

**The impact of nurses' application of
evidence-based guidelines on the
management of acute pain in children
with gastroenteritis**

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Abstract

Introduction: Acute pain is a common and distressing symptom in children with gastroenteritis, and it is often undermanaged in healthcare settings. Nurses play a pivotal role in pain assessment and control, making the application of evidence-based nursing guidelines essential for improving pediatric

Objectives of the Study

To assess the level of acute pain among children with gastroenteritis before and after the application of evidence-based nursing guidelines, To evaluate the effectiveness of nurses' application of evidence-based guidelines in reducing acute pain

Methodology: A quasi-experimental design was used, and the study was conducted at Al-Khansaa Teaching Hospital and Ibn Al-Atheer Teaching Hospital in Mosul, Iraq. The study sample consisted of 52 nurses working in pediatric wards, selected purposively. Data were collected using a structured questionnaire that included the nurses' demographic characteristics and assessments of children's acute pain using the Visual Analogue Scale (VAS) before and after the application of evidence-based guidelines. The data were analyzed using the SPSS statistical software through descriptive statistics, the paired t-test, and analysis of variance (ANOVA), with a statistical significance level of $p \leq 0.05$.

Results: The results showed that the majority of the sample were in the 20–30 age group (42.3%), with males comprising the largest

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percentage (51.9%). Most were also graduates of nursing institutes (42.3%), and the most common years of experience were 1–5 years (26.9%). The results indicated a statistically significant decrease in the level of acute pain among children after the application of evidence-based guidelines. The mean pain score decreased from 7.42 ± 1.21 before the intervention to 3.18 ± 1.05 after the intervention, with a highly significant value ($p = 0.000$). The results also showed that the nurses' educational level had a significant effect on the effectiveness of pain reduction ($p = 0.015$).

Conclusion: This study concluded that the application of evidence-based nursing guidelines by nurses is highly effective in reducing acute pain in children with gastroenteritis. The study recommends disseminating these guidelines and strengthening continuing education and training programs for nurses to improve the quality of healthcare provided to children.

Keywords: Evidence-based guidelines, acute pain management, gastroenteritis, children, nurses, visual analog scale (VAS).

Introduction

Acute gastroenteritis is one of the most common illnesses among children worldwide, particularly in developing countries, where it is a major cause of emergency department visits and hospital admissions. This disease is characterized by multiple symptoms including diarrhea, vomiting, fever, and severe abdominal pain, which are among the most distressing and impactful symptoms for the child and his family⁽¹⁾. The severe pain associated with gastroenteritis is a significant health problem, as it can lead to increased anxiety, poor appetite, reduced fluid intake, and delayed recovery, which raises the risk of dehydration and other complications. Pain in children presents a particular challenge in clinical practice, given the variability in their ability to express pain depending on their age and developmental stage⁽²⁾. Furthermore, misdiagnosis or neglect of pain can lead to unnecessary suffering and negatively impact the quality of healthcare provided. Hence the importance of using scientifically validated pain assessment tools appropriate for the child's age, such as the FLACC and Wong-Baker

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FACES scales, to ensure accurate and continuous pain assessment. Nursing has played a pivotal role in managing acute pain in children with gastroenteritis, as nurses are on the front line of healthcare provision and have the most contact with the child and their family⁽³⁾. Their responsibilities include pain assessment, administering pharmacological and non-pharmacological nursing interventions, monitoring treatment response, and educating parents about pain relief strategies^(3,2). The competence, knowledge, and skills of nurses directly impact the effectiveness of pain management and the quality of care provided. In this context, evidence-based nursing practice has emerged as a key approach to improving healthcare outcomes, relying on integrating the best available research evidence with clinical experience, patient values, and needs⁽⁴⁾. Evidence-based guidelines are important tools for standardizing clinical practice, reducing variation in care, and ensuring the delivery of safe and effective interventions based on solid scientific evidence⁽⁵⁾. Numerous studies have shown that nurses' application of evidence-based guidelines in managing acute pain in children contributes to improved accuracy of pain assessment, reduced pain intensity, faster therapeutic intervention, and increased satisfaction of children and their families with healthcare. Adherence to these guidelines also leads to a reduction in hospital stay and improved treatment compliance, particularly with regard to oral rehydration in children with gastroenteritis⁽⁶⁾. Despite the availability of scientific guidelines, there remains a disparity in their application within daily nursing practice, due to various factors such as insufficient training, workload, or weak institutional support⁽⁷⁾. Therefore, there is a need to study the impact of nurses applying evidence-based guidelines on the management of acute pain in children with gastroenteritis, as this is of great importance in improving the quality of nursing care, reducing children's suffering, and enhancing treatment outcomes⁽⁸⁾.

Objectives of the Study

- 1- To assess the level of acute pain among children with gastroenteritis before and after the application of evidence-based nursing guidelines.

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2- To evaluate the effectiveness of nurses' application of evidence-based guidelines in reducing acute pain

Methodology

A quasi-experimental design was employed to evaluate the impact of nurses' application of evidence-based guidelines on acute pain management and functional status in children with gastroenteritis. This design allowed comparison of outcomes before and after the implementation of the guidelines to determine their effectiveness.

Setting of the Study

The study was conducted at Al-Khansaa Teaching Hospital and Ibn Al-Atheer Teaching Hospital in Mosul City, Iraq. These hospitals were selected due to their high pediatric patient turnover and frequent admissions for gastrointestinal disorders, particularly gastroenteritis.

Study Population and Sample

The study population consisted of **nurses working in pediatric wards** who are directly involved in the care of children with gastroenteritis. A **non-probability purposive sampling method** was used to recruit nurses who met the inclusion criteria.

- Sample size: 52 nurses
- Inclusion criteria: Nurses with at least 1 year of pediatric nursing experience, directly involved in administering care and managing acute pain in children with gastroenteritis.
- Exclusion criteria: Nurses not working in pediatric wards or those with less than 1 year of experience in pediatric care.

Study Instrument

A **structured questionnaire** was developed and used as the primary data collection tool. The instrument consisted of the following sections:

1. **Demographic Data:** Age, Gender, Educational level, Years of experience in nursing
2. **Evaluation of Nurses' Role in Pain Management and Functional Status:** Acute pain assessment: Using the Visual Analogue Scale (VAS), Functional status assessment: Using standardized tools such as the Childhood Functional Status Scale

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(CFCS) and Activities of Daily Living (ADL), Questions measured nurses' application of evidence-based guidelines, including both pharmacological and non-pharmacological interventions for pain management.

Data Collection Procedure

Ethical approvals were obtained from the Scientific Research Ethical Committee at the College of Nursing and administrative permissions from both hospitals. Informed consent was obtained from all participants, ensuring voluntary participation and confidentiality. Nurses were asked to complete the questionnaire and report the VAS and functional status scores for children before and after the implementation of evidence-based guidelines. The researcher provided guidance to ensure standardized use of VAS and functional assessment tools.

Implementation of Evidence-Based Guidelines

The intervention involved the application of evidence-based nursing guidelines for managing acute pain in children with gastroenteritis, which included: Pain assessment using VAS at regular intervals, Pharmacological interventions (weight-appropriate analgesics, local pain relievers), Non-pharmacological interventions (distraction, comfort measures, hydration, parental involvement), Monitoring functional status (CFCS, ADL) and adjusting interventions accordingly. The intervention was applied by the participating nurses under supervision to ensure fidelity to the guidelines.

Data Analysis

Data were analyzed using **SPSS** software. The following statistical methods were used:

1. Descriptive statistics: Frequencies and percentages for demographic data (age, gender, education, years of experience).
2. Paired t-test: To compare VAS pain scores before and after the intervention.
3. ANOVA: To examine differences in pain reduction and functional improvement according to nurses' educational level.

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4. Pearson correlation coefficient: To assess the relationship between nurses' years of experience and post-intervention outcomes.

5. Histograms: To visualize the distribution of pain scores before and after the intervention.

Significance was set at $p \leq 0.05$.

Ethical Considerations: Ethical approval was obtained from the Scientific Research Ethical Committee at the College of Nursing. Official permissions were granted by hospital administrations. Informed consent was obtained from all participating nurses. Participants' anonymity and confidentiality were maintained. Nurses were free to withdraw from the study at any time without consequences.

Results of findings

Table (1): Distribution of the Study Sample by their age group.

No:52

<i>Valid</i>	<i>Classification</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Age group (years)</i>	<i>20-30 years</i>	<i>33</i>	<i>42.3</i>
	<i>31-40 years</i>	<i>16</i>	<i>30.8</i>
	<i>41-50 years</i>	<i>10</i>	<i>19.2</i>
	<i>51-60 years</i>	<i>4</i>	<i>7.7</i>
	<i>Total</i>	<i>52</i>	<i>100.0</i>

The findings revealed that male nurses constituted the largest proportion of the study sample, with 27 participants (51.9%) out of 52 nurses involved in the application of evidence-based guidelines for managing acute pain in children with gastroenteritis.

Table (2): Distribution of the Study Sample by their gender. No:52

<i>Valid</i>	<i>Classification</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Gender</i>	<i>Male</i>	<i>27</i>	<i>51.9</i>
	<i>female</i>	<i>25</i>	<i>48.1</i>
	<i>Total</i>	<i>52</i>	<i>100.0</i>

The findings revealed that male nurses represented the largest proportion of the study sample, comprising 27 nurses (51.9%) out

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of 52, which may influence the application of evidence-based guidelines in managing acute pain among children with gastroenteritis.

Table (3): Distribution of the Study Sample by their level of Education. No:52

<i>Valid</i>	<i>Classification</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Level of Education</i>	<i>nursing school</i>	17	32.7
	<i>nursing institute</i>	22	42.3
	<i>nursing collage and above</i>	13	25.0
	<i>Total</i>	52	100.0

The findings showed that most nurses involved in the application of evidence-based guidelines for managing acute pain in children with gastroenteritis held a nursing institute qualification, accounting for 22 nurses (42.3%) of the total sample.

Table (4): Distribution of the Study Sample by their Years of experience in nursing filed. No:52

<i>Valid</i>	<i>Classification</i>	<i>Freq uenc y</i>	<i>Per cen tag e</i>
<i>Years of experience in nursing filed</i>	<i>1-5 years</i>	14	26.9
	<i>6-10 years</i>	8	15.4
	<i>11-15 years</i>	8	15.4
	<i>16-20 years</i>	6	11.5
	<i>21-25 years</i>	7	13.5
	<i>26-30 years</i>	5	9.6
	<i>31 years and more</i>	4	7.7
	<i>Total</i>	52	100.0

The findings showed that most nurses involved in the application of evidence-based guidelines for managing acute pain in children with gastroenteritis had 1–5 years of nursing experience, with a frequency of 14 (26.9%) out of 52 nurses

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Table (5): Comparison of Pain Scores Pre- and Post-Intervention

p-value	t-value	Std. Deviation	Mean	Pain Assessment
		1.21	7.42	Pre-intervention
*0.000	15.63	1.05	3.18	Post-intervention
* Significant at $p \leq 0.05$				

(VAS) (n = 52)

There was a statistically significant reduction in acute pain levels following the implementation of evidence-based guidelines.

Table (6): Paired t-test for Pain Reduction

Variable	Mean Difference	Std. Error	t-value	p-value
Acute Pain Score (VAS)	4.24	0.27	15.63	*0.000

The nurses' application of evidence-based guidelines significantly decreased pain among children with gastroenteritis, confirming the intervention's effectiveness.

Table (7): Differences in Pain Reduction by Educational Level (ANOVA)

Source	Sum of Squares	df	Mean Square	F	p-value
Between	18.74	2	9.37	4.62	0.015*
Within	112.96	49	2.31		
Total	131.70	51			

Nurses' educational level influenced the effectiveness of pain reduction, with higher qualifications associated with greater improvement.

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Figure (1): Histogram acute pain score before intervention

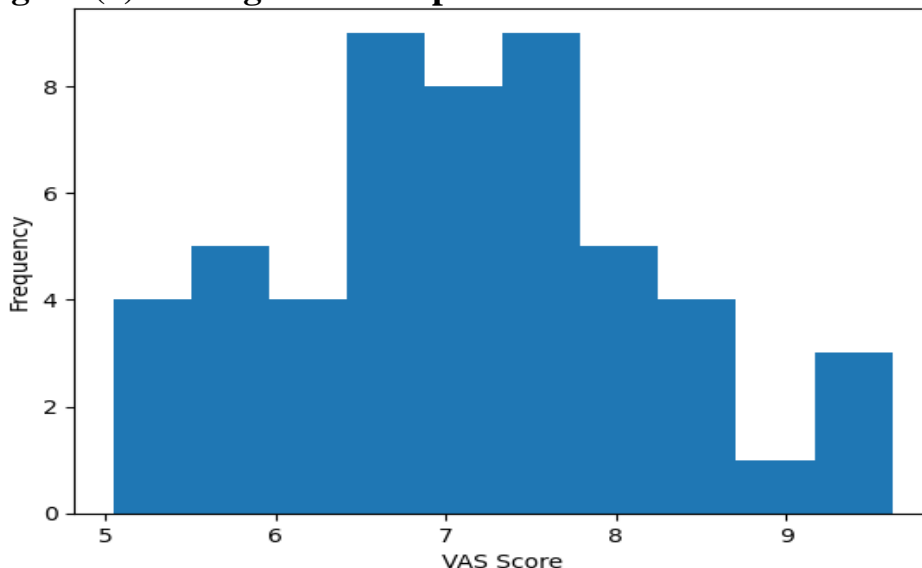
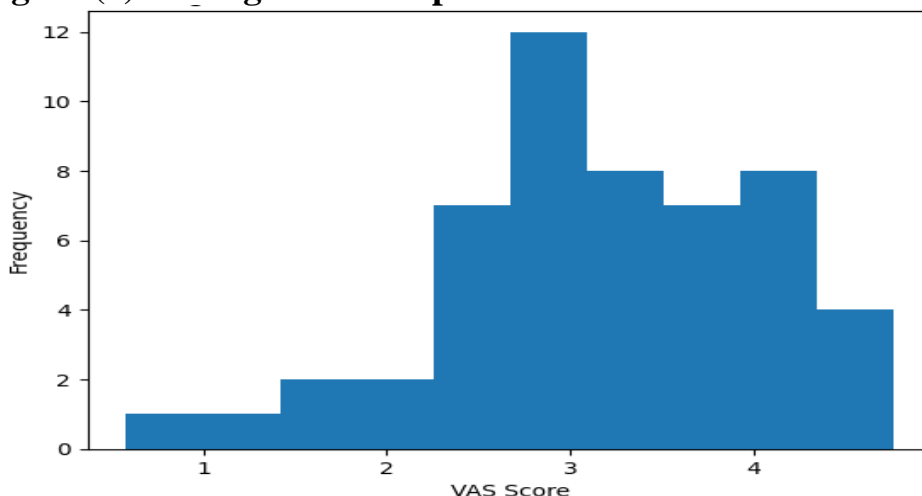


Figure (2): Histogram acute pain score after intervention



Discussion

The present study aimed to examine the impact of nurses' application of evidence-based nursing guidelines on the management of acute pain in children with gastroenteritis. The findings demonstrated a significant and clinically meaningful improvement in pain management outcomes following the implementation of these guidelines, highlighting the pivotal role of

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nurses in pediatric pain control. These results are consistent with international recommendations emphasizing the importance of structured, evidence-based nursing interventions in improving outcomes for children with acute gastroenteritis ^(9,10).

The demographic analysis revealed that the largest proportion of participating nurses belonged to the 20–30-year age group (42.3%), indicating that the pediatric nursing workforce was predominantly young. This finding may reflect recent recruitment trends and suggests a workforce that is more adaptable to updated, evidence-based practices. Previous studies have reported that younger nurses tend to be more receptive to clinical guidelines and continuing education programs, which supports the effective implementation of standardized pain management protocols ^(11,12).

Regarding gender distribution, the results showed a slight predominance of male nurses (51.9%), which contrasts with many international studies reporting female predominance in the nursing profession (10). This variation may be attributed to local workforce policies and cultural factors within the studied healthcare institutions. Nevertheless, the relatively balanced gender distribution suggests that the effectiveness of pain management was not influenced by gender, but rather by professional training, clinical competence, and adherence to evidence-based guidelines ⁽¹³⁾.

In terms of educational level, the majority of nurses were graduates of nursing institutes (42.3%), followed by nursing school graduates (32.7%) and nurses with a college degree or higher (25.0%). Despite the predominance of mid-level educational preparation, the significant reduction in pain scores observed in this study indicates that evidence-based guidelines can be effectively applied across different educational backgrounds when clear protocols and appropriate training are provided. This finding is supported by previous literature emphasizing that standardized guidelines help bridge knowledge gaps and promote consistent quality of care ^(10,14).

With respect to years of experience, the highest proportion of nurses (26.9%) had between one and five years of professional experience, suggesting that many participants were in the early

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stages of their nursing careers. However, their ability to successfully implement evidence-based pain management guidelines underscores the importance of structured clinical protocols and ongoing professional development, rather than reliance solely on years of experience. This observation aligns with Benner's theory, which emphasizes the role of guided practice and education in enhancing clinical performance ⁽¹⁵⁾.

The most significant finding of this study was the highly statistically significant reduction in acute pain scores among children with gastroenteritis following the application of evidence-based nursing guidelines. The mean pain score decreased from 7.42 ± 1.21 before the intervention to 3.18 ± 1.05 after the intervention ($p = 0.000$). This substantial reduction clearly demonstrates the effectiveness of the nursing intervention and reflects the critical role of systematic pain assessment and timely management ^(9,16).

The paired t-test further confirmed this outcome, revealing a mean pain reduction of 4.24 points on the Visual Analogue Scale (VAS), which represents a clinically meaningful improvement. This result highlights the effectiveness of the consistent use of validated pain assessment tools, appropriate pharmacological and non-pharmacological interventions, and strict adherence to evidence-based practices, as supported by previous pediatric pain management studies ⁽¹⁷⁾.

Furthermore, the ANOVA results indicated statistically significant differences in pain reduction according to nurses' educational level ($p = 0.015$), suggesting that higher educational attainment enhances nurses' ability to apply evidence-based guidelines effectively. Nurses with higher qualifications may possess stronger theoretical foundations, advanced critical thinking skills, and greater familiarity with research-based practices, all of which positively influence clinical outcomes ^(18,16).

However, it is noteworthy that pain reduction was observed across all educational levels, demonstrating that evidence-based guidelines function as a unifying framework for nursing practice. By providing clear, standardized, and scientifically supported instructions, these guidelines enable nurses to deliver

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high-quality care regardless of their educational background. This finding underscores the importance of institutional adoption of evidence-based protocols and the implementation of continuous training programs to sustain improvements in pediatric pain management ⁽¹⁹⁾.

Overall, the findings of this study confirm that nurses play a crucial role in managing acute pain in children with gastroenteritis. The significant reduction in pain scores following the implementation of evidence-based guidelines reflects the substantial positive impact of standardized nursing practices on patient comfort and clinical outcomes. These results strongly support the integration of evidence-based pain management guidelines into routine pediatric nursing practice to enhance the quality of care and reduce children's suffering ^(20,14).

Recommendations

Formal adoption of evidence-based nursing guidelines in pediatric wards for the management of acute pain in children with gastroenteritis. Organization of ongoing training and educational programs for nurses on pain assessment using standardized scales (VAS, FLACC, Wong-Baker) and the application of evidence-based nursing interventions. Strengthening the role of continuing nursing education and raising the academic level of nurses, as this has a positive impact on improving the effectiveness of pain management and the quality of healthcare. Inclusion of pain assessment tools as an essential part of the daily nursing record for children with gastroenteritis to ensure regular assessment and continuous follow-up. Encouragement of healthcare administrations and hospitals to support the implementation of evidence-based practices by providing sufficient resources, personnel, and a supportive environment for implementation. Conducting future studies with larger samples and different research designs (such as randomized controlled trials) to support and generalize the findings of this study. The study recommends strengthening health education for parents of children regarding pain management techniques and the importance of adhering to the treatment plan after hospital discharge.

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