

Original Article

Knowledge and Attitudes of Nurses towards Postoperative Pain Management in Southern Ethiopia

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Abstract

Introduction: Effective management of postoperative pain can lead to comfort, better mobility, improved recovery and a short stay in the hospital while untreated pain has harmful impacts on the patients as hopelessness, hinder their response to treatment, and negatively affect their quality of life. Inadequate knowledge and undesirable attitudes toward postoperative pain management were reported as one of the major difficulties to implement effective pain management among nurses.

Objective: The main purpose of this study was to assess the knowledge and attitudes of nurses towards postoperative pain management working at Hawassa University comprehensive specialized hospital.

Methods: Institution based cross-sectional study was conducted among two hundred three nurses working at the surgical, gynecology, obstetric wards, ophthalmic unit and operation theater from April 1-30, 2019. Data were collected through standardized worldwide accepted “Knowledge and Attitudes Survey Regarding Pain” (KASRP) tool it contains 37 items questionnaire of two domains: knowledge and attitude towards pain management. The collected data was analyzed using SPSS version 20. A chi-square test was done and significantly associated factors were identified.

Result: One hundred and eighty-seven questionnaires were returned giving a response rate (92.1%). The mean score of correct answers was (22.5%) with a minimum and maximum score of (18.2%) and (75.4%) respectively. After categorizing the level of knowledge and attitude, (82.2 %) of nurses possessed very low knowledge and negative attitude towards postoperative pain management. Prior training on pain management ($X^2 = 14.935, P=0.001$) and reading of medical books or journals about pain ($X^2 = 5.019, P=0.025$) were significantly associated with knowledge and attitude of nurses towards post-operative pain management.

Conclusion: Nurses had a very low level of knowledge and a negative attitude towards post-operative pain management. The hospital provides in-service training and avail reading medical books to improve nurse’s knowledge and attitude towards post-operative pain management. The federal ministry of Health of Ethiopia enriches the pain content of the nursing curriculum.

Keywords: Nurse, knowledge and attitude, post-operative, pain management, Ethiopia.

Introduction

Post-operative pain is defined as a complex response to tissue trauma during surgery and it is an expected and annoying yet controllable problem (Kehlet H 2006). An earlier study stated that ill-managed post-operative pain may have lengthier stays in hospitals, higher readmission rates, late healing of wounds, more recurrent outpatient visits, and altered immune tasks. Such unwell treated pain has deep long-lasting concerns and it rises emotional and behavioral replies during future painful occasions (Smart 2005).

Effective postoperative pain management has numerous benefits include reducing the patient's pain, faster postoperative recovery, improved sleep, increased mobility, increased patient satisfaction, and leads to shorter hospital stays (Smart 2005). Ineffective pain management is quite a common phenomenon across the globe (Dunwoody CJ 2008) and remains to be a grievance of hospitalized patients despite the weight laid on the patient's right to proper pain treatment and the augmented alertness of the unfavorable properties of pain that is inadequately treated and managed (Idvall 2002). For the effective management of pain in post-operative patients, strong clinical knowledge, attitudes, and skills in the assessment of pain are essential for nurses. They must also perform well in the control of and effective administration of pain medication. However, several obstacles to this have been identified, knowledge deficit on the use of appropriate pain measures and negative attitudes are the major problems (Smart 2005).

One of the most crucial and immensely provides aspects of a patient's pain management is the role of nurses. Having such an important and unavoidable role; nurses must have an adequate level of knowledge and a positive attitude in the delivery of post-operative pain management based on effective training (Al Qadire M 2014). Even if pain management has been an integral part of nursing practice for many years, yet there are still too many who lack the basic knowledge necessary to manage pain appropriately (McCaffery 2000). Numerous nurses are still trusted their private view about patient's pain, rather than using their documented assessment to support them and to select suitable opioid doses. Proper pain

investigation tools are not applied on a consistent basis in acute care situations and this also pays to under-treatment of pain (McCaffery 2000).

Although studies have shown that pain education programs increase nurses' knowledge and improve attitudes towards pain management, the management of postoperative pain by nurses still remains a problem and also insufficient education and training for nurses were amongst the issues reported as poor postoperative pain management (Goodrich 2006). Even if Ethiopia developed a national pain management guideline in 2007 (Health 2007), many studies demonstrated that pain was untreated adequately due to various reasons among which nurses' inadequate knowledge and inappropriate attitude were the leaders (Eyob, Mulatu et al. 2013) and (Woldehaimanot, Saketa et al. 2014). Until now, there is no enough proof to understand the real gap in Ethiopia. Thus, this study was planned to define nurses' knowledge and attitude towards post-operative pain management. The finding delivers well-timed and baseline information related to nurses' knowledge and attitudes towards post-operative pain management at HUCSH. These results may be used as a basis for comparisons in upcoming research and interventional studies could be planned on pain management. This is the first study done in HUCSH and the Southern part of Ethiopia in general.

Method and Materials

Study design, period and study area

A health institution based cross-sectional study was conducted on April 1-30, 2019. The study was conducted in Hawassa University comprehensive specialized hospital. The hospital was established in 2004 by a collaboration of the federal ministry of health, regional government health bureau and Hawassa town community. The hospital is found in the south-western part of Hawassa town and is bordered to the east by Hawassa town, to the north by Tabor Mountain, to the west by Hawassa Lake and to the south by private local residents.

It delivers a variety of both outpatient and inpatient services for about 20 million people from all over southern regional states (SNNPR) and neighboring Oromia region. Currently, it has 400 beds and provides patient care in a broad range of services

to over 90, 200 outpatients, 18,116 hospitalized patients, and 1,092 emergency cases annually. It offers services at general and specialty levels. The hospital is also center for different initiated projects and the vision is to make the hospital a center of training and research for tropical diseases in addition to curative services.

Sample size and sampling procedure

No specific sampling strategy was employed in this study, all nurses working surgical, obstetrics, gynecology wards, ophthalmology unit and operation theater during the data collection period were involved in the study. These wards were purposefully selected because nurses have exposure to patients with post-operative pain therefore, adequate knowledge and positive attitude are needed from nurses to manage post-operative pain.

Exclusion criteria

- Nurses in maternity, annual and sick leave during the data collection period.
- Nurses who are not willing to participate.

Data collection instruments

To collect the data, two questionnaires were used: (I) Form of nurse information and (II) Knowledge and Attitudes Survey of Nurses Regarding Pain.

Form of Nurse information

This form was prepared by investigators and comprised of questions on the nurses' sex, age, current unit of employment, level of nursing educational, year of experience in caring patients, reading experience of any books or journals about pain, Experience of pain management training and personal experience of pain which required anti-pain medication.

Knowledge and Attitudes Survey Regarding Pain (KASRP) was used as an instrument.

The KASRP is a 39-item questionnaire developed by Ferrell, McGuire, and Donovan (Ferrell 1993) to assess nurses' knowledge and attitudes toward pain management. It consists of 21 true/false questions, 14 multiple-choice and 2 case studies.

Howell acknowledged that KASRP is the only available instrument to measure nurses' knowledge and attitudes about pain management (Howell and

Stearns 2000). The content validity of KASRP was established by a panel of pain experts.

The KASRP content was based on the pain management guidelines of the American Pain Society, WHO, and the Agency for Health Care Policy and Research. The KASRP Cronbach alpha is 0.70 and test-retest reliability > 0.80 (Howell and Stearns 2000).

The KASRP was revised in 2012 and used by worldwide researches to assesses the Knowledge and Attitudes of health professionals regarding pain management (Hope 2012). According to the KASRP tool, the high score indicates a higher level of knowledge and a positive attitude while the low score indicates a lower level of knowledge and a negative attitude.

The questionnaire was administered in English because Ethiopian nurses are capable to understand and answer questions in the original language of the KASRP (all nursing education, curricula, and examination in Ethiopian nursing institutions are conducted in English).

Data collection procedures

Data were collected through a self-administered questionnaire. Questionnaires were distributed to each nurse and they were asked to tick the best answer. Adequate time was given to read and understand the questions and then submit their responses.

The data collectors stayed with the participants until they filled the questionnaire. Trained diploma nurses with previous data collection experience have collected the data. An average time spent to complete one questionnaire per nurse was 30-40 minutes.

Data quality control measures

Data collectors and supervisors were trained on data collection processes and procedures for half a day. Filled questionnaires were checked on a daily basis for completeness, clarity, and accuracy. Data cleaning was undertaken before entry and analysis.

Data analysis

Data were coded and entered into Epi data version 3.1 and exported to SPSS version 20 statistical software for analysis.

Descriptive statistics was made using frequency tables, mean, standard deviation, graphs, pie charts, and other narrative explanations. A chi-square test was applied for finding an association among the variables.

Operational definitions:

The researcher categorized the level of knowledge and attitude into 5 levels using McDonald's percent correct score of cutoff points.

Composite score	percent	Level of knowledge and attitude
90 – 100 %		Very high
80 – 89.9 %		High
70 – 79.9 %		Moderate
60 – 69.9 %		Low
< 60 %		Very low

Ethical consideration

A written ethical clearance was obtained from the Institutional Review Board of Hawassa University, Hawassa, Ethiopia. A formal letter of cooperation was written to the Hawassa university comprehensive specialized hospitals. After the provision of sufficient information about the purpose of the study, verbal and written consent was obtained from all study participants.

Participants were also informed that participation was on a voluntary basis and they can withdraw from the study at any time if they are not comfortable with the questionnaire. To ensure the confidentiality of respondents, their names were not written on the questionnaire.

Results

Nurses socio-demographic characteristics The response rate of this study was (92.1 %) meaning 187 respondents completed and returned the questionnaire while 16 respondents (7.9%) did not, despite they were given the questionnaire. More than half (52.9%) were male nurses and (40.1 %) in the age range of 25-29 years. Nurses working in Operation theatre were (31.6 %) and most (68.4) of participants were Bachelor degree holders.

The professional experience of (58.8%) participants in caring patients was between 1 to 5 years. In addition, (75.9 %) of nurses experienced

reading any books or journals about pain but only (26.7 %) participated in pain management training. Furthermore, (77.0 %) of nurses reported the personal experience of pain. Table 1.

Nurses' Knowledge and Attitudes regarding postoperative pain management

The mean score of nurses' knowledge and attitude towards postoperative pain management was (22.5%) with a minimum and maximum score of (18.2%) and (75.4%) respectively. Item analysis was made to determine which items answered correctly by more nurses and which items answered correctly by fewer nurses. Table 2.

The five items that the highest number of nurses answered correctly on KASRP in ascending order were (I) The efficiency of Aspirin and other nonsteroidal anti-inflammatory agents (75.4%); (II) the effect of patients' spiritual beliefs on pain control (70.6%); (III) definition of Narcotic/opioid addiction (70.1%); (IV) the efficiency of combining analgesics (65.8%) and (V) the preferred route administration of opioid analgesics during severe pain (65.8%) Table 2.

The result also found five items that the lowest number of nurses answered correctly on KASRP in ascending order were (I) the right time of morphine administration to moderate pain (18.2%); (II) the correct pain score of talking and joking patient (19.7%); (III) risk of respiratory depression with opioid analgesics (20.3%); (IV) the correct pain score of quietly lying patient with grimaces (20.8 %) and (V) the accurate clinical manifestation of opioid physical dependence (21.9%) Table 2.

Level of Knowledge and Attitude

Further item analysis was computed after categorization of the level of knowledge and attitude according to operationally stated. A great proportion of nurses (82.1%) were found with a very low level of knowledge and negative attitude followed by low (10.2%) and no single nurses identified with high or very high levels of knowledge and positive attitude. Graph 1.

Factors associated with Nurses' Knowledge and Attitudes

In order to make a better understanding of the variables, the researchers conducted additional data analysis to determine which factors may contribute to the knowledge and attitude level of nurses

towards post-operative pain management. The chi-square test revealed that prior training on pain management ($X^2 = 14.935$, $P=0.001$) and reading of medical books or journals about pain ($X^2 = 5.019$, $P=0.025$) significantly associated with nurses' level of knowledge and attitude towards post-operative management Table 3.

Table 1: Nurses' socio-demographic characteristics, Hawassa University comprehensive specialized, southern Ethiopia, 2019 (N=187).

Socio-demographic characteristics	N	%
Sex		
Male	99	52.9
Female	88	47.1
Age (years)		
20-24	68	36.4
25-29	75	40.1
30-34	35	18.7
>35	9	4.8
Current working unit		
Surgical ward	37	19.8
Gynecology ward	22	11.8
Labor and maternity ward	48	25.7
Ophthalmologic unit	21	11.2
Operation theatre (all)	59	31.6
Level of nursing education		
Diploma	59	31.6
Bachelor degree	128	68.4
Years of experience in caring for patients		
1-5 years	110	58.8
6-11 years	64	34.2
11 and above years	13	7.0
Reading any books or journals about pain		
Yes	142	75.9
No	45	24.1
Experience of pain management training		
Yes	50	26.7
No	137	73.3
Personal experience of pain		
Yes	144	77.0
No	43	33.0

Table 2: Frequency and percentage of correctly answered questions by nurses, Hawassa University comprehensive specialized hospital, southern Ethiopia, 2019 (N=187).

Item number	Item content	Correct response	
		N	%
	True or false questions		
1	Vital signs are always reliable indicators of the intensity of a patient's pain (False)	78	41.7
2	Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences (False)	71	37.9
3	Patients who can be distracted from pain usually do not have severe pain (False)	88	47.1
4	Patients may sleep in spite of severe pain (True)	50	26.7
5	Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases (False)	141	75.4
6	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months (True)	109	58.3
7	Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent (True)	123	65.8
8	The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours (False)	82	43.9
9	Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics (False)	65	34.8
10	Opioids should not be used in patients with a history of substance abuse (False)	91	48.7
11	Elderly patients cannot tolerate opioids for pain relief (False)	78	41.7
12	Patients should be encouraged to endure as much pain as possible before using an opioid (False)	90	48.1
13	Children less than 11 years old cannot reliably report pain so clinicians should rely solely on the parent's assessment of the child's pain intensity (False)	86	46.0
14	Patients' spiritual beliefs may lead them to think pain and suffering are necessary (True)	131	70.6
15	After an initial dose of an opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response (True)	116	62.0
16	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real (False)	109	58.3
17	Vicodin (hydrocodone 5 mg + acetaminophen 500 mg) PO is approximately equal to 5-10 mg of morphine PO (True)	66	35.3
18	If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to	102	54.5

	correctly diagnose the cause of pain (False)		
19	Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose (False)	100	53.5
20	Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm (True)	118	63.1
21	Narcotic/opioid addiction is defined as a chronic neurobiological disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving (True)	131	70.1
Multiple-choice questions			
22	The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is (oral)	81	43.3
23	The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onsets such as trauma or postoperative pain is (IV)	123	65.8
24	Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients? (Morphine)	85	45.5
25	Which of the following IV doses of morphine administered over a 4-hour period would be equivalent to 30 mg of oral morphine given q 4 hours? (Morphine 10 mg IV)	46	24.5
26	Analgesics for postoperative pain should initially be given (Around the clock on a fixed schedule)	85	45.5
27	A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is (less than 1%)	38	20.3
28	The most likely reason a patient with pain would request increased doses of pain medication is (The patient is experiencing increased pain)	97	51.9
29	Which of the following is useful for the treatment of cancer pain? (All of the above)	95	50.8
30	The most accurate judge of the intensity of the patient's pain is (The patient)	110	58.8
31	Which of the following describes the best approach for cultural considerations in caring for patients in pain: (Patients should be individually assessed to determine cultural influences)	101	54.0
32	How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem? (5 – 15%)	84	44.9
33	The time to peak effect for morphine given IV is (15 min)	84	44.9

34	The time to peak effect for morphine given orally is (1 – 2 hours)	65	34.8
35	Following abrupt discontinuation of an opioid, physical dependence is manifested by the following: (Sweating, yawning, diarrhea and agitation with patients when the opioid is abruptly discontinued)	41	21.9
Case Studies			
36A	Patient A: Andrew is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8. A. On the patient's record, you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain (8)	37	19.7
36B	B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time (Administer morphine 3 mg IV now)	34	18.2
37A	Patient B: Robert is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8. On the patient's record, you must mark his pain on the scale below. Circle the number that represents your assessment of Robert's pain: (8)	39	20.8
37B	B. Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6 to 8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time: (Administer morphine 3 mg IV now)	36	19.2

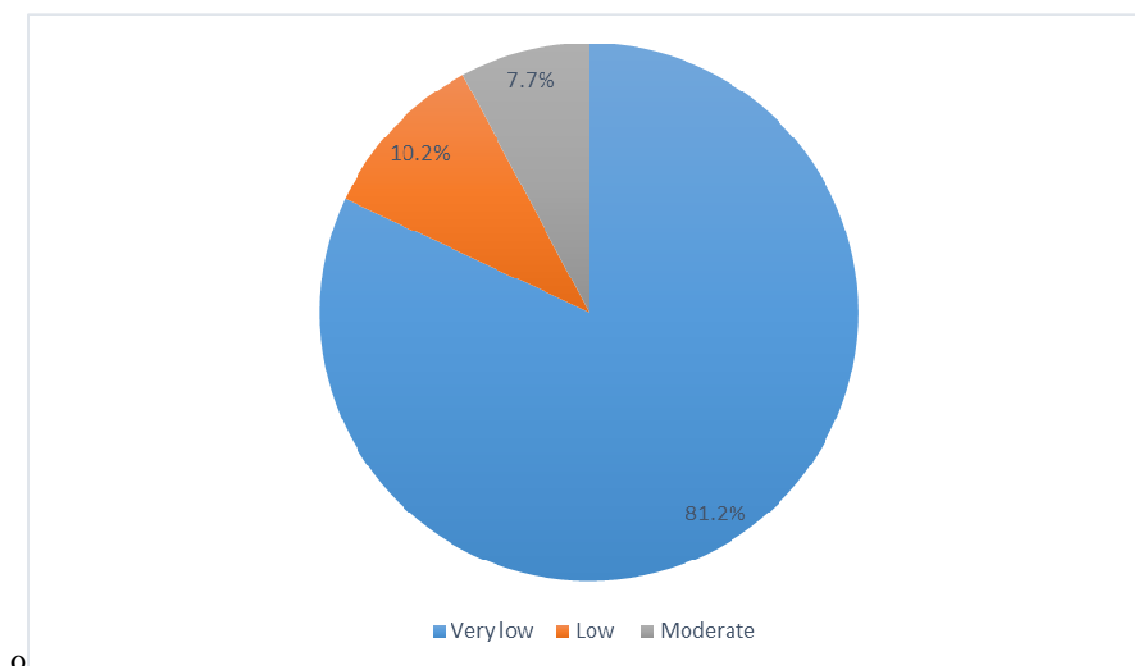


Figure 1: Category of nurses' level of knowledge and attitude, Hawassa University comprehensive specialized hospital, Southern Ethiopia, 2019 (N=187).

Table 3: Factors associated with the Nurse's level of knowledge and attitude towards post-operative pain management, Hawassa University comprehensive specialized hospital, Southern Ethiopia, 2019 (N=187).

Knowledge and attitude level						
Variables		Moderate	Very low-low	X ² test	P-value	
Prior training on pain management	Yes (n=50)	13(26%)	37(74%)	14.935	0.001*	
	No (n=137)	8 (5.8%)	129 (94.2%)			
Reading of medical books or journals about pain	Yes (n=141)	20 (14.2%)	121(85.8%)	5.019	0.025*	
	No (n=46)	1 (2.1%)	45 (98.9%)			

Discussion

Post-operative pain is upsetting to patients experiencing surgical events. Nurses with adequate knowledge and positive attitude play a key role in alleviating post-operative pain. The contribution of inadequate knowledge and nurse's negative attitudes towards the pain experience has been

implicated in the nurses' inadequate management of patients in pain (Dalton and Greer 2001).

This study showed that the mean correct answer score was (22.5%) meaning nurses were able to correctly answer only (22.5%) the questions on average. The result was much lower than study conducted in other parts of the world for example

it was (65.64%) on Pakistan nurses (Zeb 2019), (59.05%) on Bangladesh nurses (Basak 2010), (64.5%) on Indian nurses (Manwere, Chipfuwa et al. 2015) and (47.72%) on Hong Kong nurses (Lui 2008). Among several factors contributing to this finding, lack of in-depth pain contents in undergraduate nursing education and inadequate in-service training on pain topics in Ethiopia seem to play an important role. Also, the other likely explanation may be nurses from these countries possess a higher level of knowledge about pain management incomparable to the Ethiopian context.

This study also identified that (82.2%) nurses had a very low level of knowledge and positive attitudes regarding postoperative pain management. This inadequate knowledge contributes to the possibility of under-treatment of patients' post-operative pain. This finding was surprisingly low even if it was supported by different studies throughout the world. For example, the researcher found that the level of low knowledge among Indonesian nurses was (50%) (Tarjuman 2006). Only (7.7 %) of nurses had a moderate level of knowledge and positive attitudes. This also low as compared to (69%) Malaysia nurses scored a moderate level of knowledge towards post-operative pain management (Ho, Choy et al. 2009).

Several factors might contribute to the very low level of knowledge and negative attitudes among nurses in this study. Firstly, only (26.7 %) participants had received pain management training and it is given for a small proportion of nurses in the Ethiopian context because of the budget issue. Secondly, it seems likely that pain management content is not given in-depth on the nursing curriculum in the Ethiopian context.

According to the result, the five ranking orders of the least correctly answered items (lower than 21.9%) were identified and indicated that nurses had very low knowledge and negative attitudes in some parts of pain management. These included appropriate pain score assessment, fear of addiction, right dose and the right time of pharmacologic pain medications (Table 2). These results were amusingly very low and inconsistent even if earlier studies reported relative low findings in these important areas of pain management (Lui 2008, Yava, Cicek et al. 2013,

Al Qadire and Al Khalaileh 2014, Manwere, Chipfuwa et al. 2015, Woldehaimanot, Saketa et al. 2014). Therefore, these areas may add more barriers to pain management and prevent patients from receiving adequate pain management.

This study clearly pointed to the fact that nurses' knowledge and attitudes of postoperative pain management are associated with certain factors. Thus, prior training on pain management and reading of medical books or journals about pain is very important to nurses for improving their knowledge and attitude in providing care for post-operative pain. This result was consistent with results reported by earlier studies (Al Qadire and Al Khalaileh 2014).

Conclusion and Recommendation

This study concluded that nurses retained a very low level of knowledge far from an optimal and negative attitude towards post-operative pain management than previously reported findings worldwide. Finally, this study provided significant evidence of the knowledge deficit of nurses concerning pain management in Ethiopia.

It is critical that the hospital must arrange training workshops on post-operative pain management for staff nurses to close the gap. The federal ministry of Health of Ethiopia should enrich the pain content of the nursing curriculum.

The results of this study also provided a framework for the policymakers, government, and non-government organizations to develop and implement continuing education programs and in-service training for nursing staff on pain management, which can enhance the quality of patient care.

Therefore, it is imperative that pain management should be considered in detail as the fifth fundamental vital signs to reduce patients' suffering from pain.

Limitation of the study

Participants who completed the survey were from one setting and might not entirely reflect the knowledge and attitudes of nurses in broad. This would reduce the possibility of generalizing the implications of the study. Therefore, a larger-scale survey that includes a larger number of nurses and settings would be highly recommended.

List of abbreviations

WHO: World Health Organization; KASRP: Knowledge Attitude Survey Regarding Pain; UK: United Kingdom; USA: United States of America; IRB: Institutional review board of Hawassa University; SNNPRS: Southern Nations Nationalities and Peoples Region;

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