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THE EFFECT OF A NURSE-LED TRAINING ON KNOWLEDGE OF PAIN ASSESSMENT AND MANAGEMENT AMONG SURGICAL NURSES, SOUTH-WEST, NIGERIA

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ABSTRACT: ***Introduction:*** *Pain is inevitable in most invasive procedures, which include surgery. Patients experiencing pains expect to have it relieved by their caregivers, most especially nurses. However, these expectations are not often met. The objective of the study was to determine the effect of pain assessment and management training programs on surgical nurses' knowledge about pain in Obafemi Awolowo University Teaching Hospital, Ile-Ife.* ***Material and Methods****: The study utilized a one-group quasi-experimental pre and post-test design. The general formula was used to determine the sample size of 108 respondents out of a total population of 248 surgical nurses. A Self-Report Questionnaire (SRQ) and a Text Paper on Knowledge and Management of Pain (TPKMP) were used to assess the surgical nurses' knowledge of pain and management pre and post-intervention. Descriptive and inferential statistics (t-test) were used for data presentation and analysis via SPSS version 20 at a 0.05 level of significance.* ***Results:*** *Research findings revealed significant differences between pre and post-intervention knowledge on pain assessment (p = 0.007), knowledge on non-pharmacological management (p= 0.00) and knowledge of pharmacological management of pain (p = 0.00), respectively.* ***Conclusion:*** *Nurses are concerned with assessing the patients´ subjective experiences and have a moral obligation to care for the patients in pain. Therefore, the study recommended that regular training and seminars on pain assessment and management should be organized for nurses to render services that ensure comfort and optimal health outcomes.*

KEYWORDS: Knowledge, Non-Pharmacological Management, Pain Assessment, Pharmacological Management, Training Program

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INTRODUCTION

Patients' response to pain varies from individual to individuals and may be affected by their culture, past pain experience, individual pain threshold, heredity, and resistance to analgesic used. Pain is physical, biological, social, and physiological reactions to painful and obnoxious stimuli influenced by socio-cultural norms and values. Melzack (2015) stated that pain could not only be described as a physiological reaction of tissue deterioration, but it encompasses behavioral and emotional reactions that are conventional and acknowledged by one's culture, which may determine pain perception. Pain is an offensive sensation and mind-blowing reality connected with truly existing or conceivable tissue destruction or defined in terms of such deterioration (International Association of Pain Study (IAPS), 2015).

Nurses are the cornerstones of patients' pain management in any clinical setting since they spend more time than any other professionals in the health sector. Adequate knowledge of pain assessment and management could help the nurse to relieve patients of psychological stress, delayed ambulation associated with pain which can improve patients' overall quality of life. Pain is subjective, meaning it is what the person undergoing it says it is, occurring when he says it occurs; hence its complaints should not be treated with a non-charlant attitude by healthcare providers as patients are the better judges when dealing with pains. Most often, the expectations of these surgical patients are not met because their pain complaints were not promptly attended to. When attention was sought, the amount of analgesic administered are not commensurate with the intensity of the pain being experienced by surgical patients (International Association for the Study of Pain (IASP), 2017).

At one time or the other, surgical patients experience one form of pain: acute, chronic, nociceptive, somatic, visceral, neuropathic, incidental, breakthrough, or procedural pain. Pain is prevalent in almost all surgical and medical specialties, including palliative care, oncology, and hematology. Patients affected include those who have cancer, HIV, sickle-cell disease, those who have surgery or accidents, and potentially other patients. Approximately 80% of people with advanced cancer and 50% of people with advanced HIV experience moderate or severe pain (IAPS, 2015).

Postoperative pain is common in surgical settings, and it develops naturally as a warning, which can be predicted and should be prevented and treated (Power, 2015). There is evidence that surgical nurses have basic knowledge about pain assessment and management during their studentship in the schools/departments of nursing or seminar/workshop attendance as in-service training. Despite their background knowledge about pain assessment and management, surgical patients still experience unrelieved postoperative pain during their hospitalization. This unrelieved postoperative pain experienced by surgical patients is not unconnected with inadequate pain assessment and management by caregivers, most especially surgical nurses. Inadequate knowledge can be about pain concept, its mechanism, how pain is managed non-pharmacologically and non-pharmacologically (Gan, 2017).

The occurrence of pain postoperatively has been linked to inadequate pain assessment and management by health care professionals. Pasero (2009) affirmed that clinically related barriers to pain management included knowledge deficits regarding pain assessment and management principles, failure to assess and acknowledge the existence of pain. The most challenging barrier to attaining reasonable control of pain is the lack of pain assessment (Harsoor, 2011). the American Pain Society Quality of Care Committee (2014) reported that

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establishing a trusting relationship with the patient and providing a summary of the assessment process are the goals of the pain assessment process. The primary objective of the healthcare providers is to identify the cause of pain by obtaining information through history taking, physical examination, and relevant diagnostic studies from the patient to ensure the direction of pain management. Pain management is reported to be a humanistic and moral issue for nurses who provide care for the relief of pain (Hunt, Hendrate, & Nyles, 2009).

The goal of the nurse in pain assessment is to provide physical and emotional comfort. Nurses are concerned with assessing the patients´ subjective experiences and have a moral obligation to care for the patients in pain (Brennan, Carr, & Cousins, 2007; Van Niekerk & Martin, 2012). According to Ferrell (2010), the principle of doing good (beneficence), identification of duty to provide care for patient benefit, and establishing good relationship has been supported in pain management. The Joint Commission regulations state that pain is to be assessed whenever other vital signs are measured, i.e., clients are to be asked regularly if they are experiencing pain. Pain is considered the 5th vital sign that must be measured (respiration, temperature, blood pressure, pulse, and pain). According to Taylor (2010), the first step in managing pain is pain assessment, and its improvement in pain management has been reported. Effective pain management and safety of patients are made possible with regular pain assessment.

Unrelieved pain in surgical patients has the potential of causing unpleasant emotional outcomes, delay in ambulation, a prolonged period of hospitalization, and delay patients' recovery despite available analgesic medications and anesthetics skills. It also makes patients unnecessarily anxious; not carrying out independent tasks affects patients' employment/job and affects their relationship with healthcare providers. Inadequate pain assessment and management have other harmful physical and physiological effects, including strained nurse-patient relationships and poor public nurse perception. Nursing surgical patients is a task that needs good listening skills and the ability to show empathy towards patients' pain concerns. At the same time, it also involves genuine desires to make patients more comfortable and show the surgical patients determining strategies to relieve their pain (Gan, 2017).

Optimal pain relief relies on nurses' knowledge and understanding, systemic and consistent assessment, and regular documentation of pain (Francis & Fitzpatrick, 2013). However, studies have revealed inadequate nurses knowledge of pain assessment and management, which is a call for concern. Manwere, Chipfuwa, Mukwamba and Chironda (2015) reported that Zimbabwean nurses have low knowledge, poor attitude regarding pain management of adult medical patients. Kizza, MuliiraKohi and Nabirye (2016), conducted a study in Uganda where it was found out that nurses had adequate knowledge about pain assessment principles but lack knowledge about some key concepts like patients' autonomy in pain assessment and pre-emptive analgesia concepts, which was concluded might affect their ability to provide quality pain assessment and management.

Inadequate knowledge of pain assessment and management by nurses may be improved via an organized training program to assess better patients' pain levels and different pharmacological and non-pharmacological measures in which pain could be managed while patients are still under nurses' care. Hence, this study explores the effect of a training program about pain assessment and management on the surgical nurses' knowledge about pain in Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife.

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MATERIALS AND METHODS

Research Design

The researcher used one quasi-experimental one-shot pretest, post-test, and purposive design where tests were administered pre and post-intervention to the surgical nurses of OAUTHC, Ile-Ife.

Research Setting The setting is Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State, Nigeria. It is a 756 bedded multi-unit tertiary health institution with 252-bed spaces for surgical patients and 725 as the total number of nurses.

Population

The total population for this study was 248 surgical nurses who care for patients in pre and postoperative phases in Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife (Ife Hospital and Wesley Guild Hospital units).

Table 1: Surgical wards and number of nurses therein.

S/No	Surgical Wards	No of Nurses
1	Male Surgical	12
2	Female Surgical	13
3	Male Ortho	12
4	Female Ortho	13
5	Children Ortho	13
6	Burn and Plastic	12
7.	Surgical subspecialty	13
8.	Male Ophthalmology	12
9	Female Ophthalmology	12
10.	Paediatrics Surgical	13
11.	Ear Nose and Throat	12
12.	Male neuro-surgical	14
13.	Female neuro-surgical	12
14.	Urological ward	14
15.	Gynaecological ward	12
16.	Post-natal ward	13
17.	Female surgical 1	13
18	Male ward WGH	12
19	Female ward WGH	11
20	Post-natal ward WGH	10
	Total	**248**

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Inclusion Criteria:

i. These nurses must have post qualification working experience of not less than 2 years in surgical units of OAUTHC, Ile-Ife providing direct nursing care to the surgical patients.

Exclusion Criteria

i. Perioperative nurses, nurse anaesthetists and Intensive Care Unit nurses were excluded based on their default knowledge about pain assessment and management which the researcher considered might affect the outcome of the study.

ii. Nurses that were not directly involved in the care of patients in pains on surgical wards or units.

Sample size and sampling Technique

Surgical nurses from this Teaching Hospital were purposefully selected to implement pain assessment and management training program at surgical seminar room of OAUTHC, Ile-Ife. 248 surgical nurses have worked more than 2 years in their respective wards/units, therefore met the inclusion criteria. The researcher used general/standard formula to calculate the sample size for the study.

$$n^r = \frac{4\alpha^2}{d^2}$$

$$n = \frac{(1.96)^2\alpha^2}{d^2}$$

Where n^r = required sample size

α = the Pop standard deviation = 1.5

d = is the degree of precision required

$$n^r = \frac{4\alpha 2}{d2} = \frac{4 \times 1.5^2}{0.25^2} = \frac{9}{0.0625} = 144$$

Finite population correction factor

When the sample represents a significant (e.g. over 5%) proportion of the population

When

$^n a$ = adjusted sample size

$^n r$ = is the original sample size =144

N= Population Size = 248

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$^{n}a = \frac{nr}{1+(nr-1)} = \frac{144}{1+(144-1)} = \frac{144}{1.334} = =$ 107.95 =108

Adjusted minimum sample size is 108

A total number of 108 surgical nurses were selected from each ward by proportion to participate in the pain assessment and management training program.

Instrumentation

Instruments utilized for this study was self-constructed, divided into three sections: a Self-Report Questionnaire (SRQ) which elicited information on the demographic characteristics of the participants. It has 8 multiple choice questions while sections two and three which is Test Paper on knowledge and Management of Pain (TPKM) was used to collect data on pain assessment and management pre and post interventions, it has 60 dichotomized questions. The test paper has sections A and B as follows;

Section A: Questions on knowledge of pain assessment with 30 dichotomized questions

Section B: Questions on Knowledge of non-pharmacological and pharmacological management of pain also has 30 dichotomized questions.

Validity and Reliability of Instrument

Instrument was self-developed from review of literature, same presented to the researcher's supervisor for corrections which were effected and experts in the field also validated the questionnaire for face and content validity. Reliability of the instrument was ensured by the researcher via performing a pretest at Federal Teaching Hospital, Ido-Ekiti in Ekiti State. Eleven copies of the questionnaire were administered to 11 surgical nurses working in surgical units of the hospital. The filled questionnaires were retrieved and analyzed. The internal consistency reliability using Cronbach's Alpha coefficient yielded 0.78 and 0.76.

Procedure for Data Collection

A letter of introduction was collected from the Dean, School of Nursing Science, Babcock University to the Director of Nursing Department of Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, seeking for hospital's permission to carry out the study. The researcher discussed the purpose(s) of the study with the Director of nursing and ward managers on when and where to meet with the participants. Data collection was in three stages: Pre intervention stage, Intervention stage, and Post intervention stage.

First Stage (Pre-intervention)

The researcher sought the consent of the participants through the Director of Nursing Services at the appointed date as initially agreed with ward leaders, researcher and the participants. The researcher familiarized and got acquainted with the participants, good rapport was established. The researcher explained the objectives, benefits of the study to the participants and was informed that the study would cover two training sections. The researcher explained the topics that would be discussed during the training; they agreed that the each session would last about one hour. It was also agreed that participants from Wesley Guild Hospital Unit would be transported to meet those at Ife Hospital Unit for uniformity to

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avoid contamination. The researcher solicited the cooperation of the participants throughout the period of the study. They were assured of their confidentiality that all information provided would be used for academic purpose and they were free to withdraw at any stage of the research work without it having negative implication on them. The researcher and the participants agreed on time and duration of the training which would not affect the discharge of their official duties to patients in the course of the training.

Second Stage (Intervention)

The objective of this session was to expose the participants to the teaching module to determine the effect of pain assessment and management training program me on participants' knowledge. The training had four modules which was delivered for 1 hour weekly for four weeks (See Appendix II).

Session One

This was the first week, the purpose of this session was to orientate the participants on what the study was all about, to obtain informed consent and administer pretest instruments. Test paper was to measure pre-intervention knowledge of the participants about assessment, non-pharmacological and pharmacological management of pain.

Session Two (week two)

The activities include educating the participants about the pain concept, types of pain, effects of pain, pain interpretations as influenced by their cultural beliefs, pain mechanism; which discussed the origin of pain like nociceptive, somatic, visceral and neuropathic pain. The researcher also discussed about pain situation like incident, breakthrough and procedural pain, and incident pain and how to use rescue doses to adjust daily doses of opioids based on rescue dose requirements. They were taught how to diagnose pain emergencies and how to manage it. The session lasted for an hour. All questions asked were answered.

Session Three (week three)

The activities schedule for this session was to educate the participants on understanding the essence of pain assessment (using different tools), WHO analgesic ladder to review and discuss pharmacological treatment of mild, moderate and severe pain. It discussed several non-pharmacological strategies of managing pain like music, massage, changing of positioning, heat/cold therapy and comfort measures. The session also lasted for 60 minutes. All raised questions were promptly answered.

Session Four (week four)

This was the fourth week and the last session. The previous activities were reviewed. The researcher also educated the participants on various forms of adjuvants/co-analgesics, side effects and toxicity of analgesia, treatment of pain in children, elderly, patients with dementia, sickle cell disease, addiction and dependence in this session.

Evaluation Session (week six)

This session was done two weeks after the last intervention session and that was when post intervention instruments were administered to determine the participants' knowledge of pain

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assessment and management after the training sessions. This was to know whether the training programme had effect on their knowledge of assessment and management of pain.

Method of Data Analysis

The returned questionnaires were sorted and coded after which data was entered into Statistical Package for Social Science (SPSS) software version 21. Descriptive statistics of percentages, means scores, frequencies, and standard deviation were used to provide answers to the research questions of this study. Inferential statistics of t-test was used to provide answers to the three hypotheses of the study at 0.05 level of significance.

Ethical Consideration

The researcher sought permission from Babcock University Research and Ethical Committee (BUHREC) to conduct this study. A letter of introduction from the Dean, Babcock University School of Nursing, Ilishan-Remo, Ogun state to OAUTHC, Ile-Ife.Approval of the Teaching Hospital was sought by writing application to conduct the study in their health facility, verbal approval was given while waiting for the Hospital's Ethical Committee for written approval whenever the meeting was convened.

Written informed consent in simple English language clearly stating the purpose, risks, benefits and benefits to the study participants, it stated that they have rights to withdraw from the study at any time in the course of the study. It assured them that their participation in the study was purely voluntary and that they could chose not to participate in the study, which had no effect on them in any way. The consent form also indicated that the study was confidential as their names would not be identified or indicated from the questionnaire.

RESULTS

Table 4.1 shows the demographic data of the 108 participants. The age of the respondents ranges between 23 and 51, with a mean age of 34.9. 34.3% of the respondents were between the ages of 36 to 40, while the lowest number of 20 (18.5%) was recorded between age 25-30. Seventy-three (67.6%) of the participants were female, and 35 (32.4%) were male. Seventy-four of the respondents were Christians, and almost 81% were married. It was revealed further that 52.8% were either registered nurse (RN), registered midwife (RM), or both. The clinical experience showed that the majority (39.8%) had 8-13years of experience. Also, the professional cadre revealed that 33 (30.6%) were NOII/NOI, 34 (31.5%), and were SNO, 19 (17.6%).

Table 4.1: Participants' Socio-Demographic Data

SN	Variable (N =108)		Frequency	Percent (%)
1	**Age**	25-30yrs	20	18.5
		31-35yrs	28	25.9
		36-40yrs	37	34.3
		41& above	23	21.3

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2	**Gender**	Female Male	73 35	67.6 32.4
3	**Religion**	Christianity Islam Traditional	74 33 1	68.5 30.6 .9
4	**Educational Qual.**	RN/RM BNSC MSC Nursing Others	57 41 3 7	52.8 38.0 2.8 6.5
5	**Clinical Experience**	2-7YRS 8-13YRS 14-19YRS 20YRS & above	29 43 21 15	26.9 39.8 19.4 13.9
6	**Professional Cadre**	NOII/NOI SNO ACNO CNO ADNS	33 34 19 8 14	30.6 31.5 17.6 7.4 13.0
7	**Marital Status**	Single Married Widow Divorcee	18 87 1 2	16.7 80.6 .9 1.9

Table 4.2: Information on the pre and post intervention mean scores of training programme on knowledge of surgical nurses on pain assessment

The knowledge of surgical nurses on pain assessment	**Category of scores**	**Pre- intervention**		**Post- intervention**	
		Freq.	**%**	**Freq.**	**%**
Low	1-10	32	29.6	8	7.4
Average	11-20	45	41.7	21	19.4
High	21-30	31	28.7	79	73.2
Total		108	100.0	108	100.0
Mean		14.90		25.46	
Standard dev.		6.87		5.34	
Mean difference		10.57			
Maximum		17.00		26.00	
Minimum		6.00		10.00	

Table 4.2 presents the pre and post mean scores of a nurse-led training programme on knowledge of surgical nurses on pain assessment. The surgical nurses' knowledge mean score of pain assessment at pre-test was 14.90 $\pm$ 6.9 which is equivalent to 49.66%. Thus, it could be said that the surgical nurses' knowledge of pain assessment before intervention was on the average. This is because their mean score is approximately 50%. After the intervention, the study revealed that surgical nurses' knowledge mean score of pain assessment was 25.46 $\pm$5.3 (84.88%). The Mean difference was 10 (35.22%).

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Table 4.3: Pre and Post Intervention Knowledge of Non-Pharmacological and pharmacological Pain Management

Knowledge of Pain Management	Category of scores	Non-Pharmacological Knowledge				Pharmacological Knowledge			
		Pre-Intervention		Post-Intervention		Pre-Intervention		Post-Intervention	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%
Low	0-2	28	25.9	-	-	12	11.1	-	-
Average	3-5	50	46.3	66	61.1	63	58.3	34	31.5
High	6-8	30	27.8	42	38.9	33	30.6	74	68.5
Total		108	100.0	108	100.0	108	100.0	108	100.0
Mean		3.90		7.23		4.90		7.911	
Standard dev.		2.20		1.16		2.06		1.94	
Mean difference		3.33				3.01			
Maximum		8.0		8.00		8.00		8.00	
Minimum		.00		4.00		1.00		4.00	

Table 4.3 presents the pre and post mean scores of a nurse-led training of surgical nurses on knowledge of non-pharmacological and pharmacological pain management. The surgical nurses' knowledge of non-pharmacological pain management means score at pre-test was 3.90 $\pm$2.2 which is equivalent to 48.76%. Thus, it could be said that the surgical nurses' knowledge of non-pharmacological pain management before intervention was fair. This is because their mean score is less than 50%. After the intervention, the study revealed that surgical nurses' knowledge of non-pharmacological pain management mean score was 7.23 $\pm$1.2 (90.4%).

The surgical nurses' knowledge of pharmacological pain management means score at pre-test was 4.90 $\pm$2.1 which is equivalent to 54.4%. Thus, it could be said that surgical nurses' knowledge of pharmacological pain management before intervention was not too bad but average (4.90). After the intervention, the study revealed that surgical nurses' knowledge of pharmacological pain management mean score was 7.91 $\pm$1.9 (87.9%) which means the training programme had positive effect on their pharmacological management of pains.

Test of Hypotheses

H1: There is a significant difference between the pre and post intervention mean scores of surgical nurses' knowledge on pain assessment.

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Table 4.4: Independent t-test on the difference between the pre and post intervention mean scores of surgical nurses' knowledge on pain assessment

	N	Mean	Std. Deviation	Df	T	Mean diff	Sig
Pre intervention	108	14.898	6.867				
Post intervention	108	25.463	5.341	106	11.063	10.565	.007

Results in Table 4.5 indicate a significant difference between pre and post-intervention mean scores of surgical nurses' knowledge on pain assessment (Knowledge gained = 10.57; t = 11.06; P = .007 < .05). It could be deduced from this finding that the difference observed between pre and post-intervention groups mean scores could not have been by chance but due to the intervention or training the participants were exposed to. Going through the knowledge mean scores, as shown above, one can say that there is an improvement between pre-intervention knowledge (14.90) and post-intervention knowledge (25.46). The earlier set hypothesis was retained, the hypothesis was accepted.

H2: There is a significant difference between the pre and post intervention knowledge of surgical nurses about non-pharmacological pain management

Table 4.5: Independent t-test on the difference between pre and post intervention mean scores knowledge of surgical nurses about non-pharmacological pain management

	N	Mean	Std. Deviation	Df	T	Mean diff	Sig
Pre intervention	108	3.90	2.20				
Post intervention	108	7.23	1.16	106	9.88	3.33	.000

Table 4.6 indicates a significant difference between the pre and post-intervention knowledge of surgical nurses about non-pharmacological pain management (Knowledge gained = 3.33; t = 9.88; P = .000), which means the hypothesis is accepted. The earlier set hypothesis was sustained. It could be deduced from these findings that the difference observed between pre and post-intervention groups could not have been by chance, but due to the educational intervention, the participants were exposed to. Going through the knowledge mean score of non-pharmacological pain management, one can say that there is an improvement between pre-intervention (3.90) and post-intervention (7.23).

H3: There is significant difference between the pre and post intervention knowledge of surgical nurses about pharmacological pain management.

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Table 4.6: Independent t-test to show the significant difference between the pre and post intervention knowledge of surgical nurses about pharmacological pain management

	N	Mean	Std. Deviation	Df	T	Mean diff	Sig
PRE	108	4.898	2.058				
POST	108	7.911	1.944	106	13.911	3.013	.000

Results in Table 4.7 indicate significant difference between pre and post intervention knowledge of surgical nurses about pharmacological pain management (Knowledge gained = 3.013; t = 13.013; P = .000). It could be deduced from this finding that the difference observed in between pre and post intervention groups could not have been by chance but as a result of the educational intervention the participants were exposed to. Going through the knowledge mean scores of surgical nurses about pharmacological pain management as shown above, one can say that there is an improvement between pre-intervention (4.90) and the post-intervention (7.91). The earlier set hypothesis was sustained.

DISCUSSION

Knowledge of Surgical Nurses about Pain Assessment

The surgical nurses' knowledge means score of pain assessment at pre-test was 14.90 ± 6.8 which is equivalent to 49.66%. Thus, it could be said that the surgical nurses' knowledge of pain assessment before intervention was fair but not good enough in helping their patients' response to pain better. This might be as a result of continuous unrelieved pain among surgical patients in so many hospitals today. This is causing unpleasant emotional outcomes, delay in ambulation, prolonged period of hospitalization, delay patients' recovery despite available analgesic medications and anesthetics skills. It also makes patients unnecessarily anxious, the inability of patients to carry out independent tasks, it affects patients' employment/job, it affects patients' relationship with healthcare providers, inadequate pain assessment and management have other harmful physical and physiological effects which include strained nurse-patient relationship and poor public nurse perception. This result is in line with the report of Ojong, Ojong-Alasia, and Nlumanze (2014), who found out that 84% of the nurses interviewed assessed their patients' level of pain before managing the pain but techniques used were limited to observation of pain related behaviours and patients' vital signs.

The study revealed that surgical nurses' knowledge mean score of pain assessment was 25.46 ±5.3 (84.88%) post-intervention. This show an improvement due to the training the nurses were exposed to and have equally helped the nurses to improve their listening skills and ability to show empathy towards patients' pain concerns and genuine desires to make patients more comfortable as well as showing the surgical patients determining strategies to relieve their pain. This finding agrees with studies of Oniawa, Alonge, Otegbayo, Ike, Chukura, Are, et al. (2017), who assessed the impact of pain assessment training programs on Nigerian nurses' knowledge of pain management at the University College Hospital, Ibadan. Their

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study result revealed that nurses' pain educational program has positive effects on nurses' knowledge of pain assessment and pain management.

Knowledge of Non-Pharmacological Pain Management

The outcome of this study showed that the surgical nurses' knowledge of non-pharmacological pain management increased after the intervention, as their mean score at pre-test was 3.90 ±2.2 (48.8%) compared to post intervention mean score of 7.23 ±1.2 (90.39%). This lends credence to the findings of Kizza, MuliiraKohi and Nabirye (2016), on a study conducted in Uganda where it was found out that nurses had adequate knowledge about pain assessment principles but lack knowledge about some key concepts like patients' autonomy in pain assessment and pre-emptive analgesia concepts which were concluded might affect their ability to provide quality non-pharmacological pain assessment and management.

According to Kwekkeboom and Gretarsdottir (2012), a variety of nondrug techniques is being used by women recovering from breast and gynecological surgery in conjunction with analgesics to alleviate pain at their residence. Non-pharmacological treatments have been used in 22% of the evaluation of pain occurrences in a study reported by Gelinas, Fortier, Viens, Fillion, and Puntillo (2014). Different strategies for ensuring comfort were administered, including repositioning in bed, suctioning of the endotracheal tube, repositioning in bed, reassurance, massage, and oral care. Patients on hospital admission can make use of strategies that were effective to relieve their pain in the past.

Surgical Nurses on Knowledge of Pharmacological Pain Management

The outcome of this study showed that the surgical nurses' knowledge of pharmacological pain management mean score at pre-test was 4.90 ±2.1 (54.4%). Thus, it could be said that surgical nurses' knowledge of pharmacological pain management before intervention was average. However, after the intervention, the study revealed that the surgical nurses' knowledge of pharmacological pain management mean score was 7.91 ±1.9 (87.9%). This result corroborate the previous findings from McNamara (2012) that revealed the effectiveness of training programs on the knowledge, attitude and skills of nurses about postoperative pain management. It was also reported that healthcare professionals' attitude affects the way they respond to the patient experiencing pain while the majority of nurses, physicians, patients and their relative believe and fear that patients can become addicted to or depended so much on opioids which are borne out of their inadequate knowledge about pain management.

Difference between the Pre and Post Intervention Mean Scores of Surgical Nurses' Knowledge on Pain Assessment

The outcome of the first research hypothesis indicated a significant difference between pre and post-intervention mean scores of surgical nurses' knowledge on pain assessment. It could be deduced from this finding that the difference observed in between pre and post intervention groups mean scores could not have been by chance but as a result of the intervention or training the participants were exposed to. This study empirically show that inadequate knowledge of pain assessment and management by nurses is likely to be corrected through an organized training program on how they could better assess patients' levels of

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pain and different types of pharmacological and non-pharmacological measures in which pain could be managed while patients are still under nurses' care. This is in line with the study of Arab, Shirzadi, Sabzvari, Jahani, Rostami, Ebrahimi, et al (2016), that evaluated the effects of training on the attitudes and knowledge of nurses with regards to management of pain and found that training has a positive impact on nurses' knowledge and attitudes. This is equally consistent with the results of a study carried out by Oldenmenger (2012), that training program has positive effects on nurses' knowledge of pain assessment and patients' pain relief strategies.

Difference between the Pre and Post Intervention Knowledge of Surgical Nurses about Non-Pharmacological and Pharmacological Pain Management

The results of the second and third hypotheses indicated a statistically significant difference between the pre and post-intervention knowledge of surgical nurses about non-pharmacological and pharmacological pain management with a p-value of 0.000, respectively. It could be deduced from this finding that the difference observed between pre and post-intervention groups could not have been by chance but due to the educational intervention the participants were exposed to. This result is supported by Oniawa, Alonge, Otegbayo, Ike, Chukura, Are, et al. (2017), whose result revealed a significant improvement in nurses' knowledge on pain assessment management after a training program. In addition, the awareness of the effective strategies used and liked by the patient must be understood by the nurses before informing or teaching patients on the adoption of the non-drug techniques. According to Cepeda, Carr, Lau, and Alvarez (2007), Kwekkeboom and Gretarsdottir (2012), and Briggs (2008), non-drug techniques like music, relaxation, and comfort measures produced a substantial decrease in pain intensity but may not reflect a significant change of clinical importance.

CONCLUSION

Challenges continue to remain evident in pain management and persist in being the most common complaints of older adults. Inadequate knowledge is a barrier to the adequate management of pain. Nurses can play a pivotal role in the assessment, relief, and evaluation of pain. Therefore, improving nurses' knowledge regarding pain assessment and management is essential to improving patients' quality of life.

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Conflicts of interest

There are no conflicts of interest.

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