# Knowledge and attitudes toward pediatric pain management among nursing interns

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**Abstract**

***Introduction*:** Pediatric pain is often not addressed properly in the literature. This suggests a research gap in health care providers' knowledge of and attitudes toward the treatment of pain experienced by children in various healthcare settings. Hence, to improve future practice in this area, nursing interns should be well versed in pediatric pain assessment and management. This issue must be addressed to improve pediatric pain management practices in collaboration with other healthcare professionals.

***Purpose*:** This study aimed to assess the levels of knowledge and attitudes toward pediatric pain management among nursing interns at a specific academic institution.

***Methods*:** This descriptive, cross-sectional quantitative study employed an online questionnaire to collect data from 119 female nursing interns in Riyadh, Saudi Arabia. In addition to collecting the participants' demographic profiles, the questionnaire gathered data using the Pediatric Nurses' Knowledge and Attitudes Survey Regarding Pain (PNKAS) instrument.

***Results*:** The overall knowledge of and attitudes toward pediatric pain management among the nursing interns were found to be poor, with a mean score of 36.59% (SD 13.2).

***Conclusion*:** Additional education and clinical training for nursing interns is essential to enhance their knowledge of and attitudes toward pediatric pain management.

**Keywords:** knowledge, attitudes, pediatric pain management, nursing interns, nursing college.

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# Introduction

Pain, as one of the key symptoms of many health conditions, can be experienced for a variety of etiological reasons. It negatively affects a person's social life, physical and mental health, and overall quality of life and is a considerable source of distress for children and their families as well as for healthcare workers. Surgery, trauma, acute and chronic illnesses, and medical or surgical treatments can all cause pain. Increased oxygen consumption and changes in blood glucose metabolism are only a few of the major physical and emotional repercussions of pain. Although pain affects individuals of all ages, it can have long-term physiological, psychosocial, and behavioral effects on children if untreated. [1]

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Dezfouli and Khosravi (2020)[2] observed that it can be difficult to administer pain medication to children due to the possible adverse effects of opioids. However, a variety of pharmacologic and non-pharmacologic pain management options are available for children experiencing acute and chronic pain. For example, nociceptive and neuropathic pain can be targeted by opioids and opioid-sparing medicines. Thus, early use of a combination of pharmacological and integrative non-pharmacological pain management options is crucial in the treatment of pediatric pain.

Nurses are in a unique position to effectively diagnose and manage pediatric pain because they constitute the majority of health care workers and spend the most time interacting with children and their families during hospitalization.[3] However, unresolved pediatric pain remains an issue due to a lack of information and prevailing attitudes toward its management among most healthcare professionals, including nurses. Therefore, nurses and other healthcare workers must have sufficient information and positive attitudes to enhance the assessment and management of pediatric pain. As core members of healthcare teams, nurses play a vital role in the assessment and management of pain.

Mediani et al (2020) [4] found that undergraduate nursing students have insufficient knowledge about and poor attitudes toward pain assessment and treatment in children. This influences their provision of nursing care. In providing improved pain management outcomes for their pediatric patients, nurses should ideally become change agents in their hospitals. If nursing students are not well versed in pediatric pain and its management, they will not be able to appropriately relieve the pain experienced by their patients. Thus, nursing students should have adequate knowledge about pain assessment and management in pediatric patients and should also improve their pain management practices by collaborating with other healthcare professionals. Furthermore, nursing students must understand how to apply their knowledge and attitudes toward pain management in a clinical setting while obtaining their bachelor's degree programs. Pediatric patients experiencing pain will suffer if nursing students lack the necessary information and training to adequately assess and manage pediatric pain. Therefore, nursing students must gain a thorough understanding of pain and how to manage it while completing their undergraduate nursing programs.

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### *Purpose*

The purpose of this study was to assess the levels of nursing interns' knowledge about and attitudes toward pediatric pain management at a specific academic institution.

### *Research questions*

This study explored the following two research questions:

(1) What are the nursing interns' demographic profiles in terms of age, marital status, grade point average (GPA), training hospital, and area of training?

(2) What are the current attitudes and levels of knowledge regarding pediatric pain management among the nursing interns?

## Materials and methods

This study adopted a descriptive cross-sectional quantitative design to assess the knowledge and attitudes regarding pediatric pain management among female nursing interns at a specific academic institution. The study population comprised 171 nursing interns who were placed in eight hospitals in the Riyadh region of Saudi Arabia. Using an estimated proportional impact calculation app, a minimum sample size of 119 was deemed necessary to have a 95% confidence and a 5% margin of error (MOE) to ensure that the true proportion in the entire population fell within the established interval calculated from the sample. The following EPI app formula was used to calculate the sample size: $n = N \times X / (X + N - 1)$, where N is the population size (171), and when confidence is 95%, $X = (1.96)^2 \times p \times (1 - p) / MOE^2$ (MOE = .05 in this case; for the purposes of the sample calculation, the sample proportion, p, was set to .5).

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### *Instrument*

The demographic information of the nursing interns, such as age, marital status, GPA, and the name of the training hospital, was collected. After reviewing the literature, the Pediatric Nurses' Knowledge

and Attitudes Survey Regarding Pain (PNKAS) [5] was selected. The instrument was found to be reliable among nurses and nursing students.

Permission to use the (PNKAS) to measure the nursing interns' knowledge and attitudes on pain assessment and its management was obtained from the copyright holders. [5]

This instrument includes 22 true-or-false questions, 16 multiple-choice questions, and two case studies, which are explored in four multiple-choice questions. The PNKAS took approximately 30–40 minutes to complete. Correctly answering a question was scored as 1 point, whereas an incorrectly answered question was scored as 0 points. Hence, the range of scores for the 42-item PNKAS was 0–42. The total scores were converted into percentages for each participant using the following formula: total percentage score = (total score obtained / 42) × 100.

Manworren (2000) [5] examined the reliability and validity of the PNKAS instrument, and its face and content validity were determined using a panel of five nursing specialists in pain management. The test–retest reliability correlation coefficient was .67 among six nurses and six child life specialists, indicating a high level of instrument stability. The Cronbach's $\alpha$ for the instrument was calculated using data from two different groups of pediatric nurses and varied from .72 to .77, indicating that the instrument's level of internal consistency was satisfactory. Eight pediatric experts (seven registered nurses and one pediatrician) confirmed the instrument's face validity.

## *Data collection*

The data were collected from February to March 2022 using a Google Forms questionnaire that was distributed to nursing interns at an academic institution in Riyadh.

## *Statistical analysis*

The data were coded and analyzed using the Statistical Package for the Social Sciences (SPSS) for Windows V.21.0 (IBM, Armonk, NY). Tables and a bar chart were developed to organize the data collected from each question. The descriptive statistics of frequency, percentage, mean, and standard deviation were presented, and the r value was used as a measure of association. Frequency and

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percentage distributions were used to summarize and organize the respondents' demographic profiles, academic performance, area of work, and levels of knowledge and attitudes toward pediatric pain management.

### *Ethical considerations*

Institutional review board approval was obtained from an academic institution in Riyadh, Saudi Arabia (approval number: 22-0110). Data confidentiality and privacy were guaranteed. The participants' informed consent was obtained before data collection began.

## Results

Of the 119 nursing interns who participated in the survey, the majority (91.6%) were aged 21–23 years, followed by 24–25 years (8.6%) and 18–20 years (1.7%). Almost all the participants (91.6%) were single; only 8.4% were married. The largest proportion of participants (69.7%) had a GPA in the range of 3.75–4.49, followed by 24.4% with a GPA of 4.50–5.00, and 5% with a GPA of 2.75–3.74. Only 0.8% had a GPA of 2.00–2.74. Approximately 19.3% of the respondents were assigned as interns in pediatric units, while the majority (80.7%) were assigned as interns in various non-pediatric areas (Table 1).

### *Knowledge and attitudes toward pediatric pain management*

Table 2 shows the results for the levels of knowledge and attitudes regarding pediatric pain management among the nursing students. Among all the students who participated in the survey, only 2.5% had a good level (75–100) of knowledge and positive attitudes toward pediatric pain management, while the majority (86.5%) had poor levels (≤50) and 10.9% had average levels (51–74).

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Figure 1 depicts the distribution of the levels of knowledge and attitudes toward pediatric pain management. The data were not normally distributed but skewed to the right (toward the lower end

of the scale), with a high percentage of students with poor levels of knowledge and attitudes toward pediatric pain management, while the percentage of students with good scores was extremely small.

The top 10 questions from both the true/false and multiple-choice sections of the questionnaire that were correctly answered by the nursing interns were selected and analyzed to determine the areas that were best understood by the participants (Table 3). These items are presented with the highest to lowest frequency of correct answers, ranging from 80.7% to 53.8% of the respondents.

The top 10 items from the true/false and multiple-choice questions on pediatric pain management that were most frequently answered incorrectly by the nursing interns were selected to determine the aspects of pain management for which their knowledge was most lacking (Table 4). These items are presented in the order of the frequency of incorrect answers, ranging from 91% to 68.9% of respondents who answered incorrectly.

# Discussion

The present study aimed to assess nursing interns' levels of knowledge and attitudes toward pediatric pain management at an academic institution. All participants were female nursing interns, unlike other studies by Al Omari (2016) [6] and Alotaibi (2019) [3]. To the best of our knowledge, our study is the first to include female nursing interns from an academic institution in Riyadh, Saudi Arabia.

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The current study revealed that the overall knowledge and attitudes with respect to pediatric pain management among nursing interns were poor, with a mean score of 36.59 (SD 13.02). Shdaifat, Al-Shdayfat, and Sudqi (2020) [7] used the same instrument among nursing students and recorded higher scores on average (mean 42.6, SD 9.1).

This finding is congruent with previous studies. [1,4,6-11] An exception was a study by Aydın and Bektaş (2020) [12] among nursing interns in which a pain management knowledge questionnaire was used, showing a moderate level of knowledge.

A recent study in Saudi Arabia [3] also had similar results. Based on the findings of this study and others, nursing students currently appear to be insufficiently prepared for pediatric pain

management. Moreover, less time spent with children in the clinical field and the limited opportunities provided were reasons suggested for this study's results.

The most correctly answered items in this study were similar to those obtained by Kusi et al (2020)[9], Gadallah, Hassan, and Shargawy (2017)[1], Alotaibi (2019)[3], and Shdaifat, Al-Shdayfat, and Sudqi (2020)[7]. The items with correct responses on pain assessment and individualized pain experience and its treatment may be due to the simplicity of the questions. This made them more comprehensible to the nursing interns.

Insufficient knowledge of pain assessment was evident in the incorrect responses. More than two-thirds of the nursing interns' responses were incorrect for the item about changes in vital signs as an indicator of severe pain. The nursing interns did not understand that vital sign change is a physiological response to pain in children. This was also evident in studies by Chiang etal. (2006)[13], Al Omari (2016)[6], and Gadallah, Hassan, and Shargawy (2017)[1]. This finding indicates that nursing students must be taught pediatric pain assessment.

The results of the present study imply that nursing interns' responses regarding pharmacological management were mostly incorrect. For example, most of the study participants showed extremely poor knowledge of the route of administration of opioid analgesics and pharmacological items related to the two case studies. This result echoes the studies of Chow and Chan (2015)[13], Al Omari (2016)[6], and Alotaibi (2019)[3], which showed similar percentages of responses.

It was also evident from this study that the nursing interns exhibited poor knowledge about non-pharmacological approaches to pediatric pain management, represented by incorrect responses to items 7 and 25. Similarly, Mediani et al (2020)[4] and Chiang et al. (2006)[13] found that a considerable number of nursing students provided incorrect responses in this area.

The current study indicated no significant differences in the nursing interns' knowledge and attitude scores with regard to their demographic data. While this is similar to the findings of Karaman et al., (2018)[14], it contradicts a study by Alotaibi (2019)[3] conducted in Saudi Arabia that found that

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nursing students' scores had substantial differences due to gender, age, clinical experience, and qualification.

For several of these results, there may be a number of factors that explain the nursing interns' or students' poor knowledge and attitudes toward pediatric pain assessment and its management. For example, the curriculum may lack conceptual content on the assessment and management of children's pain, and nursing students may be provided with less clinical exposure in the care of children.

### *Limitations*

One of this study's limitations is that the results cannot be applied to the entire population due to the small sample size. In terms of the clinical area of assignment/training in the hospital, most of the nursing interns in this study were assigned to non-pediatric areas, with only a few working in pediatric areas. In addition, the time available for data collection was limited, as the interns were frequently busy, making it difficult to obtain responses and administer the instrument within short periods of their availability.

## Conclusion

Despite pain management in children being a vital aspect of pediatric practice, this study showed poor knowledge and attitudes toward pediatric pain management among nursing interns, especially in pharmacological and non-pharmacological pain management. This could be the result of their short clinical training period in pediatric care in hospitals, which was mostly observational rather than practical.

### *Recommendations*

This study provides insights into the importance of redesigning nursing curricula with clinical training to strengthen knowledge of pediatric pain assessment. Teaching and training methods must be revised to help nursing students practice their skills in pediatric pain assessment and management,

with close supervision by clinical nursing educators. These findings should be disseminated to hospital administrators, academicians, and policymakers to help initiate programs to improve skills in pediatric pain management. In-service education may be tailored to update nurses' knowledge of pain management practices. Further research studies are recommended to focus on the knowledge and attitudes of nurses and nursing students in different settings.

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## Acknowledgments

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## Disclosure

The authors declare no conflicts of interest.

### *Institutional review board statement*

The protocol for this study was approved by the Princess Nourah bint Abdulrahman University Institutional Review Board (approval number: 22-0110; March 3, 2022).

### *Informed consent*

All respondents gave their informed consent to participate in the survey.

### *Data availability*

For confidentiality reasons, the data presented in this study are available only upon reasonable request from the corresponding author.

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## *Author contributions*

Conceptualization: S.S.R.; methodology: S.S.R.; software: A.A.A.S.; validation: A.A.A.S. and S.S.R.; formal analysis: S.S.R; investigation: A.M.H and A.F.A.; resources: A.S.K.; data curation: A.M.F.; writing – original draft preparation: A.W.K., A.G.S., and A.R.Z.; writing – review and editing: S.S.R. and A.A.A.S.; visualization: S.S.R. and A.A.A.S.; supervision: S.S.R.; project administration: A.A.A.S.; funding acquisition: A.A.A.S.

## *Conflicts of interest*

The authors declare no conflicts of interest.

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