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Non-pharmacological Management of Procedural Pain in Children: Health Worker's Approach at a Tertiary Health Facility, Southern Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Author GKE *designed the study. Author LEY performed the statistical analysis. Author GKE wrote the protocol and wrote the first draft of the manuscript. Authors GKE and LEY managed the analyses of the study. Both authors* were involved with the literature *searches. Both authors read and approved the final manuscript.*

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ABSTRACT

Introduction: Pain is one of the most recurrent complaints obtainable in paediatric settings especially while carrying out procedures. The emergency section is a very tasking place for children. Hence it is important for health care workers to follow a child focussed or individual methods in their assessment and management of pain and painful procedures.
Aim: To determine health workers' approach towards non-pharmacological management of procedural pain in children at the University of Port Harcourt Teaching Hospital (UPTH).
Methods: This descriptive cross-sectional study was carried out between November 2019 and January 2020. A semi-structured questionnaire was used to retrieve information on biodata, knowledge and practice of non -pharmacological management of procedural pain in children. Data was entered into Microsoft Excel spread sheet and analysed using Statistical Package for Social Sciences version 21.
Results: Respondents in this study included 25(24.8%) physicians and 61(60.4%) nurses. Forty-four respondents (43.5%) had more than 10 years' work experience. Self-development 59 (58.4%) was the most common source of knowledge of paediatric pain management. Fourteen (13.9%) respondents knew the appropriate time of applying non-pharmacological measures of which

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distraction was the most common strategy mentioned (n=85, 84.2%) and used (36%). Nurses were significantly more knowledgeable about non-pharmacological methods of pain management in children (p= .000).

Conclusion: There are gaps in knowledge and practice of clinicians concerning use of non-pharmacological interventions in the management of procedural pain in children. Development of a standard protocol would be an asset. There is need for necessary tools, and institutional commitment to adequate pain relief for children in our institution.

Keywords: Non-pharmacological management; procedural pain; children; Southern Nigeria.

1. INTRODUCTION

Procedural pain is a short-lived acute pain associated with medical investigations and treatments conducted for the purpose of health care [1]. It is a common yet preventable cause of suffering in children. The pain associated with these procedure serves no useful purpose, but has been reported as one of the most significant and distressing cause of pain for hospitalised children [1]. Untreated acute pain has also been recognised to have the potential of resulting in both immediate and long-term consequences, including among others anticipatory anxiety during future procedures, needle fears, a lowering of pain threshold and reduced compliance and cooperation to treatment.[2,3] In addition to undue pain and suffering, stress associated with painful procedures can influence physiological, social and cognitive outcomes and have emotional and psychological implications for children and families [3]. Whereas, it has been documented that acute procedure-related pain can be effectively reduced through the use of selected pharmacological and integrative non-pharmacological strategies.

Non-pharmacological measures refer to interventions that do not involve the use of medications to treat the pain [4,5,6]. These methods have been found highly effective, with excellent safety profiles, inexpensive and easy to learn. They are recommended for use whenever possible in conjunction with pharmacological options to help lower levels of anxiety, pain and distress. They provide patients with a sense of control [7,8,6].

Distraction and hypnosis have been reported as non-pharmacological interventions effective for management of acute procedure-related pain in hospitalized children [3]. Among others are education, slow rhythmic breathing, relaxation, guided imagery [3].

Much research has been conducted on acute paediatric pain in the past decades, and has resulted in the development of multiple paediatric pain standards and guidelines. However, the content of these guidelines are not effectively translated into clinical practice, while pain is still poorly managed and children, in particular, continue to suffer unnecessarily [2,3].

Health workers' perception and practice of non-pharmacological management of pain inflicted on children while undergoing various procedures has not been studied in our institution. Thus this survey was conducted to determine the approach of Health workers towards the use of non-pharmacological strategies in the management of procedural pain in children at the University of Port Harcourt Teaching Hospital(UPTH), to offer an opportunity to reflect on our attitude, belief and practice, and advocate for practice changes that could ultimately contribute to improved patient- and system-related outcomes.

2. METHODS

2.1 Study Design and Setting

This was a descriptive cross-sectional study carried out over a period of three months November2019 to January 2020 at the Department of Paediatrics, UPTH. It is a tertiary hospital located in Port Harcourt, Southern Nigeria. The Paediatrics department provides both inpatient and outpatient care.

2.2 Study Population

The study population consisted of doctors and nurses who care for children at the department of Paediatrics of the UPTH. Their years of work experience ranged from between <5years to >15 years and they all consented for the study.

2.3 Inclusion Criteria

Every doctor/nurse working in the department of Paediatrics or student nurses of the department who gave consent for the study was recruited.

2.4 Exclusion Criteria

Every doctor/nurse working in the department of Paediatrics or student nurse of the department who failed to give consent for the study was excluded.

2.5 Sampling Technique

Purposeful sampling technique was used, where every doctor or nurse working in department of Paediatrics was eligible.

2.6 Data Collection Tool

A semi-structured and self-administered questionnaire consisting of 3 sections was used to collect information. The first section was designed to retrieve information on demographic data, the second was to explore respondents' knowledge of non-pharmacological methods in the management of procedural pain in children, and the third section was to explore their practice about the subject. Respondents could tick more than one option per question, where applicable. The questionnaires were distributed at the end of various departmental activities. Respondents were asked to fill and return the questionnaires same or following day. They were expected to answer it on their own and truthfully. A pilot study was first carried out with the questionnaire to ensure validity and clarity of included questions. Self-development was considered when individuals took specific steps to improve their skills.

Data was entered into Microsoft Excel spread sheet and analysed using Statistical Package for Social Sciences version 21.

3. RESULTS

Respondents in this study included 25(24.8%) physicians and 61(60.4%) nurses. One third of respondents(29.7%) had less than 5 years working experience post graduation, while 44(43.5%) had more than 10 years. Self-development was the most common source of knowledge of pain management in children and for 21(20.8%) respondents, it was their training institutions (Table 1).

For the majority of respondents (n=35, 34.7%), non-pharmacological measures should be applied before the painful procedure, for 14(13.9%) respondents they should be applied before, during and after the procedure (Table 2).

Distraction was the most common strategy mentioned as non-pharmacological measure by respondents (n=85, 84.2%), followed by positioning (n=58, 57.4%) while 15(14.9%) knew about hypnosis. Half of the respondents were

Table 1. Characteristics of the study population

Characteristics	Frequency (%)
Profession	
Physician	25 (24.8)
Nurse	61 (60.4)
Not indicated	15 (14.9)
Total	101 (100)
Work experience	
< 5 years	30 (29.7)
5-9 years	25 (24.8)
10-14 years	26 (25.7)
≥ 15 years	18 (17.8)
Not indicated	2 (2)
Total	
Source of knowledge of pain management in children	
Self-development	59 (58.4)
Training institution	21 (20.8)
In-service training	17 (16.8)
Colleagues	16 (15.8)
Others, included seminars	9 (8.9)

aware that there was no available protocol/ guideline for paediatric pain management in the department while 20(19.8%) had.

More nurses than physicians could name up to 5 non-pharmacological methods for the management of procedural pain in children, while more physicians than nurses could name 2 methods. The difference was statistically significant (p= .000) (Table 3).

Thirty-three (32.7%) respondents always applied non-pharmacological measures for changing dressings, 27(26.7%) did so for lumbar puncture and 25(24.8%) for immunisation of children (Fig. 1). Nineteen (18.8) respondents often applied non-pharmacological measures for lumbar puncture, while 24(23.8%) respondents never applied any for suctioning children.

4. DISCUSSION

The lack of information about pain assessment and management for both physicians and nurses during their education has been previously reported [2,9,10,11,12]. In the present study, self

Table 2. Knowledge of respondents about use of non-pharmacological strategies for the management of procedure related pain in children

Characteristics	Frequency (%)
When to apply non pharmacological measures of pain management for painful procedures	
Before the procedure	35 (34.7)
During the procedure	24 (23.8)
After the procedure	11 (10.9)
No knowledge	8 (7.9)
Not indicated	1 (1.0)
Before, during and after the procedure	14 (13.9)
Common non-pharmacological strategies that can be used for the management of procedural pain in children	
Distraction	85 (84.2)
Positioning	58 (57.4)
Sucrose for infants	37 (36.6)
Breathing exercises	37 (36.6)
Restraining	27 (26.7)
Promoting resilience	19 (18.8)
Hypnosis	15 (14.9)
Others, included reassurance, breastfeeding, massaging	5 (5.0)
Availability of a standard protocol/guideline for paediatric pain management in your department/unit?	
No	51 (50.5)
Yes	20 (19.8)
No knowledge	27 (26.7)
Not indicated	3 (3)
Total	101 (100)

Table 3. Minimum number of non-pharmacological strategies respondents could name by profession

Could name at least 5 measures	Physician (%)	Nurse (%)	Not indicated (%)	Total (%)
Not indicated	2 (8)	0 (0)	0 (0)	2 (2)
Knowledge of five	2 (8)	34 (55.7)	9 (60)	45 (44.5)
Knowledge of four	3 (12)	9 (14.7)	0 (0)	12 (12)
Knowledge of three	3 (12)	8 (13.1)	1 (6.6)	12 (12)
Knowledge of two	12 (48)	2 (3.3)	4 (26.6)	18 (17.8)
Knowledge of one	2 (8)	3 (5)	1 (6.6)	6 (6)
No knowledge	1 (4)	5 (8.2)	0 (0)	6 (6)
Total	25 (100)	61 (100)	15 (100)	101 (100)

Pearson Chi-Square p= .000

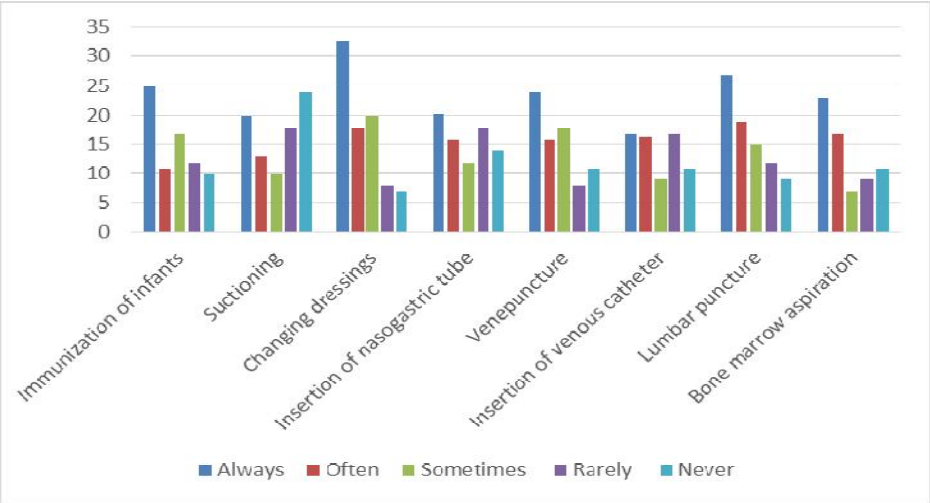

Fig. 1. Practice of non-pharmacological pain management for painful procedures

Table 4. Non-pharmacological methods of pain management used by health workers

Non-pharmacological methods	Frequency (%)
Distractions	127(36)
Positioning/Restrictions	58(16.4)
Cuddling/ Soothing	29(8.2)
Breathing Exercises	27(7.6)
Warm /Cold compress	16(4.53)
Breast feeding	14(3.97)
Resilience	12(3.4)
Encouragement	11(3.1)
Massage	10(2.8)
Relaxation	7(2)
Acupuncture	6(1.7)
Hypnosis	5(1.4)
Psychotherapy	5(1.4)
Counselling	4(1.1)
Hydrotherapy	3(0.8)
Health education	2(0.6)
Life style change	1(0.3)
Placebo	1(0.3)
Not indicated	15(3.2)

development was the most common source of knowledge for the respondents, which is in contrast with a previous study in this same centre, in which training institutions (30%) and in-service training (23%) were identified as the commonest sources [12]. This may represent a good development as with more awareness being created about the topic locally and globally, it is possible that clinicians are taking up the responsibility to equip themselves with knowledge and skills to meet up with the moral and ethical obligation of providing adequate pain relief to their paediatric patients. However, the integration of the subject of pain control in curricula of health training institutions which would ensure that health workers are adequately equipped for service delivery is still recommended.

Despite the numerous published guidelines, recommending a multimodal approach for the management of procedural pain, involving both pharmacological and non-pharmacological interventions, only few respondents (14%) knew that the non-pharmacological ones should be applied before, during and after a painful procedure to minimize pain and its associated fear and distress [2]. This shows that for lots of

children, the pain experienced during routine medical procedures may not be adequately controlled, and it is not peculiar to our institution [2,13].

In this study, respondents had some knowledge about non-pharmacologic strategies for use in the management of procedural pain in children, especially distraction, which has been found very helpful for children during medical procedures [2,3,14].This has been previously reported [13]. With the emphasis on offering tender loving care to patients during their professional training, it may not be surprising that nurses had better knowledge about these interventions, compared to physicians whose training are mainly geared toward the pharmacologic aspect of care. Nevertheless, pain relief remains the duty of every clinician. This highlights the urgent need of building the capacity of healthcare providers on these simple non-pharmacologic methods for improved service delivery.

This present study shows that the practice of health workers concerning pain relief during common medical procedures is below the standard of international best practices, which demands that non-pharmacological interventions be always applied alone or with pharmacological measures. Further studies are recommended on the effectiveness of non-pharmacologic interventions for pain relief during common medical procedures in children in our centre.

Availability of standard protocol/guideline represent one of the initials steps on the right path. However, their non-availability has been previously reported [15]. When coupled with the provision of necessary tools, an institutional mechanism to ensure implementation of the guidelines and quality improvement, the use of guidelines can facilitate translation of knowledge into clinical practice, and ultimately contribute to improved patient- and system-related outcomes. Institutional commitment and support is necessary to drive the change, as shown in previous research on implementation [2].

5. CONCLUSION

There are gaps in knowledge and practice of health worker concerning use of non-pharmacological interventions in the management of procedural pain in children. Hence there is need for training and retraining of health workers at the UPTH, Nigeria. Development of standard protocols with provision of necessary tools, and institutional commitment to adequate pain relief for children in our institution is recommended.

6. STUDY LIMITATIONS

Some of the doctors and nurses did not indicate their years of experience and the non-pharmacological methods they used.

CONSENT

Written informed consent was obtained.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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