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(RESEARCH ARTICLE)

Pain management practices and perceived barriers among nurses working in National Orthopedic Hospital, Igbobi, Lagos

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Abstract

Inadequate pain management practices during patient hospitalization can increase the vulnerability to severe and persistent pain leading to chronic pain which affects patients' activities of daily living. Nurses are expected to achieve adequate pain management and relief of patient's pain conditions. This study was conducted in March 2022 to assess pain management practices among nurses. This study was a quantitative, cross-sectional survey design. The target population was N=342 registered nurses. The sample size was determined and total enumeration sampling technique was used to select all nurses practicing in the selected hospital in Lagos, Nigeria. Adapted questionnaire with validity and reliability established was used to collect data which were collated and analyzed with SPSS version 26. Hypotheses were tested using Chi-square at 95% CI and 0.05 significant levels. The result shows that majority of the respondents were in age group 41-50 years (40.1%) and females (90.4%). More than half of the respondents (60.5%) had bachelor degree as their educational qualification. Seventy-six percent (76%) of the respondents indicated system-related barriers were responsible for inadequate and low patient pain interventions practices. There was a significant association between system-related barriers and nurses' interventions for managing patient pain at p=0.001. Furthermore, the result shows that age, gender, education level, and years of experience were significantly associated with nurses' interventions for managing pain of patients at p< 0.05.In conclusion, system-related barriers affected nurses' pain management practice. It is recommended that stakeholders resolve the system-related barriers and monitor individual nurse's practice on pain management procedure.

Keywords: Hospital; Management practices; Nigeria; Nurses; Perceived barriers

1. Introduction

Pain has been the most commonly reported complaint in the hospital in developed and developing countries [1]. Pain is a displeasing feeling that is carried through the brain to the sensory neurons. Pain management is the alleviation of pain or a reduction in pain to a level of comfort that is acceptable to the client. Nociceptive and neuropathic are two types of pain patient tolerate during hospitalization [2]. Nociception is the sensory nervous system's response to certain harmful or potentially harmful stimuli [3]. Nociception pain is deduced from contiguous reactions to tissue damage, such as tissue stabbing, or skin puncture, which stimulate nerves to give evidence of pain in the brain. Neuropathic pain is a disorder specifically affecting the cranial or spinal nerve [3].

Inadequately managed pain has many consequences for the patient, family, health professionals, and society. Patients may have emotional reactions related to pain such as anxiety, sleeplessness and hopelessness. These reactions can be

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followed by unusual behaviours expressed by the patient in response to the unpleasant life experience. Untreated pain has additional risks such as prolonged hospital stay, delayed recovery, and the development of chronic and persistent pain [4]. It is also known that poor analgesia leads to immobility and increase cardiovascular, respiratory, and gastrointestinal complications [5].

It is widely accepted that pain is a significant part of the nurses' workload. Studies showed that acute pain is inadequately managed because of delayed administration of painkillers and under-treatment [6]. In addition, it has been reported that patients in the hospital might not be assessed because the priority is given to the primary disease. Consequently, patients with low oxygen saturation and blood pressure were less likely to be considered for pain assessment [7].

The pain management methods include non-pharmacological and pharmacological approaches [8]. Alzghoul and Abdullah [8] conducted study on pharmacological pain management, when researchers asked what nurses do when a doctor prescribes four hourly medications, only 34% nurses indicated they administer the drugs at the exact time whether the patient complains of pain or not, while, 66% said they give the medication only if the patient complains of pain. Patients stated that the relief measures they usually found most effective when in pain were medications (64.2%), heat application (18.9%), change of position (11.3%) and distraction (5.7%). However, nurses mainly used medication and occasionally cold compresses. Only 46.2% of patients (especially those with severe pain), indicated satisfaction with the pain management instituted by nurses in that hospital. In another study conducted by researchers on pain management in selected hospitals in Ilorin, the result showed that as regards the administration of narcotics, 11.6% respondents agreed that it is the best pharmacological method of pain management while 88.4% disagreed [9]. Also, 80.2% agreed that nurses administer injection paracetamol as prescribed for relief of pain, while 19.8% disagreed with the assertion [9].

Non-pharmacological interventions refer to non-medicinal measures used in common practice by clinicians e.g. breathing exercises, massage, and positioning and music therapy [10]. Non-pharmacological interventions have the potential to complement pharmacological interventions and may offer alternative treatment options in the management of symptoms, including pain [10]. Researchers typically categorized non pharmacological interventions into three [11]: Physical interventions (massage, positioning, hot and cold application, transcutaneous electrical nerve stimulation, acupuncture and progressive muscle relaxation), psychological interventions (cognitive behavioral therapy, mindfulness-based stress reduction, acceptance and commitment therapy, guided imagery and biofeedback), and others (Spirituality, religion in pain management and music therapy). In the study conducted by Arbour et al. [11] both patients/family members and nurses mentioned that they had already used massage, music therapy, distraction, relaxation techniques, heat/cold application and family presence facilitation in the past for personal use or in the ICU and they found them to be effective for pain management.

Various types of barriers to pain management practices in clinical settings have been reported and these barriers can be grouped into 4 subjects: patient related barriers, nurses-related barriers, physician-related, and systems-related barriers [12]. The results of the study conducted by Dabrowski et al. [13] indicated that nurses perceive a kind of barriers when attempting to provide optimal pain management practices. The most commonly perceived barriers to pain management practices were system-related barriers [14]. A variety of barriers to pain management practices perceived by Nigeria nurses have misinformed the public the minimum standards of the nursing profession and help them misunderstand professional nursing code of conduct.

The theoretical framework applied to this study is the Gate Control Theory (GCT) designed by Melzack and Wall [15]. Melzack and Wall proposed the GCT in 1965 to explain the relationship between pain and emotion, and how pain is transmitted to the brain or inhibited. In 1982, the theory was reviewed by other researchers with the notion that the awareness of pain is not just a physiologic response, but also psychological [16]. In general, pain impulses are transmitted to the dorsal horns of the spinal cord, to the area of the cord named the substantia gelatinosa (SG). The cells of the "substantia gelatinosa are responsible for facilitating or inhibiting the transmission of pain impulses to the brain through the spinal cord" [16, p.318]. Melzack and Wall in advocating this theory discussed an assumption that there is a gate mechanism existing in the central nervous system which regulates and blocks pain impulses when necessary. The GCT identifies that the gate mechanisms are located in the spinal cord, thalamus, reticular formation, and the limbic system [17, 18]. The GCT explains that the inhibition of the action of the nerve cells closes the gate producing no pain. Conversely, when the gate is open, pain impulses can pass through the spinal cord and progress to the brain where the impulses are interpreted as pain. When there is an injury producing painful stimuli such as surgical incision, and there is no administration of pain medication before onset of pain, the consequence is that the gate remains open allowing painful stimuli to pass through to the brain. The transmitted pain impulse is interpreted as it arrives in the brain as pain.
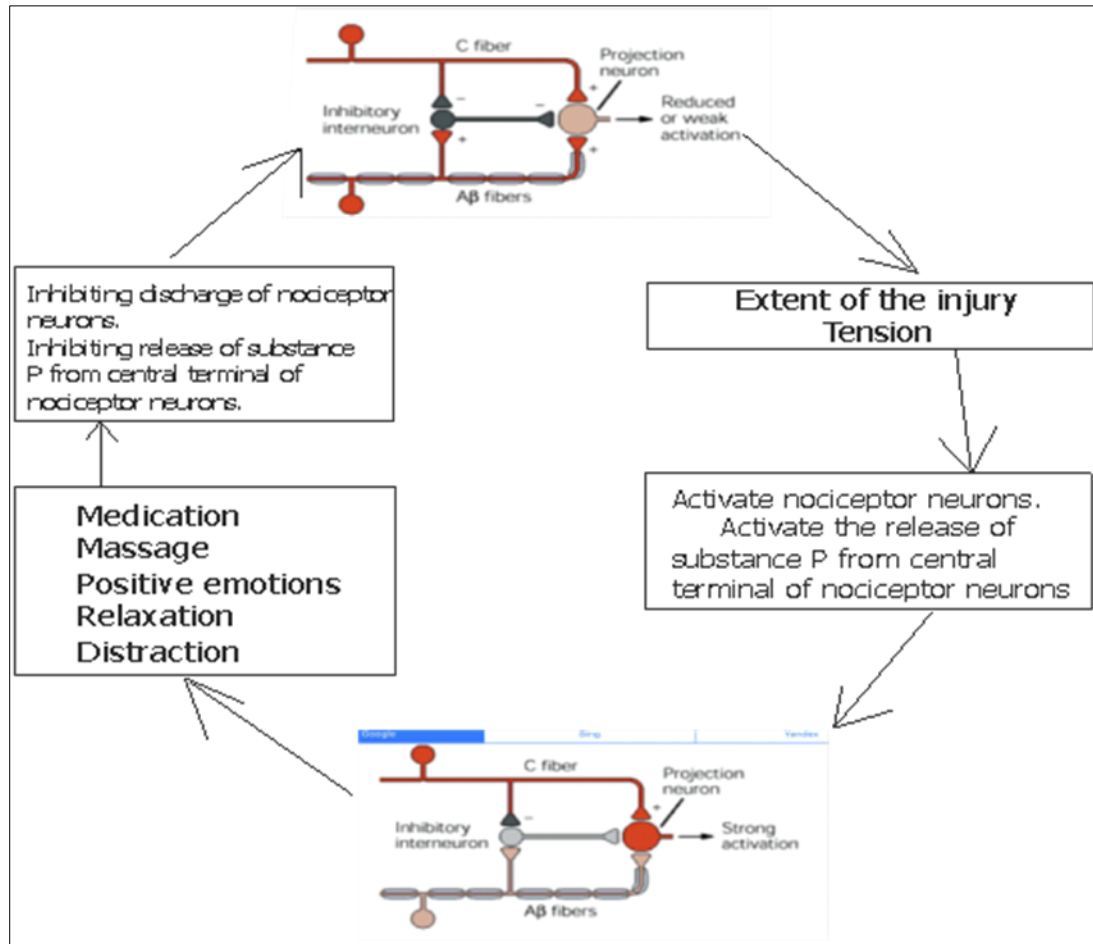
Figure 1 Diagrammatic representation of theoretical framework applied to nurse practice on patient pain management intervention, March, 2022

Considering the problem associated with pain management practices, this study was conducted with the purpose of filling the gap in knowledge on nurses' interventions practice on managing the patient pain. The main objective of this study is that it assessed the pain management practices and perceived barriers among nurses. The significance of this study is to give insight into the current ways of managing the pain and inform future practice so as to promote patient well-being and healing. Hence, patient may carry out daily activities effectively and reduce the burden in the society.

2. Material and methods

2.1. Study Design

This study was a quantitative, cross-sectional design. The design established the relationship that exists between dependent and independent variables. It was not expensive and requires less time. The results could be generalized to the entire population.

2.2. Study Setting

National Orthopedic hospital, Igbobi in Somolu Local Government areas of Lagos State, Nigeria was the setting used for this study. Lagos state is located in South-Western Nigeria. It is bounded on the West by the Republic of Benin, bordered by Ogun state on the North and East, and by Atlantic Ocean on the South. The National Orthopedic Hospital, Igbobi is located along the ever busy motorway (Ikorodu Road) in Lagos. This hospital was, in 1945, became a Medical establishment known as Igbobi Orthopedic hospital and gained international status for training of health professionals [19]. The institution has fifteen (15) units where nurses are practicing. Nurses practicing in these units include those registered in various Nursing Specialties. The units was chosen as an ideal site for the study as it serve as learning centers for clinician, including nurses.

2.3. Population

The target population for this study was N=342 nurses practicing in the National Orthopedic hospital in Igbobi according to records. The inclusion criteria were being a registered nurse practicing in National Orthopedic Hospital, Igbobi and ready to provide written consent. The exclusion criteria included been on annual, study and sick leaves and those who were not ready to participate.

2.4. Sample Size Determination

Total inclusion of (N=342) nurses was used. Orthopedic and trauma unit has 60 nurses, Spine unit as 35 nurses, Pediatric unit has 20 nurses, Arthroplasty and oncology unit has 35 nurses, Emergency medical services department has 40 nurses, Burn and plastic surgery department has 55 nurses, Anesthesia and intensive care department has 40 nurses, NHIS unit has 25 nurses, and the General outpatient department has 32 nurses.

2.5. Sampling Technique

Total enumeration sampling technique was used to select of all the registered nurses who participated in this study.

2.6. Instrument

Questionnaire was used as an instrument and it consist of the following parts: Socio-demographic: this section contained 6 items which include: age, sex, marital status, levels of education, and the tribe. Knowledge of pain management practice: this section contained 5 items which measured respondent's knowledge. Practices for managing pain of patients: this section contained 14 items which measured nurse's practice. Barriers faced in pain management practices: this section contained 4 items which measures barriers in pain management practices.

2.7. Validity of the Instrument

The instrument was previewed and corrected by the researchers' supervisor for face and content validity. The questionnaire was assessed for ambiguity to ensure that it measures exactly what it is supposed to measure

2.8. Reliability of the Instrument

Reliability of instrument was carried out using 10% of the respondent (10% of 342 = 35) through test-retest method. The questionnaire was shared amongst the same 35 nurses in Lagos university teaching hospital Idi Araba on two occasions without informing them of my second coming. After collection of this questionnaire, they were assessed using the Cronbach's alpha reliability coefficient and the results of each session was between 0.765 and 0.888 which shows reliability.

2.9. Method of Data Collection

Data were collected from the nurses daily between Monday and Saturday in the months of March to April 2022 in the selected hospital in Lagos for 6 weeks, using questionnaires as the instrument for data collection. The questionnaire was given to each nurse on duty to fill. The filled questionnaire was placed in sealed envelopes and collected by the researcher. Participants' names were not revealed on the questionnaire in order to protect their identity.

2.10. Data Analysis

The SPSS statistical package software version 26 was used to analyze the data. All errors on the field were corrected, codebook prepared, data imported into the computer for analysis, and no missing N value. The descriptive analysis was done to examine the distribution of each variable, while association that exists between the independent and dependent variables was established using chi-square. Figure and tables were used to display the data. P-value of < 0.05 was used to make clear the level of statistical significance which was set at 95% confidence interval.

3. Results and discussion

3.1. Socio-demographic characteristics of the population

Table 1 shows that N = 342 respondents were surveyed, with n=104 (30.1%) ≤30yrs, n=75 (21.9%) between age range of 31-40 years, n=137 (40.1%) between age range of 41-50, while n=26 (7.6%) were between age range of 51-60 years. The respondents mean age =37.85±8.67years.Majority of respondents n=309 (90.4%) were female, while n=33 (9.6%) were male. The respondents n=207 (60.5%) were holder of bachelor degree, n=103 (30.1%) were holder of diploma,

while n=32 (9.4%) were holder of master degree. Majority of the respondents n=167 (48.8%) were between years of working experience 0-5 years.

Table 1 Socio-Demographics Characteristic of the Respondents

	Frequency	Percent
Age		
≤30yrs	104	30.4
31-40yrs	75	21.9
41-50yrs	137	40.1
51-60yrs	26	7.6
Total	342	100.0
Mean age and SD		37.85±8.67
Gender		
Male	33	9.6
Female	309	90.4
Total	342	100.0
Highest level of professional education		
Diploma	103	30.1
Bachelor	207	60.5
Master	32	9.4
Total	342	100.0
Years of working experience		
0-5	167	48.8
6-10	106	31.0
11-15	39	11.4
+15	30	8.8
Total	342	100.0

3.2. Bivariate analyses of barriers and nurses' pain management practice

Table 2 indicates a significant association between barriers and nurses' interventions for managing pain of patient as a P=0.001 was recorded which is lesser than P<0.05. Hence, the earlier set hypothesis is rejected and the alternate hypothesis (H$_1$) is accepted. This shows that there is a significant association between the barriers and nurses' interventions for managing pain of patients.

Table 2 Bivariate analyses between system-related barriers and nurses' interventions for managing pain of patients

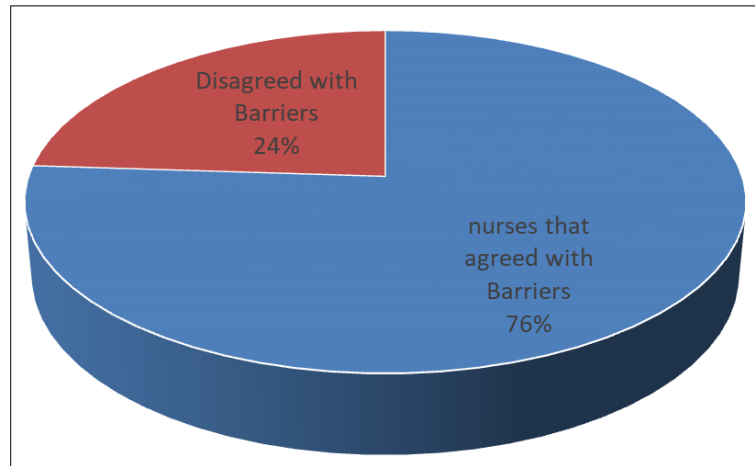| Barriers	Nurses' interventions for managing pain of patients		Total	χ²	df	*Pvalue*
	Good practice of pain interventions	**Poor practice of pain interventions**				
Patients that agreed with barriers	179(68.8)	81(31.2)	260(100.0)	12.221ᵃ	1	0.001
Patients that disagreed with barriers	39(47.6)	43(52.4)	82(100.0)			
Total	218(63.7)	124(36.3)	342(100.0)			

3.3. Bivariate analyses of socio-demographic and nurses pain management practice

The table 3 shows that age, gender, level of professional education, and years of working experience were significantly associated with nurses' interventions for managing pain of patients with $p < 0.05$.
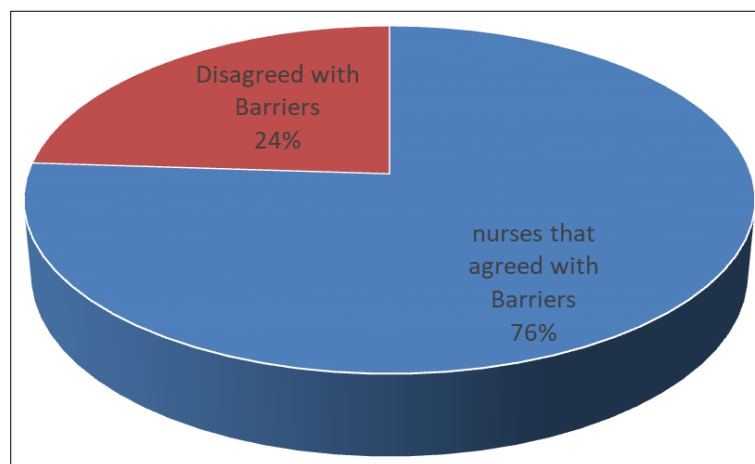
Table 3 Association between socio-demographics characteristics and nurses' interventions for managing pain of patients

	Nurses' intervention for managing pain of patients			Statistics		
	Good	**Poor**	**Total**	**x^2**	**df**	***Pvalue***
Age						
<=30yrs	53(51.0)	51(49.0)	104(100.0)	24.524	3	0.001*
31-40yrs	54(72.0)	21(28.0)	75(100.0)			
41-50yrs	85(62.0)	52(38.0)	137(100.0)			
51-60yrs	26(100.0)	0(0.0)	26(100.0)			
Total	218(63.7)	124(36.3)	342(100.0)			
Gender						
Male	14(42.4)	19(57.6)	33(100.0)	7.182	1	0.007*
Female	204(66.0)	105(34.0)	309(100.0)			
Total	218(63.7)	124(36.3)	342(100.0)			
Highest level of professional education						
Diploma	65(63.1)	38(36.9)	103(100.0)	8.842	2	0.012*
Bachelor	125(60.4)	82(39.6)	207(100.0)			
Master	28(87.5)	4(12.5)	32(100.0)			
Total	218(63.7)	124(36.3)	342(100.0)			
Years of working experience						
0-5	58(50.0)	58(50.0)	116(100.0)	27.593	3	.001*
6-10	106(67.5)	51(32.5)	157(100.0)			
11-15	24(61.5)	15(38.5)	39(100.0)			
+15	30(100.0)	0(0.0)	30(100.0)			
Total	218(63.7)	124(36.3)	342(100.0)			

Note: Chi-square test *p*<0.05 is *significant

Figure 2 Pie chart showing overall score of nurses' intervention for managing pain of patient

Figure 3 Pie chart showing System related barrier; the figure revealed majority of the respondents agreed with system related barriers 76%

4. Discussion

4.1. Socio-demographic characteristics and nurses' interventions for managing pain of patients

The results of this survey revealed that age, gender, level of professional education, and years of working experience were significantly associated with nurses' interventions for managing pain of patients. This finding is not consistent with the finding of the study conducted by Bekelem, Nemem, and Nemera[20] among 298 nurses aged between 36 and 55 years in Ethiopia, the result indicated that overall nurse' pain management competency level is very low despite the fact that majority of the nurses were bachelor degree holders. In fact, some are master holders. The implication of this finding is that highly experienced and well educated matured nurses are more likely to manage the patients with pain adequately.

4.2. Nurses' interventions for managing pain of patients

Majority (78%) of the respondents in this study identified analgesic that can handle pain, while (22%) had limited knowledge on certain pain medications, particularly groups of NSAID pain medications. This finding was consistent with the finding of the study conducted in the Cross River of Nigeria and Pakistan where 85% and 79% of the respondents respectively identified analgesic group of medicines [21]. In this study, (49.7%) nurses observed site of injection, while (38%) observed site for side effect. In contrast to these findings, Ramsay [22] determined that measures were taken

regularly by nurses (87%) to identify the site of injection for pain. Similarly to this study, however, Celik [23] opined that measures were not taken regularly by nurses as (51.1%) identified the site of injection for pain.

Furthermore, this study revealed that 70.8% of nurses used analgesic drugs for pain management of patients as prescribed; few did not give it as prescribed. The reason could be due to fear of side effects and or nurses indifferences. Pharmacological pain relief was moderately applied in this study. In related studies, literature have reported that moderate levels of pharmacological medication use [24], while others have reported lower levels [25].

Few nurses (8.8%) used non-pharmacological pain relief methods in this study. It was pointed out in the results of the previous studies that non-pharmacological interventions were not applied as required by nurses [26]. More than ten percent (10.5%) of participants in this study administered diversional therapy and ask for reaction, (12.3%) administered cold compress and ask for reaction, and (8.8%) administered heat application and ask for reaction. This finding was in line with the study conducted in the Istanbul, Turkey where patients were asked whether nurses applied non pharmacological pain control methods to stop their pain, 11.1% of patients stated that the position change, 17.5% the help for cold compress, 27.8% the help for hot compress, 35.4% massage, 32.5% distracting attention, 20.5% making them listen to music, 85.7% dreaming were never used [26].

Minority of participants in this study used visual analogue scale and behavioral pain assessment scale to assess intensity of pain. In the study by Ozer and Bolukbasi [27], it was determined that nurses generally evaluate pain according to patients' behavioral responses. The results of the study conducted in Turkey are similar to those described in Ozer and Bolukbasi's study [27]. As is known, it is important in the pain management process to know the patient at all points because the pain is an idiosyncratic symptom. Therefore, the nurse should have sufficient knowledge about the methods to get the right story, make continuous observation and appropriate pain assessment. It was found in the study conducted by Eti-Aslan and Badir [28] that nurses had insufficient knowledge about evaluating and easing the pain. Dihle et al. [29] also emphasized that the most important obstacle in effective pain management was that a systematic data collection and evaluation were not made. Considering administration of analgesics for relief and elimination of pain, the determination of pain and anxiety levels of the patient, and deciding and applying non-pharmacologic methods, and evaluating the effectiveness of applications are important interventions in which nurses take an active role

4.3. System-related barriers to effective pain management

Among the system-related barriers, poor patient-to-nurse ratio was the most commonly perceived barrier. This result was not in consistent with some study conducted in Turkey where lack of psychosocial support services was the most commonly perceived barrier [13]. When the poor patient-to- nurse ratio is high, nurses experience time constrains which interferes with quality of care. Research from developed countries may show different figures as it was in Borneman et al. [30] study reporting that only 13% of nurses identified understaffing as a barrier to pain management. Understaffing remains a barrier to optimal patient care in Nigeria. Each nurse has to take care of 10 to 12 patients in the hospital where this study was done. There are no nurse aids; therefore, nurses are responsible for all the nursing care. Therefore, they have been facing time limitation for symptom assessment and treatment.

More than half (64%) of the nurses in this study indicated not having a documented pain treatment plan for each patient and the poor use of professionals who practice specialized pain treatment methods (64.9%) were important barriers to pain management. In National Orthopedic hospital, nurses and doctors have been making separate patient rounds with not having a documented pain treatment plan for each patient. The negative impact of this disconnection can be clearly seen in this result. The appropriate assessment and treatment of pain is highly dependent upon communication between doctors and nurses. Lack of adequate and accurate communication between nurses and doctors was reported as an important barrier to optimal management of pain [31]. Martin & Van Niekerk, [31]opined that nurses who did not feel adequately consulted by doctors were significantly more likely to encounter barriers such as insufficient cooperation by patient's doctors and inadequate prescription of analgesic medications. A collaborative relationship between the two professions would ensure that the barriers experienced by nurses could be resolved in a supportive team approach. Education on pain management emphasizing the importance of teamwork, and the role of each health care professional in the team is essential to overcome this barrier.

In this study, lack of standardized clinical guidelines for pain treatment was indicated as a barrier by 81% of the nurses. Similarly, in the study by Dabrowski et al, lack of standardized clinical guidelines for pain treatment was indicated as a barrier by 66% of the nurses. And it has been reported that pain management guidelines contribute to nurses' pain knowledge and attitudes. More effective pain management practice can be achieved if clinical practice guidelines are tailored to the specific type of the institution and the available resources within a given setting. Lack of non-pharmacologic pain management was agreed on by the 52.9% of the nurses. This finding is line with the study conducted

in Turkey where 52% of the nurses agreed on lack of non-pharmacologic pain management. Non-pharmacologic pain management modalities remain a neglected treatment option in hospital because of time limitations and lack of expert staff.

5. Conclusion

The overall nurses' pain management competency level among the studied participants is low. Factors that contributed to the nurses' patient pain management low competency level are system-related barriers, nurse-related barriers, patient-related barriers, and physician-related barriers. Although, nurse-related barriers were less perceived as an obstacle compared with other barriers, nurses who participated in study showed a varied practice in areas of patients' pain management.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no competing interests.

Statement of informed consent

The study was conducted using informed consent and approval was granted the Ethics and Research Committee of the Babcock University, Nigeria and the approval number is 899/21.

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