Research Article

The role of nursing in improving pain management and functional status in children with gastroenteritis using evidence-based guidelines

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Abstract

Introduction: Pediatric gastroenteritis is a critical inflammatory condition affecting the stomach and intestines, characterized by acute diarrhea, vomiting, and abdominal pain. Often accompanied by fever and dehydration, these symptoms typically persist for less than two weeks. Despite the common misnomer "stomach flu," gastroenteritis remains a leading global health challenge. In 2011, approximately 1.7 billion cases were recorded, resulting in nearly 700,000 deaths among children under the age of five, with the highest prevalence in developing nations. Acute gastroenteritis remains a leading cause of morbidity among children globally, characterized by symptoms such as diarrhea, vomiting, and abdominal cramps, often resulting in dehydration and significant discomfort. In children, these symptoms are not only physically distressing but frequently impair functional status, including oral intake, activity levels, sleep, and participation in normal daily routines. **Objective:** The primary objective of this study is to assess the nursing role in pain assessment and functional-status monitoring for children with gastroenteritis, with an emphasis on alignment with evidence-based guideline recommendations within clinical settings. **Methodology:** A descriptive correlational (cross-sectional) design was used to assess nursing practices related to pain and functional-status assessment in pediatric gastroenteritis at Al-Khansaa Teaching Hospital and Ibn Al-Atheer Teaching Hospital in Mosul, Iraq. **Sample:** A non-probability (purposive) sample consisting of 50 nurses currently working in the pediatric departments. **Instruments:** Data collection used a structured self-report questionnaire to assess nurses' reported use of standardized pain assessment and functional-status monitoring. The findings indicated that nursing performance regarding guideline-aligned assessment and monitoring was suboptimal. Nurses demonstrated a significant gap in applying evidence-based guidelines to their daily practice. Furthermore, the data revealed a statistically significant correlation between the nurses' demographic profiles (such as educational level and years of experience) and their clinical competency. **Conclusion:** The study concludes that the nursing role in pediatric gastroenteritis care is currently underperforming relative to international evidence-based standards. There is a critical need for professional development and targeted training programs to bridge this gap. Improving nursing interventions is essential for optimizing patient outcomes and reducing the morbidity associated with this condition in the region.

Keywords: pediatric gastroenteritis, nursing role, pain management, evidence-based guidelines

1 Introduction

Acute gastroenteritis remains a leading cause of morbidity among children globally, characterized by symptoms such as diarrhea, vomiting, and abdominal cramps, often resulting in dehydration and significant discomfort [1]. In children, these symptoms are not only physically distressing but frequently impair functional status, including oral intake, activity levels, sleep, and participation in normal daily routines [2]. Although clinical management traditionally emphasizes fluid and electrolyte replacement, the experience of pain and discomfort associated with gastroenteritis is increasingly recognized as a critical component that influences clinical outcomes and recovery trajectories in pediatric patients [3].

Gastroenteritis in children is an inflammation that most common occurred in stomach and intestine [4]. Gastroenteritis, also called infectious diarrhea or gastroenteritis. It's directly effecting on the digestive tract, accompanied by multiple symptoms including diarrhea, vomiting, and abdominal pain [5]. It may also be accompanied by fever, general fatigue, and dehydration [6]. These symptoms usually last less than two weeks.

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Some people call this illness "stomach flu," which is a common misconception [7]. In 2015, there were two billion cases of gastroenteritis, resulting in 1.3 million deaths worldwide. Children and people in developing countries were the most affected. In 2011, there were approximately 1.7 billion cases, resulting in the deaths of about 700,000 children under the age of five [8]. Children under the age of two in developing countries typically suffer six or more infections per year, and the rate is lower in adults, partly due to their developing immunity [9]. Gastroenteritis is defined as vomiting or diarrhea caused by inflammation of the small or large intestine due to infection. Changes in the small intestine are usually non-inflammatory, while those in the large intestine are inflammatory [10]. The number of pathogens required to cause infection varied from 1 (in the Cryptosporium parasite) to 108 (in Vibrio cholera bacteria) [11]. Approximately 3-5 billion episodes of gastroenteritis occur annually worldwide, most commonly in children under 5 years of age living in countries where children are more vulnerable and where access to care is limited. Around the world, approximately 500,000 children under 5 years of age die each year from diarrhea caused by gastroenteritis [12].

In countries where children are well-fed and receive excellent medical care (and, most importantly, intravenous rehydration fluids when needed) [13]. The consequences are not severe. However, acute gastroenteritis remains a frequent problem in the United States. In the United States, gastroenteritis causes approximately 1.5 million doctor visits, 200,000 hospitalizations, and 300 deaths each year [14]. Gastroenteritis is usually diagnosed based on symptoms alone, but the cause is often not [15]. In the context of children with gastroenteritis, addressing pain effectively is not only a matter of comfort but also influences critical aspects of recovery, such as willingness to rehydrate, tolerance for feeding, and normalization of activity levels [16]. Evidence-based nursing care frameworks emphasize a holistic, child-centered, and family-engaged approach, integrating both pharmacologic approaches (e.g., appropriate use of analgesics) and non-pharmacologic strategies (e.g., distraction techniques, comfort positioning, education) tailored to the child's developmental stage and cultural context [17].

These strategies, when consistently applied, can significantly improve functional status, reduce anxiety, and support faster return to normal activities [18]. Given the high incidence of pediatric gastroenteritis and the documented gaps in pain management, there is an urgent need to examine the role of nursing in bridging the divide between guideline recommendations and clinical practice [20].

This study aims to explore how evidence-based nursing practices can enhance pain management and functional outcomes in children with gastroenteritis, ultimately contributing to higher standards of pediatric care and improved patient experience [21].

2 Methodology

2.1 Study design

A descriptive correlational (cross-sectional) design was employed to assess nurses' reported practices and readiness to apply evidence-based assessment for pain and functional status among children with gastroenteritis.

2.2 Setting of the study

The study was conducted at Al-Khansaa Teaching Hospital and Ibn Al-Atheer Teaching Hospital in Mosul City, Iraq. These settings were selected due to their high admission rates of pediatric gastrointestinal cases.

2.3 Sample of the study

A non-probability (purposive) sample was recruited for this study. The sample consisted of (50) nurses working in pediatric wards who are directly involved in the care and management of children with gastroenteritis.

2.4 Study instrument

A structured questionnaire was developed as a data collection tool, consisting of two main sections:

- *Demographic Data:* Comprising (3) items (e.g., age, years of experience in nursing field).
- *Evaluation the nurses role depended on (VAS & Functional Status):* containing questions designed to assess nurses' reported use of standardized pain assessment (Visual Analogue Scale – VAS) and functional-status monitoring (CFCS) in relation to evidence-based recommendations.

2.5 Data analysis

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequencies and percentages, were used for demographic data. Inferential statistics (Pearson correlation and one-way ANOVA) were used as exploratory analyses to examine associations between demographic variables and the overall nursing performance score derived from questionnaire responses.

2.6 Ethical considerations

Official approval was obtained from the Scientific Research Ethical Committee at the College of Nursing. Formal administrative permission was secured from the management of the participating hospitals in Mosul. Furthermore, informed consent (both oral and written) was obtained from all participating nurses, ensuring their right to anonymity and voluntary withdrawal from the study at any time.

3 Results and discussion

Figure 1 presents the distribution of the nursing sample according to age and years of professional experience. These socio-demographic characteristics play a crucial role in shaping nursing performance, particularly in the implementation of evidence-based guidelines aimed at improving pain management and functional status in children with gastroenteritis.

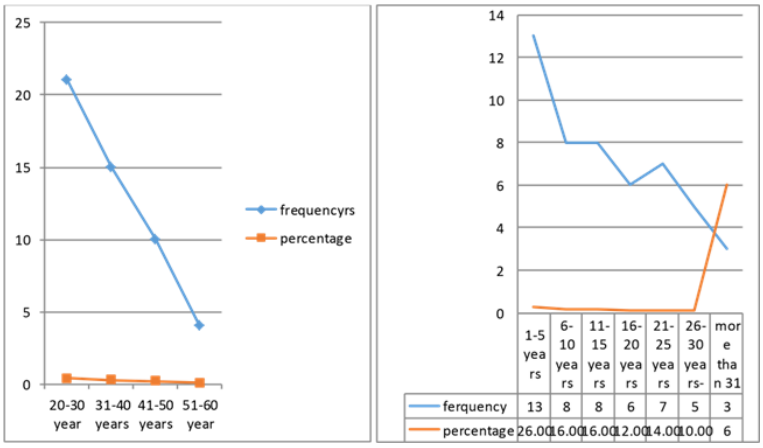

Figure 1: Socio-Demographic factors (age and years of experience) for sample

The results indicate that the majority of participants belong to the younger age group of 20–30 years, followed by those aged 31–40 years, with a progressive decrease in older age categories. This finding suggests

that the pediatric nursing workforce is largely composed of younger nurses. Previous literature indicates that younger nurses are often more adaptable to change and more receptive to evidence-based practice due to recent academic preparation and exposure to updated clinical guidelines [22].

In the context of pediatric gastroenteritis, such adaptability is essential for the accurate assessment of pain, appropriate use of pediatric pain scales, and timely application of non-pharmacological and pharmacological pain management strategies. These practices directly contribute to improving children's comfort and functional ability during illness. Regarding years of experience, the findings reveal that most nurses have between 1 and 5 years of professional experience, with fewer nurses reporting longer durations of service. While limited experience may initially appear as a limitation, several studies suggest that nurses with fewer years of experience tend to rely more consistently on standardized protocols and clinical guidelines [23]. This reliance is particularly beneficial in pediatric pain management, where evidence-based guidelines provide structured approaches to pain assessment, hydration monitoring, and supportive care for children with gastroenteritis. Adherence to such guidelines has been shown to improve pain control and enhance functional recovery in pediatric patients [24].

At the same time, the presence of nurses with longer professional experience, although representing a smaller proportion of the sample, adds clinical depth and practical expertise to patient care. Experienced nurses contribute critical judgment and contextual decision-making skills that complement guideline-based practice. The integration of experienced and less-experienced nurses creates a supportive clinical environment that enhances the overall quality of nursing care and strengthens the implementation of evidencebased interventions. In relation to the study title, these findings emphasize that age and years of experience are influential factors in determining how effectively nurses apply evidence-based guidelines to manage pain and improve functional status in children with gastroenteritis. A predominantly young nursing workforce with early to moderate experience appears well positioned to adopt and apply current best practices, thereby reinforcing the pivotal role of nursing in optimizing pediatric outcomes.

Table 1 provides a comprehensive assessment of nurses' roles in pain management and functional status evaluation among children with gastroenteritis using evidence-based guidelines. Overall, the findings reveal a marked deficiency in the systematic use of standardized pain and functional assessment tools, highlighting critical gaps in evidence-based nursing practice. The results related to pain assessment using the Visual Analogue Scale (VAS) demonstrate extremely limited utilization among nurses. A large proportion of participants reported that they do not use the VAS to assess pain intensity in pediatric patients with gastroenteritis, nor do they apply it regularly during acute clinical episodes. Furthermore, most nurses indicated a lack of regular training on standardized VAS application and infrequent periodic reassessment of pain. These findings suggest that pain assessment is largely based on subjective judgment rather than structured, validated tools. This practice contradicts evidence-based recommendations, which emphasize that accurate and repeated pain assessment using standardized scales is fundamental to effective pediatric pain management and improved clinical outcomes [25]. Additionally, the majority of nurses reported that the VAS is not adapted or utilized for children who experience difficulty verbalizing pain, nor do they perceive standardized pain assessment as a means to improve communication with families. This lack of structured communication may negatively affect family involvement and shared decision-making, which are essential components of pediatric care. Previous studies have shown that standardized pain assessment tools enhance communication between healthcare providers and caregivers and facilitate appropriate painrelated interventions [26]. Regarding functional status evaluation using the Child Functional Status Checklist (CFCS), the findings indicate minimal awareness and application of this scale. Most nurses reported that they have never used the CFCS, do not apply it routinely in pediatric units, and lack proficiency in evaluating functional domains such as sleep, play, and feeding. This is concerning, as gastroenteritis significantly affects children's functional abilities due to pain, dehydration, weakness, and discomfort. Evidence-based guidelines stress that functional status assessment is essential for monitoring disease severity, evaluating response to interventions, and guiding holistic nursing care [27].

Table 1: Assessment of nurses' role in improving pain management and functional status in children with gastroenteritis using evidence-based guidelines

N	Steps	Yes		Sometime		No	
		F.	%	F.	%	F.	%
1- Assess the nurse role Regarding Acute Pain Levels in Children with Gastroenteritis Using the Visual Analogue Scale							
1-1	Do you utilize the Visual Analogue Scale (VAS) to assess pain intensity in pediatric patients?	0	0	0	0	26	100
1-2	Do you rely on the VAS scale during acute clinical presentations, such as severe injuries or episodes?	4	15.4	2	7.7	20	76.9
1-3	Does the medical/nursing staff undergo regular training on the standardized application of the VAS scale?	0	0	11	42.3	15	57.7
1-4	Is the VAS scale used periodically (at set intervals) to monitor and document the patient's pain levels?	0	0	12	46.2	14	53.8
1-5	Is the VAS scale specifically adapted for use in cases where the patient faces difficulty in verbalizing their pain?	1	3.8	1	3.8	24	92.4
1-6	Do you believe that pain assessment via standardized scales improves communication with families regarding treatment options?	0	0	0	0	26	100
1-7	Have you observed an improvement in the child's functional status (sleep, play, or feeding) following pain management guided by the scale?	4	15.4	1	3.8	21	80.8
1-8	In your professional opinion, does the use of pain scales improve clinical outcomes for children with gastroenteritis?	5	19.2	5	19.2	16	61.5
1-9	Does the systematic application of the pain scale enhance your ability to provide optimal nursing care to pediatric gastroenteritis patients?	4	15.4	2	7.7	20	76.9
2- Evaluation of Pediatric Functional Status (CFCS Scale)							
2-1	Have you previously utilized the Child Functional Status Checklist (CFCS) to assess pediatric patients with gastroenteritis?	0	0	0	0	26	100
2-2	Do you implement the CFCS scale on a regular basis within pediatric care units?	0	0	0	0	26	100
2-3	How would you rate the effectiveness of the CFCS scale in evaluating the impact of gastroenteritis on a child's functional status?	4	15.4	1	3.8	21	80.8
2-4	Do you believe the CFCS scale accurately reflects the child's ability to perform Activities of Daily Living (ADLs) such as sleeping, playing, and feeding during illness?	5	19.2	5	19.2	16	61.5
2-5	Is the Visual Analogue Scale (VAS) specifically employed for patients who face significant challenges in verbalizing their pain?	4	15.4	2	7.7	20	76.9
2-6	Does the CFCS scale provide a precise indication of the functional impairments caused by gastroenteritis in pediatric patients?	1	3.8	5	19.2	20	76.9
2-7	Are you proficient in assessing the impact of gastroenteritis on a child's sleep patterns according to the CFCS criteria?	0	0	0	0	26	100
3- Assess nurses role regarding the child's functional status and the extent to which it is affected by pain resulting from gastroenteritis, according to the Child Functional Status Checklist (CFCS).							
3-1	Have you previously utilized the Child Functional Status Checklist (CFCS) to evaluate pediatric patients diagnosed with gastroenteritis?	4	15.4	4	15.4	18	69.2
3-2	Do you implement the CFCS tool systematically within pediatric clinical settings?	8	30.8	1	3.8	17	65.4
3-3	How would you rate the efficacy of the CFCS scale in measuring the impact of gastroenteritis on a child's functional performance?	3	11.5	3	11.5	20	76.9
3-4	Do you believe the CFCS scale accurately reflects the child's capacity to perform Activities of Daily Living (ADLs) such as sleep, play, and nutrition during illness?	0	0	0	0	26	100
3-5	Is the Visual Analogue Scale (VAS) specifically employed for cases where the patient exhibits a limited ability to verbalize pain?	7	26.9	7	26.9	12	46.2
3-6	Does the CFCS scale provide a precise representation of functional impairments caused by acute gastroenteritis symptoms?	5	19.2	5	19.2	16	61.5
3-7	Are you proficient in evaluating the specific impact of gastroenteritis on a child's sleep quality based on the CFCS criteria?	4	15.4	2	7.7	20	76.9
Total			10.3		10.2		80.6
F.= frequency, % = percentage							

Although a small proportion of nurses acknowledged the effectiveness of the CFCS in reflecting functional impairments and activities of daily living, the overall low utilization suggests insufficient training and limited integration of functional assessment tools into daily nursing practice. This gap reduces the ability of nurses to identify functional deterioration early and to implement targeted interventions aimed at improving recovery and quality of life. The third section of the table, which evaluates nurses' roles in assessing the relationship between pain and functional status, further reinforces these findings. While some nurses reported occasional use of the CFCS and VAS for children with limited verbal abilities, the majority did not systematically apply these tools. The low total mean scores indicate that pain-related functional impairment is not consistently evaluated using standardized methods. This inconsistency undermines the nurse's pivotal role in linking pain management interventions to functional outcomes such as improved sleep, feeding tolerance, and physical activity. In relation to the study title, these findings highlight a substantial gap between recommended evidence-based guidelines and actual nursing practice. Nurses play a central role in pain assessment and functional evaluation; however, the limited use of validated tools such as the VAS and CFCS restricts their effectiveness in improving pain management and functional status in children with gastroenteritis. The results emphasize the urgent need for structured training programs, institutional support, and policy implementation to promote adherence to evidencebased guidelines. Strengthening nurses' competencies in standardized pain and functional assessment would significantly enhance pediatric care outcomes and reinforce the critical role of nursing in managing gastroenteritis-related complications.

Table 2 demonstrates the statistical relationships between selected socio-professional variables and nurses' roles in improving pain management and functional status in children with gastroenteritis using evidence-based guidelines. The analysis highlights significant differences related to age and years of ICU experience, while no statistically significant difference was found for years of experience in the general nursing field. The results indicate a highly statistically significant difference between age groups, as evidenced by the F value ($F = 6.013$) and a p-value of .000. This finding suggests that age plays a critical role in influencing nurses' performance in pain management and functional status assessment. Age is often associated with cognitive maturity, clinical confidence, and professional judgment, all of which contribute to the effective ap-

plication of evidence-based guidelines. Nurses within certain age groups may demonstrate greater awareness of standardized pain assessment tools and functional evaluation methods, thereby enhancing pediatric care outcomes. This finding is consistent with previous studies that report age as a determinant factor in the adoption and implementation of evidence-based nursing practices [28].

Table 2: Statistical significant between age group, years of knowledge in nursing field, Years of experience in ICU

Variables		Sum of Squares	Df	Mean Square	F	P ≤ 0.05
Age (Years)	Between Groups	41.117	25	1.581	6.013	.000
	Within Groups	6.575	24	.263		H-sig.
	Total	47.692	49			
Years of experience in nursing field	Between Groups	106.473	25	4.095	1.064	.439
	Within Groups	96.200	24	3.848		N-sig.
	Total	202.673	49			
Years of experience in ICU	Between Groups	29.635	25	1.140	3.829	.001
	Within Groups	7.442	24	.298		H-sig.
	Total	37.077	49			
d.f: Degree of freedom, F: F-statistic, Sig: Significance						

In contrast, years of experience in the nursing field did not show a statistically significant relationship with the study variables (p = .439). This result suggests that the length of general nursing experience alone does not necessarily translate into improved pain management or functional assessment skills in pediatric gastroenteritis cases. One possible explanation is that experience without continuous education or specialization may lead to reliance on routine or traditional practices rather than evidence-based approaches. This finding reinforces the concept that quality of care is not solely dependent on duration of experience but rather on ongoing professional development and exposure to updated clinical guidelines [29]. Notably, years of experience in the Intensive Care Unit (ICU) showed a highly statistically significant difference (F = 3.829, p = .001). This result underscores the importance of specialized clinical environments in shaping nurses' competencies. ICU nurses are frequently exposed to critically ill patients and are trained to conduct continuous assessments, manage complex symptoms, and respond rapidly to physiological changes. Such experience enhances their ability to assess pain accurately, monitor functional deterioration, and apply evidence-based interventions effectively. In pediatric gastroenteritis, where pain, dehydration, and functional impairment can escalate rapidly, ICUtrained nurses may be better equipped to implement systematic pain assessment and functional monitoring strategies. In relation to the study title, these findings emphasize that nurses' effectiveness in improving pain management and functional status in children with gastroenteritis is significantly influenced by age and specialized ICU experience rather than general years of nursing practice. This highlights the essential role of targeted training, specialization, and continuous education in promoting evidence-based nursing care. Strengthening ICU-based competencies and integrating evidence-based guidelines into routine pediatric nursing practice may lead to improved pain control, enhanced functional recovery, and better overall outcomes for children with gastroenteritis.

Overall, Table 2 provides strong statistical evidence that professional characteristics, particularly age and ICU experience, are key factors affecting the nursing role in applying evidence-based guidelines. These findings support the need for structured educational programs and policy interventions that focus on skill development rather than relying solely on years of service.

4 Conclusion

There is a profound deficit in the nursing role regarding evidence-based pain management. The total absence (100%) of utilizing standardized tools like the Visual Analogue Scale (VAS) and the Child Functional Status Checklist (CFCS) indicates that pediatric care in the targeted hospitals remains traditional and subjective rather than evidence-based. Nursing care is predominantly focused on physiological symptoms (vomiting and diarrhea) while neglecting the functional status (sleep, feeding, and play), which is essential for holistic recovery. The study proved that Age and Specialized ICU Experience are significant predictors of nursing performance. However, general seniority (years of experience) does not ensure competency, highlighting a failure in continuous professional development. The disconnect between the nurses' positive perception of pain scales and their actual clinical application suggests systemic barriers, including a lack of standardized protocols and unavailability of assessment tools in pediatric wards.

5 Recommendations

Integrating the VAS and CFCS tools into the official nursing documentation system (nursing flowsheets) as routinely recorded clinical parameters for pediatric gastroenteritis admissions. Launching targeted training workshops for pediatric nursing staff, with emphasis on early-career nurses, to strengthen competency in standardized assessment and documentation. Encouraging a patient-centered approach that includes monitoring functional indicators to support safer discharge decisions and caregiver education. Supporting experienced ICU nurses to act as clinical mentors within pediatric wards to promote systematic monitoring and consistent documentation practices. The Ministry of Health and Nineveh Health Directorate should consider administrative support for implementing evidence-based pediatric pain assessment and monitoring protocols in teaching hospitals. Conducting future comparative studies with patient-level outcomes to evaluate the impact of guideline-based nursing interventions on symptom burden and length of stay.

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