Original

Pain Assessment and Use of Non-Pharmacological Interventions: A Survey of Paediatric Nurses

[1]Isaac Sunday Chukwu, [1]Emmanuel Uzoma Nwaelewa, [2]Eberechi Ojimgba, [3]Uchechukwu Obiora Ezomike

[1]Department of Surgery, Federal Medical Centre, Umuahia, Abia State
[2]Nursing Services Department, Federal Medical Centre Umuahia, Abia State
[3]Sub-department of Paediatric Surgery, University of Nigeria Teaching Hospital, Ituku/Ozalla,Enugu

Corresponding author: *Isaac Sunday Chukwu*, Department of Surgery, Federal Medical Centre, Umuahia, Abia Isaacchukwu8@gmail.com: +2348138270270

Article history: Received 19 April 2026, Reviewed 10 May 2026, Accepted for publication 20 June 2026

ABSTRACT

Background: Pain is recognized as the fifth vital sign, requiring routine assessment and effective management, particularly in children. Non-pharmacological interventions are vital in paediatric pain control. This study aimed to evaluate the knowledge and practice of pain assessment and the use of non-pharmacological strategies among paediatric nurses in Umuahia, Nigeria.

Methods: A descriptive cross-sectional study was conducted from January to February 2018 at Federal Medical Centre Umuahia. Forty-seven structured questionnaires were distributed to registered paediatric ward nurses after an educational programme in December 2017. A total of 26 responses were received (55.3% response rate). Data were analyzed using SPSS version 20 with Fisher's exact test for statistical comparison.

Results: All nurses (100%) assessed pain during shifts but 42.3% were unaware of the need to assess pain in neonates. Nurses who participated in the educational programme demonstrated significantly better knowledge about neonatal pain assessment (68% versus 0%, P = 0.0221). Additionally, 26.9% of the respondents lacked knowledge of key non-pharmacological strategies, such as distraction and applying skin-to-skin contact. Nurses with over 10 years' experience were more likely to recognize distraction as a useful intervention (P = 0.0261).

Conclusion: Gaps persist in pediatric nurses' knowledge regarding pain assessment and non-pharmacological pain management strategies. Periodic educational programmes improve knowledge and may enhance pediatric pain management practices.

Keywords: Pain assessment, Non-pharmacological interventions, Pediatric nursing, Neonatal pain

How to cite this article

Chukwu IS, Nwaelewa EU, Ojimgba E, Ezomike UO. Pain Assessment and Use of Non-Pharmacological Interventions: A Survey of Paediatric Nurses. The Nigerian Health Journal 2026; 26(2): 519-525.
https://doi.org/10.71637/tnhj.v26i2.1205

Print ISSN: 0189-9287 Online ISSN: 2992-345X

INTRODUCTION

Pain is recognized as the fifth vital sign, underscoring its role in clinical assessment alongside temperature, pulse rate, respiratory rate and blood pressure [1]. Unmanaged pain in children leads to significant physiological, psychological, and developmental consequences, including heightened stress responses, delayed wound healing, immunosuppression, anxiety, and long-term maladaptive pain processing [2-5]. Paediatric pain is particularly complex due to children's limited ability to communicate pain, making accurate assessment and management, critical [6,7].

Non-pharmacological interventions such as breastfeeding, distraction, skin-to-skin contact, and positioning, are effective strategies recommended by international guidelines including those from World Health Organization (WHO) and International Association for the Study of Pain (IASP) [8,9]. Non-pharmacological interventions are particularly vital in low-resource settings where pharmacological options may be limited [10].

Despite growing evidence supporting non-pharmacological interventions in paediatric pain management [11-13], studies within Nigeria and globally report gaps in nurses' knowledge and practice [14-17]. For example, studies in Ghana, South Africa and Turkey revealed over 40% of paediatric nurses were unfamiliar with distraction techniques [17-19].

Nigeria's Federal Ministry of Health guidelines emphasize multimodal pain management strategies [20]. However, local data on paediatric nurses' knowledge and practice of non-pharmacological interventions remain limited. This study aims to evaluate the knowledge and practice of pain assessment and non-pharmacological interventions among pediatric nurses in Umuahia, Nigeria, and assess the impact of an educational programme.

MATERIALS AND METHODS

Study Design: This is a descriptive cross-sectional study conducted to evaluate pediatric nurses' knowledge and self-reported practices regarding pain assessment and the use of non-pharmacological pain management. The study was conducted over two months (January to February 2018) at Federal Medical Centre, Umuahia, a tertiary hospital serving a large paediatric population in southeastern Nigeria.

Study setting: The study was conducted in the paediatric wards of the hospital, which include paediatric wards, emergency room and neonatal care units where routine procedural pain management is frequently required.

Study Population and sampling: The study population included all registered nurses working in the hospital's paediatric wards. Emergency room and neonatal care units. Inclusion criteria required nurses to have at least one year of clinical experience in paediatric care. Exclusion criteria included nurses on administrative roles, annual leave, or those who declined consent.

Sampling technique: A total sampling approach was used. All eligible paediatric nurses were invited to participate in the study. This approach was adopted due to the relatively small and finite population size, allowing for complete enumeration of the target group rather than selection of a subset.

Sampling size and response rate: The sample size was determined using Slovin's formula for a known population ($n = N/ (1 + Ne)^2$), based on a total population of 52 paediatric nurses, a 15% margin of error, and 95% confidence interval, yielding a minimum required sample size of 24 nurses. To ensure robust participation, 47 questionnaires were distributed, and 26 completed responses were retrieved, achieving a 55.3% response rate.

Educational Exposure: An educational programme: 'Treat the Pain', facilitated by the American Cancer Society was delivered in December 2017, prior to data collection. This training focused on: pain assessment techniques across different techniques across different paediatric age groups (including neonates); non-pharmacological pain management strategies (eg. distraction, breastfeeding, skin-to-skin contact), documentation and assessment of pain during and after procedures. The programme aimed to improve nurses' understanding and application of non-drug pain management techniques. This exposure was treated in the analysis as a background variable and potential confounder, rather than an intervention component of the study design.

Data collection instrument: Data were collected using a structured, self-administered questionnaire developed based on the Federal Ministry of Health Pain Management Guidelines (Nigeria). The questionnaire comprised three sections:

1. Demographics: Age, gender, rank, years of service, and participation in the educational programme.
2. Knowledge Assessment: Awareness of pain assessment practices, recognition of pain in

Print ISSN: 0189-9287 Online ISSN: 2992-345X

neonates, and understanding of non-pharmacological strategies.
3. Self-reported Practice: Frequency and timing of pain assessments, use of pain scales (eg. FLACC, FACES), and implementation of non-pharmacological interventions.

The questionnaire underwent content validation by the hospital's pain and palliative care team, ensuring clarity and relevance. A pilot test involving 10 nurses in a similar clinical setting confirmed the tool's reliability and ease of understanding. Internal consistency of the instrument was acceptable (Cronbach's alpha = 0.78).

Data collection procedure: Questionnaires were distributed in paper form to eligible nurses during duty periods and collected after complication. Participation was voluntary and confidentiality was ensured by anonymizing responses.

Outcome Measures: The primary outcomes were nurses' knowledge and practice of pain assessment and non-pharmacological strategies. The secondary outcome was the impact of the educational programme on these measures. Key indicators included:
1. Knowledge of paediatric and neonatal pain assessment
2. Knowledge of non-pharmacological pain management strategies (eg. distraction, skin-to-skin contact)
3. Self-reported clinical practice of pain assessment and pain management

These were treated as dependent variables in the analysis.

Statistical analysis: Data were analyzed using IBM SPSS Statistics for Windows, version 20 (SPSS Inc., Chicago, IL). Descriptive statistics (frequencies, percentages, means) were calculated for demographic data and study variables. Fisher's exact test was applied to assess associations between participation in the educational programme and knowledge of neonatal pain assessment; also, years of experience and knowledge of non-pharmacological strategies. A p-value <0.05 was considered statistically significant.

Ethical Considerations: Ethical approval for the study was obtained from the Federal Medical Centre, Umuahia Health Research Ethics Committee (Reference number: FMC/QEH/G.596/Vol.10/261; Date: December 2017). The study adhered to the principles outlined in the Declaration of Helsinki for research involving human subjects. Written informed consent was obtained from all participants. All data were anonymized to protect the participants' identity.

RESULTS

Participant characteristics: A total of 26 paediatric nurses participated in the study, yielding a 55.3% response rate from the 47 distributed questionnaires. The mean age of respondents was 37.3 ± 9.1 years (range 23 – 55 years), with the majority (88.5%) being female. Half (50.0%) of the participants were junior nursing officers, while 53.8% had over 10 years of total service. However, only 19.2% had more than 5 years of experience specifically in paediatric wards.

Notably, 84.6% of respondents had attended the 'Treat the Pain' educational programme in December 2017.

Table 1: Demographic characteristics of the respondents

Variable	Options	Frequency (n, %)
Age in years	20 - 30	6 (23.0)
	30 - 40	10 (38.5)
	40 - 50	8 (30.8)
	50 - 60	2 (7.7)
Gender	Male	3 (11.5)
	Female	23 (88.5)
Professional rank	Nursing officer	13 (50.0)
	Senior officer	2 (7.7)
	Principal officer	1 (3.8)
	Assistant chief	4 (15.4)
	Chief officer	3 (11.6)
	Assistant director	2 (7.7)
Years in service	< 5	2 (7.7)
	6 - 10	10 (38.5)
	11 - 15	6 (23.0)
	16 - 20	4 (15.4)
	> 20	4 (15.4)
Years of service in the ward	< 5	21 (80.8)
	>/= 5	5 (19.2)
Did you participate in the "Treat the pain" seminar	Yes	22 (84.6)
	No	4 (15.4)

Knowledge of Pain Assessment

Neonatal pain assessment: 42.3% of nurses were unaware that neonates experience pain or that routine pain assessment in neonates is necessary. The years of service had no significant relationship with knowing whether there was need to assess pain in neonates (P=0.6922).

Impact of the Educational Programme: Among nurses who participated in the educational programme, 68% correctly acknowledged the importance of neonatal

Print ISSN: 0189-9287 Online ISSN: 2992-345X

pain assessment compared to 0% among those who did not attend (p = 0.0221, Fisher's exact test).

Pain assessment tools: 11.5% of nurses were unfamiliar with the FLACC scale, FACES scale, and Visual Analog Scale (VAS) as appropriate pain assessment tools.

Table 2: Knowledge of nurses about pain assessment in children

Variable	Response	Frequency (n, %)
Patient's age, type and stage of disease may affect pain perception and assessment	Yes	26 (100.0)
	No	0 (0.0)
It is important to assess pain before, during and after an invasive procedure	Yes	25 (96.2)
	No	1 (3.8)
There is need for subsequent pain assessment	Yes	23 (88.5)
	No	3 (11.5)
FLACC scale, FACES scale, and Visual Analogue Scale are examples of pain assessment instrument	Yes	23 (88.5)
	No	3 (11.5)
There is need to assess pain in neonates	Yes	15 (57.7)
	No	11 (42.3)

Practice of pain assessment

All nurses (100%) reported assessing pain during their shifts; before, during, and after procedures, and for non-verbal children. However, the depth and consistency of assessments varied.

Table 3: Nurses' practice of pain assessment in children

Variable	Response	Frequency (n, %)
I assess pain during my shift	Yes	26 (100.0)
	No	0 (0.0)
I assess pain before, during and after procedures	Yes	25 (96.2)
	No	1 (3.8)
I chart pain score after assessment	Yes	25 (96.2)
	No	1 (3.8)
I do subsequent assessment of pain	Yes	26 (100.0)
	No	0 (0.0)
I assess pain in non-verbal patients	Yes	26 (100.0)
	No	0 (0.0)

Use of Non-Pharmacological Interventions

Knowledge of Non-Pharmacological Interventions: 26.9% of the nurses did not recognize common non-pharmacological strategies like distraction and skin-to-skin contact as effective pain management methods. Participation in the educational programme had no statistically significant relationship with knowing that non-pharmacological strategies may involve distraction (P=0.287).

Years of service impact: Nurses with >10 years of service were significantly more likely to recognize distraction techniques as an effective non-pharmacological interventions compared to those with fewer years of experience (p = 0.0261).

Reported practices: 92.3% of nurses stated they used non-pharmacological interventions during paediatric procedures.

Table 4: Non-pharmacological interventions by nurses

Variable	Response	Freq (n, %)
Non-pharmacological interventions are useful in children	Yes	20 (76.9)
	No	6 (23.1)
Non-pharmacological interventions involve the use of distraction	Yes	19 (73.1)
	No	7 (26.9)
Use of breastfeeding during venepuncture reduce pain	Yes	21 (80.8)
	No	5 (19.2)
Skin to skin contact is useful during procedures	Yes	19 (73.1)
	No	7 (26.9)
I use non-pharmacological interventions	Yes	24 (92.3)
	No	2 (7.7)

DISCUSSION

Our study reveals that a significant proportion demonstrated limited awareness of the need to assess pain in neonates and incomplete knowledge of the recommended non-pharmacological interventions such as distraction techniques and skin-to-skin contact. Overall, the findings indicate a disparity between self-reported practice and depth of knowledge. The findings align with align with research from low-and middle-income countries (LMICs), emphasizing a challenge in ensuring comprehensive pain management for children. However, contrasting studies suggest that knowledge gaps may not be universal [21]. Also, educational programmes alone may not guarantee sustained practice change.

The finding that 42.3% of the nurses were unaware of the need to assess pain in neonates, consistent with other studies done in Nigeria [10, 15]. This gap represents the

Print ISSN: 0189-9287 Online ISSN: 2992-345X

persistent misconception that neonates have an underdeveloped nervous system and feel less pain [13]. This has been debunked long ago by studies showing neonates experience intense, physiologically harmful pain [22 - 24].

The Treat the Pain educational programme significantly improved nurses' knowledge of neonatal pain assessment. This agrees with studies from South Africa and Ghana where intervention was applied, reinforcing the effectiveness of structured training. However, contrasting studies from high income countries report higher baseline knowledge of neonatal pain assessment among nurses, even before interventions [19]. This raises the question: is a single educational programme enough, or should the nursing curricula be revised to incorporate early, continuous pain education?

Our study found that 26.9% of nurses lacked awareness of key non-pharmacological interventions like distraction and skin-to-skin contact. Similar findings were reported in Turkey and India, where nurses, especially those with fewer years of experience, expressed lower confidence in using non-pharmacological interventions [17, 18]. This finding is at variance with the finding of a study done in Ilorin, Nigeria where almost all the nurses knew about the use of distraction [14]. This discrepancy may be accounted for by the degree of ongoing clinical mentorship and early exposure to non-pharmacological s from early training onward as >10 years in service was significantly associated with knowing the effect of distraction as a non-pharmacological strategy.

The fact that there was no significant improvement in non-pharmacological intervention awareness indicates that a single programme may be insufficient for promoting sustained behavior change. Implementing periodic, scenario-based training may better reinforce non-pharmacological intervention knowledge, enabling nurses to translate theoretical understanding into real-world practice.

Strength and limitations of the study

This study provides evidence on paediatric pain assessment and non-pharmacological pain management practices among nurses in a tertiary hospital in southeastern Nigeria, a setting where such data remain limited. It captures both knowledge and self-reported clinical practice, allowing for broader understanding of gaps between awareness and application. The inclusion of nurses of all cadre and years of experience also strengthens the internal variability of responses allows for exploratory comparisons across professional characteristics.

The study is limited by its relatively small sample size and single-centre design, which may reduce generalizability to other paediatric settings in Nigeria. The response rate (55.3%) raises the possibility of non-response bias, as nurses who participated may differ systematically from those who did not participate. Despite being conducted in 2018, the findings of this study remain relevant given the ongoing evidence of similar knowledge and practice gaps in recent literature. Finally, the study did not include direct observation or objective validation of clinical practice, which may have resulted in overestimation of actual compliance with recommended pain management practices.

Implications of the findings

Clinical practice implications: The findings emphasize the need for strengthened and sustained reinforcement of paediatric pain assessment protocols within routine nursing practice. It uncovers that knowledge does not consistently translate to comprehensive practice. Structured use of validated pain assessment tools alongside routine incorporation of non-pharmacological strategies should be emphasized during clinical care.

Policy and institutional implications: Regular in-service training and mandatory continuing professional development programmes focused on paediatric pain management should be institutionalized. In addition, supervisory systems that reinforce compliance with pain documentation and multimodal pain relief strategies may improve sustained practice change.

Educational and research implications: There is need to strengthen undergraduate and postgraduate nursing curricula to ensure early and continuous exposure to paediatric pain management principles, including non-pharmacological interventions. Future research should adopt multi-centre designs with jarger sample sizes and incorporate objective measures such as direct observation or chart audits to validate self-reported practice. Longitudinal studies may also be useful in assessing the sustainability of knowledge and practice improvements over time following educational exposure.

CONCLUSIONS

This study highlights persistent knowledge gaps among paediatric nurses in Umuahia regarding neonatal pain assessment and non-pharmacological interventions. The educational programme significantly improved neonatal

Print ISSN: 0189-9287 Online ISSN: 2992-345X

pain knowledge, though awareness of non-pharmacological interventions remained suboptimal particularly among less-experienced nurses.

Sustained, targeted educational programs, coupled with institutional support, policy enforcement, and clinical mentorship are essential to empowering nurses with the skills and confidence to implement effective pain management strategies.

Addressing these gaps is crucial to ensuring that every child, regardless of setting, receives adequate pain relief; promoting better health outcomes and improved quality care.

Declarations

Author contributions: All authors contributed to the study conception and design. ISC, EUN and EO performed material preparation, and data collection and data analysis. The first draft of the manuscript was written by ISC and critically reviewed by UOE. All authors commented on previous versions of manuscript. All authors read and approved the final manuscript.

Ethics approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The Federal Medical Centre, Umuahia Health Research and Ethics committee approved the study.

Consent to participate: Written informed consent was obtained from the participants.

Consent to publish: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article

Conflict of interest: None of the authors have any conflict of interest

Funding Statement; None

Data availability: Data will be made available following a reasonable request

Disclosure for AI use: No Generative AI was used in the development, conduct and reporting of the manuscript

REFERENCES

1. Okpara PN. Challenges of nursing of the paediatric surgical patient. Afr J Paediatr Surg. 2018; 15: 154 - 157
2. Anand KJ, Hickey PR. Pain and its effects in the human neonate and fetus. N Eng J Med. 1987; 317 (21): 1321 – 1329
3. Stevens B, Yamada J, Ohlsson A. Sucrose for analgesia in newborn infants undergoing painful procedures. Cochrane Database Syst Rev. 2016; 7:CD001069
4. Taddio A, Katz J, Ilersich AL, Koren G. Effect of neonatal circumcision on pain response during subsequent routine vaccination. Lancet. 1997; 349 (9052): 599 – 603
5. Walker SM. Long-term effects of neonatal pain. Semin Fetal Neonatal Med. 2019; 24 (4): 101005
6. Pillai RR, Racine N, Craig KD. Non-pharmacological management of procedural pain in infants and young children; An abbreviated Cochrane review. Pain Res Manag. 2011; 16(1): 33 – 37
7. McGrath PA. Non-drug programmes for pediatric pain. Pain Res Manag. 1995; 1 (1): 33 – 37
8. World Health Organization (WHO). Guidelines on the management of chronic pain in children. 2020.
9. International Association for the Study of Pain (IASP). IASP guidelines on pain in infants, children, and adolescents. 2020.
10. Eke GK, Ide LEY. Non-pharmacological management of procedural pain in children: Health worker's approach at a tertiary health facility, Southern Nigeria. J Adv Med Res. 2020; 32: 97 – 103
11. Harrison D, Laroque C, Bueno M, Stokes Y, Turner L, Hutton B et al. Sweet solutions to reduce procedural pain in neonates: A meta-analysis. Pediatrics. 2017; 139 (1): e20160955.
12. Taddio A, McMurty CM, Shah V, Riddell RP, Chambers CT, Noel M WT et al. Reducing pain during vaccine injections. CMAJ. 2015; 187 (13); 975 - 182
13. Shah PS, Torgalkar R, Shah VS. Breastfeeding or breastmilk for procedural pain in neonates. Cochrane Database Syst Rev. 2023; 12:CD004950
14. Ibitoye BM, Oyewale TM, Olubiyi KS, Onasoga OA. The use of distraction as a pain management technique among nurses in a North-central in Nigeria. Int J Afr Nurs Sci. 2019; 11: 100158
15. Umar NJ, Nuhu LA, Olubiyi SK, Rejuaro FA, Ibraheem AA, Onasoga OO et al. Practice and perceived effectiveness of non-pharmacological strategies used for pain management among nurses in University of Maiduguri Teaching Hospital. Trop J Health Sci. 2017; 24: 1 – 4
16. Koller D, Goldman RD. Distraction techniques for children undergoing procedures: A critical review of pediatric research. J Ped Nurs. 2012; 27(6): 652 - 681
17. Sonmez MO, Nazik F, Erol L. Management of pain in children by paeditric nurses in Eastern Turkey. 2018; 20: 250 – 254

Print ISSN: 0189-9287 Online ISSN: 2992-345X

18. Arif-Rahu M, Fisher D, Matsuda Y. Biobehavioural measures for pain in the pediatric patient. Pain Manag Nurs. 2012; 13 (3): 157 – 168
19. Wuni A, Salia SM, Ibrahim MM, Iddriss I, Nyarko BA, Seini SN et al. Evaluating knowledge, practices, and barriers of paediatric pain management among nurses in a tertiary health facility in the northern region of Ghana: A descriptive cross-sectional study. Pain Res Manag. 2020; 8846599
20. Federal Ministry of Health, Nigeria. Guidelines for pain management in Nigeria. 2019.
21. Alotaibi K, Higgins I, Chan S. Paediatric pain management: knowledge, attitudes, barriers and facilitators among nurses – integrated review. Int Nurs Rev. 2018; 65(4): 524 -533
22. Grunau RE, Holsti L, Peters JW. Long-term pain consequences in human neonates. Semin Fetal Neonatal Med. 2006; 11 (4): 268 – 275
23. Carter BS, Brunkhorst J. Neonatal pain management. Clin perinatal. 2017; 44 (3): 503 – 515
24. Twycross A. Nurses' about the barriers and facilitators to effective management of pediatric pain. Pain Manag Nurs. 2013; 14(4): e164 – e172

Print ISSN: 0189-9287 Online ISSN: 2992-345X