Original Research Article

Management of Paediatric Pain: Knowledge and Practice of Healthcare Providers at a Tertiary Centre, Southern Nigeria

ABSTRACT

Background: Many disease processes and interventional procedures in paediatrics are associated with pain. In spite of its frequency, it is undertreated globally, exposing children to the risks of long-term physical and psychological sequelae, which can have adverse effects on future treatments.

Objectives: To ascertain the knowledge, attitude and practice of healthcare providers towards management of paediatric pain at the University of Port Harcourt Teaching Hospital.

Methods: In this cross-sectional survey, a semi-structured and self-administered questionnaire was distributed amongst a convenient sample of physicians and nurses attached to clinical departments/units where children are cared for, and those in educational units, between June and August 2017. Their knowledge and attitude toward pain management were analysed using Epi Info v7 software (CDC, USA).

Results: One hundred and ninety seven subjects participated in the study, 95(48.2%) physicians and 102(51.8%) nurses, all of various cadres. Seventy-four percent of them had more than 5 years working experience. One third of participants (30.4%) could name up to 3 non-pharmacological methods of pain management, of which the commonest were cold compress (48(24.4%) with nurses>physicians), followed by hot compress (38(19%)) and distraction (24(12%)). The commonest procedures for which non-pharmacological interventions of pain management were usually applied included immunisation of infants (20%) and venepuncture (17%) while lumbar puncture was the least (1.5%). Half of respondents S(52%) had never prescribed/administered morphine to children.

Conclusion: Healthcare providers had poor knowledge of paediatric pain management. There is an urgent need to build their capacity to enable optimal relief of pain among paediatric patients.

Keywords: Management, Paediatric pain, Knowledge, Practice, Healthcare providers, Southern Nigeria

1. INTRODUCTION

The International Association for the Study of Pain (IASP) defines pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage.[1] It is sometimes described as “what the patient says hurts”.[2] Uncontrolled pain is multi-faceted and impacts on the physical, psychological, social and spiritual well-being of the individual.[2,3,4] Therefore, if not addressed it could negatively affect the patient’s quality of life. But in the paediatric patient, many injuries, disease processes such as sickle cell crises, Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome (HIV/AIDS), malignancies and most medical procedures such as immunization, venepuncture are associated with pain, which becomes of great concern.[5,6] There are different types of pain, including acute and chronic pain. While the acute pain lasts a short time and has a specific

cause, the chronic one persists beyond the initial insult that triggered it and the expected time for healing, which is assumed to be 3 months or longer, with no ongoing tissue damage identified.[7,21] The overall prevalence rates for different childhood pains range from 4-88%.[9] However, in spite of its frequency, pain is inadequately assessed and managed, exposing children to the risks of long-term physical and psychological sequelae, including among others, anticipatory anxiety during future procedures, a lowering of the pain threshold and sensitization to future pain.[2,5]

In sub-Saharan Africa, children are faced with a higher disease burden and poorer access to quality healthcare.[10] Regardless of disease processes, sufferings and pains they experience, management of the pain is sub-optimal and hindered by several factors, including certain cultures and assumptions claiming among others, that pain perception in children is unreal and transient.[10-12] On the other hand, unavailability and poor accessibility to analgesic medicines are also important factors why paediatric patients who often present to the hospital with pain are mostly under treated.[10,12] Furthermore, pain management takes low priority in most low- and middle-income countries due to limited and poor allocation of resources as healthcare focuses mainly on control/eradication of communicable diseases like malaria, tuberculosis, Human Immunodeficiency Virus (HIV) infection, as well as malnutrition [7].

Various protocols for pain management that employ both pharmacologic and non-pharmacologic strategies have been developed, and are being used as standard practice, especially in developed countries. Whereas, they are less understood or implemented among African health care workers and are yet to be made readily available to health workers in our setting.[10,13] Among others, little or no pre-service training and self-development; attitude, culture and believes of health practitioners have been identified as major factors why medical staff often lack sufficient knowledge for management of paediatric pain.[7,10]

Healthcare providers who care for children are mainly responsible for relieving pain and suffering when required. However, clinicians' approach to pain management in children has not been studied in our institution. Thus, this survey was conducted to ascertain the knowledge and attitude to ascertain the knowledge, attitude and practice of healthcare providers of healthcare providers towards management of paediatric pain in our institution, a tertiary centre in southern Nigeria.

2. MATERIAL AND METHODS

The study was conducted at the University of Port Harcourt Teaching Hospital (UPTH), an 800-bed tertiary care facility located in the southern part of Nigeria, and a major referral centre for patients from within Rivers State, with its under-15 population of 2,437,138 and neighbouring states.[14]

In this cross-sectional survey, a semi-structured and self-administered questionnaire, was used as instrument for data collection. The questionnaires were administered to a convenient sample of physicians and nurses attached to clinical departments/units where children are cared for, and those in educational units, through their unit heads during various departmental activities and retrieved that same or following day.

Departments and units involved included: Departments of Paediatrics (85 beds, with an average of 2,000 hospital admissions yearly), Surgery (Paediatric Surgery- 18 beds with an average of 10 surgeries weekly; Burns and plastics; Orthopedics), Ear-Nose & Throat, Ophthalmology, Paediatric Dentistry and Nursing services (Ward Nurses, Nurse Tutors and Nurses in the Post Basic Nursing Education Unit). The services provided by these health

care professionals include treatments of common and specialised conditions in children as well as supportive care.

Approval for the study was obtained from the Ethics Committee of the hospital and consent for participation was sought and onbtained from the respondents.

Descriptive statistics was used to present demographic data. Chi-square was used to compare the responses of the doctors and nurses to each question at a 95% confidence interval and a *P*-value less than .05 was considered significant. All tests were done with the Epi Info v7 software (CDC, USA).

3. RESULTS

Out of 220 questionnaires distributed, 197(90% response rate) were returned from 95(48.5%) physicians and 102(51.8%) nurses. One third of the respondents, 66(33.5%) had 5 to 10 years working experience post graduation while 49(25%) had more than 15 years. (Table 1)

Table 1. Characteristics of the study population

	Frequency	Percentage
Role		
Doctor	95	48.2
Nurse	102	51.8
Total	**197**	**100**
Years of work experience		
5 years	52	26.4
5 - 10 years	66	33.5
10 - 15 years	30	15.2
>15 years	49	24.9
Total	**197**	**100.0**

The commonest procedures for which non-pharmacological interventions of pain management were usually employed included immunisation of infants (20%) and venepuncture (17%). Nurses significantly applied them while changing dressings (*P*= .001) compared to doctors (Table 2). Whereas lumbar puncture was the least procedure for which non-pharmacological methods were considered, and by nurses only. On the other hand, pharmacological methods were mainly used for bone marrow aspiration (40%), even though significantly higher proportions of nurses had applied them for immunisation of infants (*P*= .03) and venepuncture (*P*= .007). Eight percent of respondents would use measures of pain control while performing a lumbar puncture and 4% would do so while changing dressings. .

Table 2. Medical procedures and indicated methods of pain management

	Doctors (%)	Nurses (%)	Total	*P*-value
Procedures for which non-pharmacological methods of pain management are indicated				
Immunization of infants	14 (14.7)	26 (25.4)	**40 (20.3)**	.06
Venepuncture	19 (20)	15 (14.7)	**34 (17.3)**	.32
Dressing changes	7 (7.4)	24 (23.5)	**31 (15.7)**	.001*
Insertion of venous catheter	3 (3.2)	9 (8.8)	**12 (6.1)**	.09
Lumbar puncture	0 (0.0)	3 (2.9)	**3 (1.5)**	.09
Procedures for which pharmacological methods of pain				

management are indicated				
Bone marrow aspiration	31 (32.6)	48 (47.1)	**79 (40.1)**	.03*
Lumbar puncture	7 (7.4)	9 (8.8)	**16 (8.1)**	.70
Immunization of infants	3 (3.2)	12 (11.7)	**15 (7.6)**	.02*
Insertion of venous catheter	6 (6.3)	6 (5.8)	**12 (6.1)**	.89
Venepuncture	1 (1.1)	10 (9.8)	**11 (5.6)**	.007*
Dressing changes	2 (2.1)	6 (5.8)	**8 (4.1)**	.17

One third of participants (*n*=60, 30.4%) could name up to 3 non-pharmacological methods of pain management, of which the commonest they had used knowledge, attitude and practice were assessed in the 3 months preceding the survey were cold compress (*n*=48, 24.4%), hot compress (*n*=38, 19%) and distraction (*n*=24, 12%). A significantly higher proportion of nurses identified cold compress as a measure for managing pain compared to physicians (*P*< .001) (Figure 1).

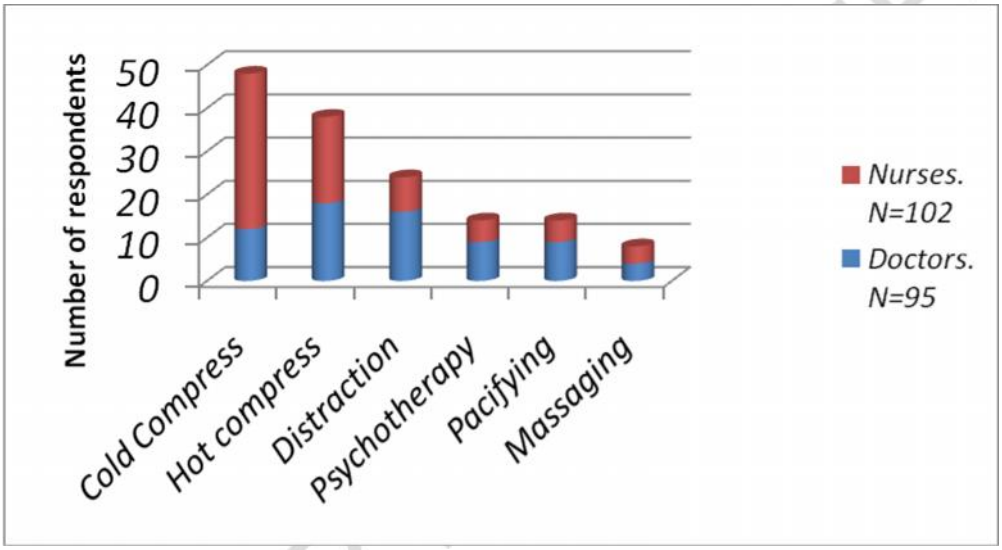

Fig. 1. Non-pharmacological methods of pain management used during the 3 months preceding the survey

Ibuprofen was the commonest drug known to be useful for treating chronic pain in children, significantly higher with nurses (*P*< .001). On the other hand, gabapentin and amitriptyline were not known as useful medication for childhood chronic pain (Figure 2).

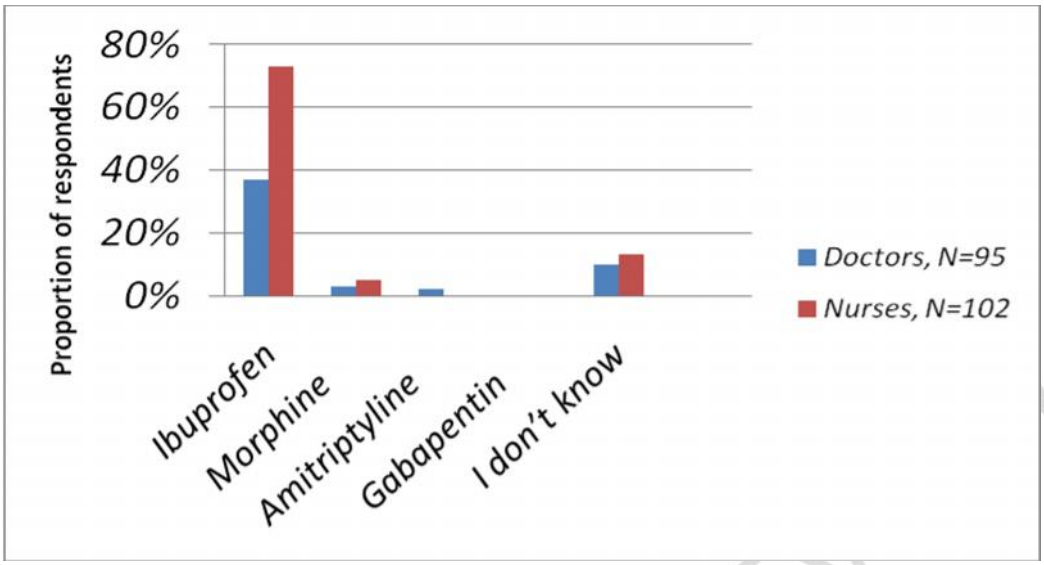

Figure 2. Useful drugs for the treatment of chronic pain in children

The large majority of respondents (*n*=103, 52%) had never prescribed/administered morphine to children, whereas about 10% had done that sometimes (Figure 3).

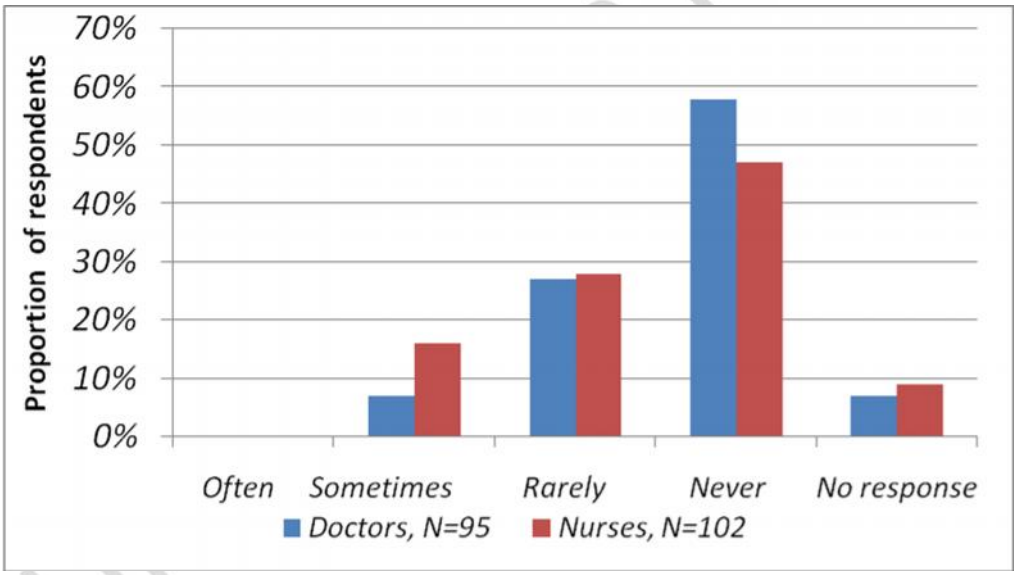

Fig. 3. Attitude of respondents towards prescription/ administration of morphine to children

Majority of respondents are unaware whether a standard protocol for management of pain in children exist in the hospital. For a third of them, there is none (Figure 4).

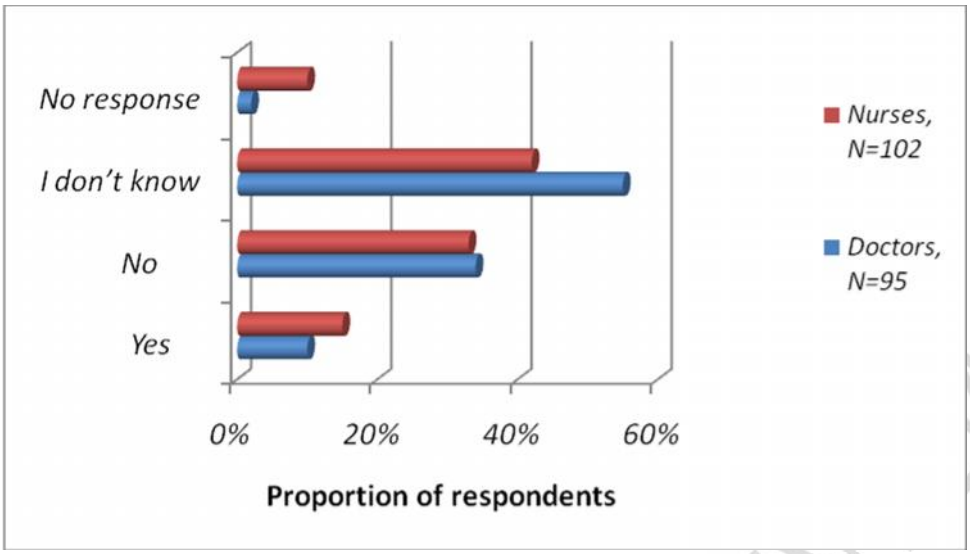

Fig. 4. Knowledge of existence of a standard protocol for the management of paediatric pain in the hospital

4. DISCUSSION

In the course of receiving health care, children are exposed to multiple invasive medical procedures as part of their preventive, curative or palliative treatment. The pain associated with these procedures has been reported as one of the most significant and distressing cause of pain for hospitalised children.[15] In this study, majority of respondents failed to associate painful procedures with interventions for pain control, implying that children are frequently subjected to unnecessary pain. Similarly Offiong found that less than 10% of Nigerian paediatric health care workers prescribed analgesics for procedural pain. [16] This is worrisome as these children are exposed to the risks of adverse sequelae of untreated procedural pain in childhood that can have a lifelong impact, including needle phobia among others, in which the fear may become generalized to individuals, objects, and situations related to needles, such as the presence of doctors, nurses, syringes and examination rooms.[17-19]

Non-pharmacological measures have been found highly effective, have excellent safety profiles and are easy to learn. They are recommended for use whenever possible in conjunction with pharmacological options to help lower levels of anxiety, pain and distress.[12,13,20] In this study, few respondents resolved to non-pharmacological methods of pain control while caring for their patients, especially nurses, even for procedures performed by physicians. This may be due to the fact that nurses spend more time with patients and by virtue of their training in providing comfort. Our finding differs from the report of De Freitas *et al* which showed that all healthcare professionals who participated in their survey and were working in some pediatric units in southern Brazil adopted non-pharmacologic measures of pain management.[21] Respondents who had some kind of training in pain treatment, during or after their professional education were found to be better informed about pain management in children.[21] The disparity with our finding could be due to the fact that pre-service training, especially for doctors, lays greater emphasis on

pharmacology than other means of pain alleviation while in-service training opportunities on pain management are not readily available in our setting.[7] Whereas use of hot water bottle was the commonest non-pharmacological measure stated in the afore mentioned survey, use of cold compress was the most common option applied by respondents in this study, while prayers and fluid therapy were the only strategies administered to children with sickle cell anaemia in acute painful crises in a tertiary hospital in south-western Nigeria.[21,22] Surprisingly, prayers were not mentioned as an option in this study, despite the fact that we live in a very religious setting. It is possible that respondents were not aware that this simple strategy could be useful in pain management [23].

Chronic pain is associated with poor quality of life, serves no biological purpose, and is more difficult to treat.[4,7,12] A multidisciplinary approach has been recommended for its care, including Non-steroidal anti-inflammatory drugs (NSAIDs) for mild pain while morphine is still advocated for moderate to severe pain, to which adjuvant medications can be added for optimal pain control. [2,3,6,7,13] In this study, healthcare professionals mainly preferred ibuprofen, for treating chronic pain in children while less than 10% believed that morphine could be useful. This result is in consonance with previous reports in Nigeria.[7,22] While exploring how clinicians treated chronic pain in 3 tertiary centres in middle and northern Nigeria, Sanya *et al* found that ibruprofen was the most used NSAID(73%), especially for patients with sickle cell disease which was the most common cause of chronic pain, which could be explained by the fact that Nigeria has the highest burden of sickle cell disease in Africa.[7,24] Whereas less than 10% of clinicians were familiar with the use of opioids, only 2% also prescribe antiepileptics as adjuvant analgesics to treat chronic pain.

Adjuvant analgesics are used in combination with the primary analgesics to improve outcome and maintain the balance between relief and side effect, and have been found useful for treating chronic pain even in children.[2-4,6,13,20] Respondents in this study were not familiar with some of the commonly used ones, including anticonvulsants such as gabapentin and tricyclic antidepressants such as amitriptyline. This gap in knowledge of healthcare professionals which could limit the ability to achieve adequate pain relief in children has been previously documented and attributed among others to a lack of knowledge about various classes and dosages of analgesics found to be safe in the paediatric population and inadequate pain education in medical/ nursing schools and during specialty trainings.[7,10,22]

Most physicians in this study had never prescribed morphine, which is considered the drug of choice for moderate to severe pain in children.[4,6,22] However, a significantly higher proportion of nurses had administered it, possibly because in the study setting, nurses are not licensed to prescribe morphine, but are usually the ones who administer the morphine prescribed by the physician. Moreover, some of them had either rotated through the children emergency wards or children wards where oncology patients are being managed and for whom morphine had been requested by the paediatric oncologist. The finding in this study is in consonance with previous reports showing that opioids were rarely prescribed by Nigerian healthcare providers.[7,16,22,25] Oshikoya *et a*l in south western part of the country found that morphine and its derivatives, except hydromorphone, were rarely used to treat acute pain in children with sickle cell anaemia during emergency admission, despite the recommendation in our National guideline to do so.[20,24] This is worrisome as poorly treated acute pain could progress to chronic pain, which patients tend to eventually live with. [26] In the same vein, even though post operative pain was not singled out in the present survey, studies exploring its practice in Nigeria showed that the use of morphine was practically nonexistent as commonly used postoperative analgesia included paracetamol, NSAIDs, tramadol and pentazocine. [24,27]

Problems of unavailability, high cost, fear of serious adverse effects, in particular respiratory depression, masking symptoms, addiction and analgesic abuse by parents were pointed out in the afore mentioned studies as reasons why morphine was not used, but this was not

explored in the present survey.[16,22,25. On the other hand, our finding is at disparity with the study by De Freitas *et al*, in which 40% of health professionals in 3 paediatric units in Brazil had administered opioids.[7,21] This is not surprising as about half of the respondents in the later study had some kind of training in pain management during or after their education.[7,21]

The majority of respondents were unaware of the existence of a protocol for management of pain in children in the study setting, which is similar to the report of Nasir *et al*. in Nigeria.[25] It is more likely because treatment of pain has not been given priority in the clinical management of patients in our institution, which could reflect deficiencies at both individual and institutional levels. Individual deficiencies, stemming from little pre-/in-service training or none, or lack of organised pain management workshops, while a lack of policy and will from the hospital management to insure implementation of guidelines for the treatment of pain in the paediatric population are also possible reasons.

5. CONCLUSION

Healthcare workers in our Institution had poor knowledge of non-pharmacological and pharmacological interventions, including adjuvant medications recommended for analgesia in children. Development and distribution of standard treatment protocols for paediatric pain, as well as setting of minimum standards and organizational support are advocated to enable professionals offer optimum pain management to their patients

COMPETING INTERESTS

Authors have declared that no competing interests exist.

ETHICAL APPROVAL

Approval for the study was obtained from the Ethics Committee of the University of Port Harcourt Teaching Hospital and from the respondents.

Disclaimer: - This manuscript was presented in a Conference.

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REFERENCES

1. Mersky H. A list with definition and notes on usage: Recommendations by the IASP Subcommittee on Taxonomy. Pain 1979; 6: 249-52
2. Downing J, Atieno M, Debere S, Mwangi-Powell F, Ddungu H, Kiyange F, et al. Beating Pain: A Pocket Guide for Pain Management in Africa. Kiwanuka R, Leng M, Meiring M, Ulaya P, Williams S, Ddungu H, et al., (eds). Kampala, Uganda: African Palliative Care Association (APCA); 2010: 1-105 p.
3. Amery J. A Really Practical Handbook of Children's Palliative Care for doctors and nurses anywhere in the World: Part 6; 44-122; Lulu Publishing services; 2016
4. Meiring M. Management of common symptoms and problems in paediatric palliative care. Clinical guidelines. USAID, HPCA 2012: 13-27
5. Taddio A, Chambers CT, Halperin SA, Ipp M, Lockett D, Rieder MJ, et al. Inadequate pain management during routine childhood immunizations: The nerve of it. Clin Ther. 2009;31:S152–67
6. World Health Organization. WHO guidelines on the pharmacological treatment of persisting pain in children with medical illnesses. WHO Library Cataloguing-in-Publication Data. WHO geneva. 2012;1–172.
7. Sanya EO, Kolo PM, Makusidi MA. A survey on doctors' knowledge and attitude of treating chronic pain in three tertiary hospitals in Nigeria. Niger Med J 2014;55(2): 106–10
8. International Association for the Study of Pain, Subcommittee on Taxonomy. Classification of chronic pain. Descriptions of chronic pain syndromes and definitions of pain terms. Pain Suppl. 1986;3:S1-226. PMID: 3461421
9. Zeltzer LK, Krane EJ, PalermoTM. Pediatric pain management. In: Kliegman RM, Stanton BF, St Geme JW, Schor NF. Nelson Textbook of Pediatrics. 20th edition, Philadelphia. Elsevier, Inc 2016; pp 430-47
10. Albertyn R, Rode H, Millar AJW, Thomas J. Challenges associated with paediatric pain management in Sub Saharan Africa. Int J Surg. 2009;7:91–3
11. Elusiyan JB, Senbanjo IO. Management of pain in children: a review of the literature. Niger J Med. 2005; 14(4): 363–67
12. Adeboye M, Fakayode E, Adeniran M. Paediatrics pain management. Symp Niger J Paed. 2013;40(1):97–104
13. Kahsay H. Assessment and treatment of pain in pediatric patients. Curr Pediatr Res. 2017; 21(1):148–57
14. Legal notice: Federal Republic of Nigeria Official Gazette No 2, Abuja 15th May 2009 Vol. 96. Page B 39- 40. Legal Notice on Publication of 2006 Census Final Results
15. Birnie KA, Chambers CT, Fernandez CV, Forgeron PA, Latimer MA, McGrath PJ, et al., Hospitalized children continue to report undertreated and preventable pain. Pain Res Manag 2014; 19(4): 198-204
16. Offiong UM. Pain management in paediatric practice: The view of paediatric health care provider on the use of analgesics. WJPMR 2017;3(11): 44-7
17. Taddio A, McMurtry CM, Shah V, Riddell RP, Chambers CT, Noel M, et al. Reducing pain during vaccine injections: clinical practice guideline. CMAJ 2015; 187(13): 975-82
18. Weisman SJ, Bernstein B, Schechter NL. Consequences of Inadequate analgesia during painful procedures in children. Arch Pediatr Adolesc Med. 1998;152:147-49
19. Hamilton JG. Needle phobia: A neglected diagnosis. J Fam Pract 1995; 41:169-175
20. Amery J, Meiring M, Albertyn R, Jassal S. Pain. In: Children's Palliative Care in Africa. Amery J (ed). Oxford University Press 2009: 97-124

21. De Freitas GRM, De Castro CG, Castro SMJ, Heineck I. Degree of knowledge of Health Care professionals about pain management and use of opioids in Pediatrics. Pain Medicine 2014; 15: 807-19
22. Oshikoya K, Oreagba I. Acute pain management in children with sickle cell anaemia during emergency admission to a teaching hospital in Lagos, Nigeria. SAJCH 2015; 9(4): 119-23
23. Keilman, Linda (2015). Compendium of Evidence-Based Nonpharmacologic Interventions for Pain in Older Adults. Copyright 2015 by LJKeilman, East Lansing: Michigan State University, College of Nursing
24. The Federal Ministry of Health, Nigeria. National Guideline for the Control and Management of Sickle Cell Disease. 2014
25. Nasir AA, Ameh EA, Abdur-Rahman LO,Kolawole IK, Oyedepo OO, Adeniran JO. Postoperative pain management in children: A survey of practices of pediatric surgeons in Nigeria. J Clin Sci 2017;14:138-43.
26. Pergolizzi JV, Raffa RB, Taylor R. Treating acute pain in the light of the chronification of pain. Pain Management Nursing 2014; 15(1): 380-90
27. Osifo OD, Aghahowa ES. Safety profile and efficacy of commonly used analgesics in surgical neonates in Benin City, Nigeria. Am J Perinatol 2008;25:617‑22