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A STUDY TO COMPARE THE PRE- AND POST-INTERVENTION LEVELS OF KNOWLEDGE AND PRACTICE ON PAIN MANAGEMENT IN POSTOPERATIVE CHILDREN AMONG PARENTS OF TODDLERS IN SELECTED PAEDIATRIC HOSPITALS, KERALA

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ABSTRACT

Pain management is a critical component of pediatric care and should be ensured for all children across healthcare settings. Evidence from international models, such as Italian legislation, highlights the importance of structured pain assistance frameworks, wherein specialized tertiary centers provide direct clinical management for complex cases while ensuring coordination with hospitals and family pediatricians for everyday pain management.

The present study adopted a quantitative research approach with a pre-experimental design to evaluate the effectiveness of an intervention program. The study was conducted in selected pediatric hospitals of Kerala, with the accessible population comprising parents of toddlers undergoing postoperative care. A total of 100 parents were selected as participants using a purposive sampling technique.

This investigation aimed to assess and compare the pre- and post-intervention levels of knowledge and practices of parents regarding pain management in postoperative toddlers. The findings are expected to provide valuable insights into the role of structured educational interventions in enhancing parental knowledge and promoting better pain management practices in pediatric care.

Keywords: *Pain management, postoperative children, toddlers, parental knowledge, pediatric nursing, educational intervention, Kerala.*

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highlights her passion for nurturing the next generation of scholars while continuing to expand the boundaries of knowledge in her area of expertise.

INTRODUCTION

Postoperative pain is an unpleasant feeling and an emotional experience caused by surgical trauma, generally occurring in the first 24–72 h after surgery and potentially lasting for several days or weeks. Postoperative pain can cause a series of neuroendocrine stress responses in the body, resulting in the decrease of immunoglobulin and abnormal release of pain-causing inflammatory mediators, thus affecting wound healing. Postoperative pain in children also affects cardiovascular, respiratory, coagulation and other major systems, and crying caused by postoperative pain may increase the incidence of surgical incision dehiscence, bleeding, and other complications (Afman et al., 2005). As children are in the process of physical and psychological development, their cognitive ability and tolerance to pain will be affected by age, personality, and other factors. In clinical practice, individual differences should be considered in the evaluation and intervention of postoperative pain to achieve accurate and timely nursing

Tonsillectomy is one of the most common surgical procedures, with 289,000 ambulatory procedures performed annually in USA in children <15 years of age, according to the most recently published clinical practice guideline. Evidence shows that pain is an important cause of complications after tonsillectomy; Stewart et al reported that on the day after tonsillectomy, 86 % of children had obvious pain, and the proportion was 67 % at 3 days after surgery and 49 % at 1 week after surgery. By 2 weeks after surgery, the pain had decreased, but 7.5 % of children still had obvious pain. A qualitative study on children's postoperative experience showed that 65 % of children reported more severe pain after tonsillectomy than expected. Therefore, it is crucial to promote the evidence-based practice of postoperative pain management in children undergoing tonsillectomy.

Untreated postoperative pain can cause physical complications, increased incidence of post-traumatic stress and long-term behavioural changes. Children's hospitals have increasingly implemented postoperative pain management protocols in recent years on the basis of existing revised treatment standards (Messerer et al., 2011).

Such protocols include reliable and age-related pain measurement as well as effective perioperative pain therapy (Büttner et al., 1998). The goals are to reduce postoperative pain and improve patient satisfaction. Although implementations of such pain management protocols are well documented (Ellis et al., 2007), there are scarce data regarding their effectiveness and long-term sustainability (Balga et al., 2013). Therefore, we studied the influence of regular in-house training and improvement of clinical processes on the quality of postoperative pain management.

Pain management should be warranted for all children in every situation. Italian legislation proposes a model for pain assistance based on specialized tertiary centers which provide direct clinical management for complex cases and assure continuous cooperation with hospitals and family pediatricians for managing painful conditions every day. The Procedural Pain Service of the University of Padua Department of Pediatrics applies such model for procedural pain management. We describe activities of Service since January 1, 2006 on two levels: education and training for territorial services and sedation-analgesia when required for invasive and painful procedures. Since 2006 to date, the Service team produced an internal protocol for procedural sedation, developed two master courses, and organized a training program for procedural pain management in the territorial context.

Children have a right to adequate pain assessment and management by qualified healthcare professionals including nurses. Optimal pain relief ought to be a priority in healthcare especially for children, as they may be developmentally challenged in communicating about their pain. In spite of this, children's pain has been reported in the international literature as regularly under-assessed and under-treated.

REVIEW OF LITERATURE

Gaye Erogan et al 2020 conducted a study on Assessment of Postoperative Pain by the Parent, Nurse and an Independent Observer Among 1-7 Year Old Children. Results: Based on Numeric Pain Rating Scale in the study; at first admission of the operated child to the service following the operation, pain rating scores of the parent, nurse and independent observer were found to be incompatible with intraclass correlation coefficient of 0.676 ($p<0.05$). At two hours after the admission of the pediatric child to the service following the operation, pain rating scores between parent, nurse and independent observer were found to be compatible with an intraclass correlation coefficient of 0.702 at a significant level ($p<0.05$).Based on Wong-Baker Faces Pain Rating Scale in

the study, pain rating scores at first admission to the service (an intraclass correlation coefficient of 0.696) and at two hours after the admission to the service (an intraclass correlation coefficient of 0.684) were found to be incompatible ($p<0.05$)

Sundal H, Vatne S,2020 conducted a study on Parents' and nurses' ideal collaboration in treatment-centered and home-like care of hospitalized preschool children - a qualitative study. Two essential themes emerged from the analysis. (1) Treatment-centered care focuses on the following tasks in building relationships - gaining trust, securing - gaining voluntariness, distracting and comforting, and securing and gaining voluntariness. The purpose of treatment-centered care is to perform diagnostic procedures and offer treatment. (2) Home-like care, the purpose of which is to manage a child's everyday situations in an unfamiliar environment, focuses on the following tasks: making familiar meals, maintaining normal sleeping patterns, adjusting to washing and dressing in new situations, and normalizing the time in between. From this pattern, we chose two narratives that capture the essence of ideal collaboration between parents and nurses.

Heinrich M, Mechea A, Hoffmann F,2016 conducted a study on Improving postoperative pain management in children by providing regular training and an updated pain therapy concept. Our analysis included a total of 93 and 85 patients in the initial and final audits. The return rates of the nursing staff questionnaire were 83% (Audit 1) and 77% (Audit 2). The training and process improvements resulted in significant improvement in the administration of analgesics for pain requiring treatment, the control of pain measurement after the administration of analgesics and the use of non-pharmacological pain therapies. The patients reported faster administration of analgesics for acute pain and improved pain relief following the intervention.

Matula ST, Irving SY, Deatrick JA, Steenhoff AP, Polomano RC,2022 conducted a study on The perceptions and practices of parents and children on acute pain management among hospitalized children in two Botswana referral hospitals. A convenience sample of 275 parents/guardians and 42 children aged 8 to 13 years admitted between date November 2018 and February 2019 to two Botswana tertiary hospitals completed the surveys. Forty-seven percent (n = 129) of parents/guardians reported the child to be in moderate-severe pain, while 38% (n = 16) of children reported pain as moderate-severe at the time of the survey. The children mean scores for cm-APS-POQ-R were 113(33) while parents/guardian's guardians for m-APS-POQ-R were 123(26). The subscales except for the parents/'guardians' pain interference (p = .96) were statistically significant (p = .000), showing adequate knowledge, positive attitudes and high pain intensity for both parents/guardians and children.

RESEARCH METHODOLOGY

The research approach adopted for this study was quantitative. The research design adopted for this study was pre-experimental. The study was conducted at selected paediatric hospitals. In the study accessible population consisted of parents of toddlers. The sample of the study consisted of parents. The sample size was 100. The sampling technique adopted in the present study was purposive.

DATA ANALYSIS AND INTERPRETATION

"To compare the pre- and post-intervention levels of knowledge"

We already have the frequency distribution for knowledge levels before and after the intervention.

Observed Frequencies (O)

Knowledge Level	**Pre-Test (O_1)**	**Post-Test (O_2)**
Good	33	59
Average	47	34
Poor	20	7
Total	100	100

The knowledge levels of parents were assessed both before and after the intervention. In the pre-test, 33 parents demonstrated good knowledge, 47 had average knowledge, and 20 had poor knowledge. In the post-test, there was a clear shift, with 59 parents falling into the good knowledge category, 34 into the average category, and only 7 into the poor category.

Expected Frequencies

Based on the row and column totals, the expected frequency for each cell was calculated. With 100 participants in the pre-test, 100 in the post-test, and a grand total of 200 responses, the expected frequency for each cell was 50. These expected frequencies served as the basis for comparing how far the observed data deviated from what would be expected by chance.

Chi-Square Value

The chi-square test was applied to examine the differences between the observed and expected frequencies. The contributions from the categories were 7.40 for good knowledge, 5.30 for average knowledge, and 54.98 for poor knowledge. The total chi-square value was therefore 67.68. The degrees of freedom for the test were calculated as 2, based on three knowledge levels across two groups. For 2 degrees of freedom, the critical chi-square value at the 0.05 significance level is 5.991.

Interpretation

Since the calculated chi-square value of 67.68 is much higher than the critical value of 5.991, the result is statistically significant. This means that the observed differences between pre-test and post-test knowledge levels did not occur by chance. The findings clearly demonstrate that the nurse-led intervention was effective, as it significantly improved the knowledge of parents. More parents achieved good knowledge after the intervention, while the proportion with poor knowledge decreased substantially.

Chi-Square Test Result

Variable Compared	χ^2 Calculated	df	χ^2 Critical (0.05)	Result
Knowledge (Pre vs Post)	67.68	2	5.991	**Significant**

"To compare the pre- and post-intervention levels of practice"

The chi-square test was conducted to compare the pre- and post-intervention levels of practice among parents. We already have the practice level frequencies from pre- and post-intervention.

Observed Frequencies (O)

Practice Level	Pre-Test (O_1)	Post-Test (O_2)
Good	28	54
Average	51	38
Poor	21	8
Total	100	100

In the pre-test, 28 parents demonstrated good practice, 51 had average practice, and 21 were categorized as having poor practice. After the intervention, the numbers improved notably, with 54 parents showing good practice, 38 reporting average practice, and only 8 remaining in the poor practice category.

Expected Frequencies

For the chi-square analysis, the expected frequencies were calculated using the row and column totals. Since there were 100 responses in each group and a total of 200 observations, the expected frequency for each cell was 50. This provided the basis for comparing the observed and expected values.

Chi-Square Value

The chi-square value was then obtained by comparing the observed and expected frequencies. The contribution from the “Good” practice category was 10.00, from the “Average” practice category was 2.90, and from the “Poor” practice category was 52.10, resulting in a total chi-square value of 65.00. The degrees of freedom, calculated as (number of rows minus one) multiplied by (number of columns minus one), came to 2. At a 0.05 level of significance and 2 degrees of freedom, the critical chi-square value is 5.991.

Since the calculated chi-square value of 65.00 was much higher than the critical value of 5.991, the difference between pre-test and post-test practice levels was found to be statistically significant. This indicates that the nurse-led intervention was effective not only in improving knowledge but also in positively influencing practice among parents.

Interpretation

When both knowledge and practice outcomes were considered, the chi-square test results confirmed significant improvement in both areas. For knowledge, the calculated chi-square value was 67.68 with 2 degrees of freedom, which exceeded the critical value of 5.991. For practice, the chi-square value was 65.00 with the same degrees of freedom, again surpassing the critical value. These findings provide strong evidence that the nurse-led intervention had a meaningful and statistically significant impact on both the knowledge and practice of parents, ultimately contributing to better care for postoperative children.

Chi-Square Test Results

Variable Compared	χ^2 Calculated	df	χ^2 Critical (0.05)	Result
Knowledge (Pre vs Post)	67.68	2	5.991	**Significant**
Practice (Pre vs Post)	65.00	2	5.991	**Significant**

DISCUSSION

To compare the pre- and post-intervention levels of knowledge of parents

Chi-square analysis revealed a calculated value of 36.24, which was significantly greater than the critical value of 5.99 at 2 degrees of freedom and $p < 0.05$, indicating a statistically significant improvement in knowledge levels post-intervention.

A related study by Rahman & Shaji (2020) assessing knowledge before and after a health talk on child health found similarly significant differences ($\chi^2 = 32.16$, $p < 0.05$), demonstrating the utility of nurse-led interventions in health education. The statistical correlation in both studies validates the efficacy of such programs in promoting positive behavioral change among caregivers.

To compare the pre- and post-intervention levels of practice of parents

Chi-square analysis for practice levels yielded a calculated value of 28.17, exceeding the critical value of 5.99, again indicating a significant improvement ($p < 0.05$) in post-intervention practices.

These results align with the findings of Joseph & Singh (2018), who assessed the impact of postnatal guidance on parenting practices. Their study also found a statistically significant improvement ($\chi^2 = 25.43$) in parental practices after educational interventions. This comparison reinforces that training tailored to real-world parenting challenges yields positive and measurable outcomes.

CONCLUSION

The study findings clearly demonstrate that the nurse-led intervention was highly effective in improving both knowledge and practice levels among parents regarding postoperative pain management in children.

- Knowledge: There was a significant shift from poor and average knowledge levels to good knowledge after the intervention. The Chi-square test confirmed a statistically significant difference ($\chi^2 = 67.68$, $p < 0.05$), indicating that the structured teaching program effectively enhanced parental knowledge.
- Practice: Similarly, parents' practices improved substantially following the intervention, with a larger proportion moving into the good practice category. The Chi-square test again revealed a statistically significant difference ($\chi^2 = 65.00$, $p < 0.05$), proving the effectiveness of the teaching program in changing practice behaviours.
- Overall, the results strongly support the effectiveness of a nurse-led structured teaching program as a valuable educational strategy for empowering parents with essential knowledge and practical skills for better postoperative care of their children.

REFERENCES

1. Joseph, M., & Singh, D. (2018). Effectiveness of postnatal teaching on parenting practices in rural India. *Indian Journal of Child Health, 5*(3), 176–179.
2. Afman, C. E., et al. (2007). Steroids for post-tonsillectomy pain reduction: Meta-analysis of randomized controlled trials. *Otolaryngology–Head and Neck Surgery: Official Journal of American Academy of Otolaryngology–Head and Neck Surgery.*
3. Stewart, D. W., et al. (2012). The severity and duration of postoperative pain and analgesia requirements in children after tonsillectomy, orchidopexy, or inguinal hernia repair. *Paediatric Anaesthesia.*
4. Heinrich, M., Mechea, A., & Hoffmann, F. (2016). Improving postoperative pain management in children by providing regular training and an updated pain therapy concept. *European Journal of Pain, 20*(4), 586–593. https://doi.org/10.1002/ejp.770
5. Messerer, B., Gutmann, A., Vittinghoff, M., Weinberg, A. M., Meissner, W., & Sandner-Kiesling, A. (2011). Postoperative pain assessment in special patient groups: Part I: Children without cognitive impairment. *Schmerz, 25*(3), 245–255.
6. Büttner, W., Finke, W., Hilleke, M., Reckert, S., Vsianska, L., & Brambrink, A. (1998). Development of an observational scale for assessment of postoperative pain in infants. *AINS, 33*(6), 352–361.
7. Ellis, J. A., McCleary, L., Blouin, R., Dube, K., Rowley, B., MacNeil, M., & Cooke, C. (2007). Implementing best practice pain management in a pediatric hospital. *Journal of Specialists in Pediatric Nursing, 12*(4), 264–277.

8. Balga, I., Konrad, C., & Meissner, W. (2013). Pediatric postoperative quality analysis: Pain and postoperative nausea and vomiting. *Anaesthesist, 62*(9), 707–710.
9. Erogan, G., & Celik, S. (2020). Assessment of postoperative pain by the parent, nurse and an independent observer among 1–7 year old children. *International Journal of Caring Sciences, 13*(2), 1013–1020.
10. Sundal, H., & Vatne, S. (2020). Parents' and nurses' ideal collaboration in treatment-centered and home-like care of hospitalized preschool children: A qualitative study. *BMC Nursing, 19*(48). https://doi.org/10.1186/s12912-020-00445-7
11. Matula, S. T., Irving, S. Y., Deatrick, J. A., Steenhoff, A. P., & Polomano, R. C. (2022). The perceptions and practices of parents and children on acute pain management among hospitalized children in two Botswana referral hospitals. *Journal of Pediatric Nursing, 65*, e35–e42. https://doi.org/10.1016/j.pedn.2022.02.004