%) and study group (n = 21; 84%) indicated that they were school nurses. According to years of experience-related findings, the study and control groups' nurses (n = 17; 68%) and (n = 14; 56%), respectively, had less than five years of experience. Regarding training sessions, the study group's nurses (n = 19; 76%) and the control group's nurses (n = 18; 72%) show no participation. The sample characteristics did not change significantly between the two groups ($p>0.05$).

This table demonstrates that, during the pre-test measurement period ($p=0.749$), there is no statistically significant difference between the study (M ± SD= 1.09±0.915) and control (M ± SD= 1.17±0.867) groups. At the post-test measurement period, there is a substantial statistical difference ($p=0.000$) between the study (M ± SD= 2.75±0.656) and control (M ± SD= 1.27±0.917) groups. When compared to the control group, the study group's replies showed improvement following the implementation of the program, as indicated by the statistical mean of the research data.

The results showed that, following the implementation of education, there were no statistically significant variations in nurses' knowledge of neonatal pain management based on participant demographics at the pre-and post-test. These results are in line with those of Abd El-Aziz et al. (2018).

According to Mohamed et al. (2019), this result is similar to that of a study carried out at Minia University for Obstetric and Pediatric and General Hospitals at the neonatal care units, as well as a study conducted in Port Said (El-husseiny et al., 2019). This could be because training could broaden their understanding of newborn pain treatment and enhance their perception of its advantages.

These findings of demographic data and nurses' knowledge are in line with Sujatha et al. (2015), which showed that the Pre-test and Post-test knowledge scores found statistically significant 't' = 1.671, $p<0.05$. It reveals the effectiveness of a structured teaching program. The study also shows that there is no significant association between the knowledge scores of the staff nurses with the selected demographic variables like age, gender, educational qualification, total clinical experience, and previous knowledge regarding Neonatal pain management.

The results of the Hoda (2020) study, "Effect of Educational Program on Nurses' Knowledge and Practices Regarding Preterm Infants' Pain Response and Nonpharmacological Strategies," support the findings. It shows that, following program implementation, there was a statistically significant difference between nurses' years of experience and total knowledge score, but not between nurses' age and total knowledge score.

The study's findings are also in line with those of El Awady and Gharib (2021), who reported in Enhancing Pediatric Nurses' Performance Regarding Selected Non-Pharmacological Techniques to Alleviate Pain in Neonates: An Educational Program that there was no statistically significant difference in Nurses' knowledge scores after

applying the program based on age, years of experience, or training courses. Therefore, organizational considerations are quite important when developing healthcare services for newborns, especially when it comes to pain management. All staff members who work with newborns must receive the required training (Azza et al., 2020).

## Conclusion

The study found that after implementing the training program, nurses' understanding of how to manage a newborn's pain had significantly improved. Additionally, there are no statistically significant variations between the program's effectiveness and the demographics of the nurses. To encourage nurses to participate, the Ministry of Health should modify the nursing care training about neonatal pain management and guide the health department. Encouraging nurses to sign up for training courses to broaden their expertise and stay current with information regarding the management of pain in neonates.

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