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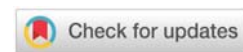
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Research Article

Knowledge and associated factors towards post-operative pain management among nurses working at referral hospitals, Ethiopia

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Abstract

Introduction: Post-Operative Pain (POP) is a common patient problem subsequently surgical procedure. Uncontrolled POP reduces physical, social and overall recovery of the patient. Effective pain management requires faultless knowledge.

Objective: To determine Knowledge and its associated factors towards POP management among nurses working in referral hospitals, northwest Ethiopia.

Methods: Data were collected from Nurses from March 08 to April 23, 2019. Nurses who are working in the surgical track were included in the study. The data were analyzed by SPSS version 20 Software.

Result: The nurses' level of good knowledge towards POP management was 43.46%. The multivariable logistic regression analysis showed; master of science degree (AOR=3.125, 95%CI (2.53-10.11)), bachelor of science degree [(AOR=2.10,95%CI (1.86, 9.05)), having 5 to10 years working experience [(AOR= 2.661, 95%CI (1.278, 5.540)), having 10 to 15 years of working experience [(AOR= 2.581 95%CI (1.758, 11.938))], having 15 to 20 years working experience [AOR=4.62,95%CI (1.28, 6.68)), having >20 years of working experience [AOR=7.27,95%CI (1.44, 11.95)), receiving training [AOR=1.59, 95%CI (1.06, 2.39)] were factors significantly associated with the level of knowledge regarding POP management.

Conclusion: This study indicated that the good level of knowledge towards POP management was poor. Educational level, working experience and receiving training were factors significantly associated with nurses' level of Knowledge towards POP management. Finally, we recommend that the training program for nurses concerning to the POP management guidelines and treatment protocols should be designed to improve their knowledge. Further, health education program for nurses may be necessary to take place.

Introduction

POP is an acute pain present in a patient meanwhile a prior surgical procedure or a combination of disease and sources associated with procedure [1]. Pain is offensive sensory and emotional impact which linked to actual or potential tissue damage [2]. POP is a critical community health issues both economically developed and developing countries [3]. Unimproved pain post surgery is extremely predominant and

have significantly influences the morbidity and mortality of the subjects [4]. Unremitting pain can lead to a short and long lasting harmful consequences for subjects [5].

The data showed abundant challenges with POP management worldwide [6]. In United States of America, eighty percent of patients' suffered of moderate to severe POP from the estimated 23.9 million surgical procedures performed [7]. But, the burdens are more greater in developing countries

[6]. Developing countries remain to face this impacts with establishing and maintaining effective programs for the enhancement of POP [8,9]. In Africa, the issue of pain has been visited principally in relative to AIDS and cancer. However a pain from surgical procedures own a far superior effect on the subjects [10,11]. The prevalence of moderate to severe POP was 88.2% in Ethiopia, of which only 41.6% of them sufficiently treated [12]. Another study done in Ethiopia showed the prevalence of moderate to severe POP was 28.6% [13].

The management POP leads to a healthcare test, which needs a knowledge of how to assess and reassess POP, prescribe and administer drugs [14]. Assessment is a continuing process to maintain continuousness through time being done during activity and at rest. So that nurses require to develop knowledge about the harmful impacts of unrelieved pain [15,16]. Nurses should be conscious of a vital role of assessing, treating, and evaluating POP [17]. As the duty of nurses, they should identify and report pain. They are the principal caregivers and they spend most of their time with the patients [18]. The evidence has indicated that management of POP by nurses still leftovers enormous issue. For this poor POP management, it was reported that inadequate education and lack of training for nurses were parts the problems [19]. Furthermore, insufficient knowledge regarding POP management can meaningfully contribute to this problem [20]. However, there has been augmented attention for enhancing POP management as a consequence of several new guidelines and progresses of techniques in managing POP [21].

Therefore, this study will be aimed to assess knowledge and factors associated towards POP management among nurses who working at study areas. The findings of this study will fill the gaps that are identified and may notify the concerned bodies to set specific strategies to improve the knowledge of nurses on POP management.

Objectives

General objectives: To assess the level of knowledge and associated factor towards POP management among nurses working in referral hospitals in Northwest Ethiopia.

Specific objectives:

1. To determine the level of knowledge towards post-operative pain management among nurses working in referral hospitals in Northwest Ethiopia.
2. To identify factors affecting the level of knowledge towards post-operative pain management among nurses working in referral hospitals in Northwest Ethiopia.

Methods

Study area and Period

The Study was conducted in Amhara regional state referral hospitals, Northwest Ethiopia from March 08 to April 23, 2019. Currently, it has 11 administrative zones and 67 governmental

hospitals and 5 referral hospitals. Whereas, each hospital serves for more than 5 million people in the catchment area [22].

Study design

Hospital based cross sectional study was conducted.

Source population

All staff nurses working in the referral hospitals in Northwest Ethiopia.

Study population

All nurses working in orthopedic, surgical, recovery, OR, and trauma wards.

Eligibility criteria

Inclusion criteria: Nurses working in the surgical wards

Exclusion criteria: Nurses who were severely ill, on maternity leave, and off duty.

Sample size determination

The final sample size for this study was 437. This is because a survey was was conducted. During this, all nurses who were working in the surgical ward were included.

Sampling technique and procedure

All 5 referral hospitals were selected with a purposive sampling method. Then, all staff nurses working in the post-operative care were included in to a survey.

Study variables

Dependent variables: Knowledge of nurses on POP management

Independent variable: Sociodemographic characteristics; Gender, age, marital status, religion, level of education, and work experience.

Organizational factors: Training, guideline & tool, analgesics, nursing workload, working unit, familiarity with assessment tool, protocols for pain management, and education on pain assessment tool.

Professional related factor: Communication, attitude of nurses, and priority for pain management.

Operational definition

Good knowledge: When nurses scored mean and above the mean value [23].

Poor knowledge: When nurses scored below the mean value.

Trained: This is when nurses who have got a minimum one training on pain assessment and management [24].

Nursing workload: The proportion of nurse to patient ratio

on the average daily number of patients seen, type of care, the average time of assistance for each patient, according to dependence and type of care delivered [25].

Communication in Nursing Practice: a transaction and message creation during nursing care [26].

Data collection instrument

Self-administered questionnaire was used to collect the data from nurses. The questionnaire contains two parts which include nurses' socio-demographic status, knowledge of POP assessment and management, The questionnaires was adapted after an intense review of the related literatures [23,27,28]. It was prepared in English.

Data collection procedure

Data were collected by 7 diploma nurses and supervised by 3 MSc nurses. The principal investigator took the responsibility of coordinating the nurses and discussing the objectives of the study. Afterwards, a questionnaire was distributed and orientation and clarification for any difficulty was provided accordingly for those who were willing to take part in the study.

Data quality control

The quality of data was assured by using pre-test of the questionnaire on 5% of the sample size prior to data collection period. A one day training was given for data collectors and supervisors concerning the data collection instrument and the procedure. The reliability analysis the questionnaire was checked and a Cronbach's alpha value was 0.842. Moreover, the supervisors and principal investigator were offered a feedback for the data collectors on the spot. Finally, the collected data were checked daily.

Data processing and analysis

The collected data were entered into Epi info version 7 and then it was exported to SPSS version 20.0. Descriptive statics such as frequency, percentage, means, and standard deviation was used to describe the data. Bivariable and multivariable logistic regression analysis was done to find associated between dependent and independent variables. The Hosmer-Lemeshow's goodness-of-fit test was used to check the model fitness while the result was p -value=0.432. Finally, $p < 0.05$ was considered as a statistically significant.

Results

Sociodemographic characteristics of study participants

Four hundred five (405) nurses were enrolled in the study with a response rate of 92.6%. The mean age of the participants was (SD 31 ± 5.381) with the age range between 22 to 46 years. 208(51.4%) of them were male. 278 (71.1%) were orthodox followers and 326(80.5%) were degree holders, and 157(38.8%) had 5-10 year work experience (Table 1).

Nurses' item score of knowledge towards POP management

Among the study participants, almost eight in every ten

Table 1: Sociodemographic characteristics of nurses in referral hospitals in northwest Ethiopia 2019 (n=405).

Variable	Category	Frequency	Percent
Sex	Male	208	51.4%
	Female	197	48.6%
Age	20-30 years	217	53.6%
	31-40 years	166	41.0%
	>40 years	22	5.4%
Marital status	Single	174	43.0%
	Married	211	52.1%
	Divorced	8	2%
	Widowed	12	3%
Religion	Orthodox	278	68.6%
	Muslim	102	25.2%
	Protestant	14	3.5%
	Catholic	11	2.7%
Educational level	Diploma	47	11.6%
	BSC	326	80.5%
	MSC	32	7.9%
Area of current practice	Surgical	128	31.6%
	Recovery	87	21.5%
	OR	104	25.7%
	Orthopedics	86	21.2%
Work experience	<2 years	56	13.8%
	2-5years	138	34.1%
	5-10 years	157	38.8%
	10-15 years	34	8.4%
	15-20 years	14	3.5%
	>20 years	6	1.5%

(82.7%) of them acquainted with pharmacological analgesic such as pethidine and Pentazocine are used to relieve pain in surgical patients, 334(82.5%) knew that Observation is one of the technique used in surgical pain Assessment. Furthermore, (66.25%) of the nurses have identified that respiratory depression can occur in patients receiving opioids and (73.6%) knew that the side effects of narcotics should be observed at least 20 minutes after administering medication (Table 2).

Level of knowledge towards POP management

The level of good knowledge towards POP management was 43.46% (Figure 1).

Factors Associated with Knowledge towards POP Management

Educational level, working experience, staff communication and training had significant association with nurse's knowledge of POP Management in binary logistic regression. However only educational level, working experience and training had significant association with nurses' level of Knowledge towards POP management.

The odds of having good level of knowledge among nurses who had a master and bachelor holder had almost three (AOR=3.125, 95%CI (2.53-10.11)) and two times [(AOR=2.10, 95%CI (1.86, 9.05)) more knowledgeable than its counterparts, respectively. The likelihoods of having good knowledge among nurses who had 5-10 years, and 10-15 years of working experience had 2.66 times [(AOR= 2.661, 95%CI (1.278, 5.540)), and had 2.581 times [(AOR= 2.581 95%CI (1.758, 11.938))] more knowledgeable than its counterpart. As well as the odds of



Table 2: Knowledge about POP management among nurses at referral Hospitals in North West Ethiopia, 2019. (N=405).

Characteristics	Yes		No	
	N	%	N	%
An increasing amount of analgesics causes psychological dependency	307	75.8%	98	24.2%
Paracetamol injection is used in managing surgical pain	147	36.3%	258	63.7%
Cold and heat application are used to manage pain in the surgical patient.	299	73.8%	106	26.2%
pharmacological methods: Opioids analgesic such as pethidine and Pentazocine are used to relieve pain in surgical patients	335	82.7%	70	17.3%
-Combining analgesics may result in better pain control than using a single analgesic agent	313	77.3%	92	22.7%
Pain should be assessed before and after administering pain drugs.	317	78.3%	88	21.7%
Observation is part of the method used in surgical pain Assessment	334	82.5%	71	17.5%
The side effects of narcotics should be observed at least 20 minutes after administration	298	73.6%	107	26.4%
If the source of pain is not known anti pain should not be used during the pain evaluation period because this could mask the ability to correctly diagnose the cause of pain	260	64.2%	145	35.8%
Based on their cultural and spiritual beliefs Patients may think pain and suffering are necessary	273	67.4%	132	32.6%
Patients should be encouraged to tolerate as much pain as possible before using an opioid.	250	61.7%	155	38.3%
Pre-surgery injection such as anesthesia is given for Pain Management	264	65.2%	141	34.8%
Respiratory depression rarely occurs in patients who have been receiving stable doses of Opioids over a period of months	268	66.25%	137	33.8%
Opioids should not be used in patients with a history of Substance abuse	266	55.8%	179	44.2%
Pain rating scale ranging from (0) "no pain at all to (10) the worst pain" is essential to adopt in pain assessment	288	71.1%	117	28.9%
If a patient sleeps with no movement postoperatively, this indicates that the patient is not in pain	218	53.8%	187	46.2%
Type of pain relief selected for the patient should be based on the type of surgery	260	64.2%	145	35.8%
NSAIDs used for severe pain Management	225	55.6%	180	44.4%

having good knowledge among nurses who had 15-20 and >20 years of work experience had almost five times [AOR=4.62, 95%CI(1.28,6.68) and 7.27 times [AOR=7.27, 95%CI(1.44, 11.95) more knowledgeable as compared to its counterparts, respectively. The odds of having good knowledge among nurses who received training was nearly two times [AOR=1.59, 95%CI(1.06,2.39) higher than its counterpart (Table 3).

Discussion

The level of Knowledge towards POP management

The level of good knowledge about POP management was 43.5% (95% CI (39.3%, 48.4%). The finding of this study was in line with a study conducted in Bangladesh (40%), Jordan (39.5%), Kenya (41%) and Ghana (48%) [29-32]. The possible explanation might be due to the educational background of the study participants. For instance; study conducted in Jordan majority of nurses had a bachelor's degree which makes similar with this study participants. In fact, as educational level of the participants increased, there level of understanding would be improved.

However, the result of this study was lower than study conducted in Uganda (71.8%), Ireland (65.7%), Nigeria (60%) and southeast Ethiopia (54.86%) [5,23,33,34]. The possible explanation could be due to the sociodemographic characteristics of the participants. In addition the variation might be due to pain management training and the absence of pain management protocol. For instance; in a study conducted in Uganda (69%) of the nurses was received training related to pain management as compared to 52.0% of a participant in the current study.

Factors associated with knowledge towards POP management

The odds of having good level of knowledge among nurses who had a master and bachelor holder had almost three

Nurses Level of Knowledge

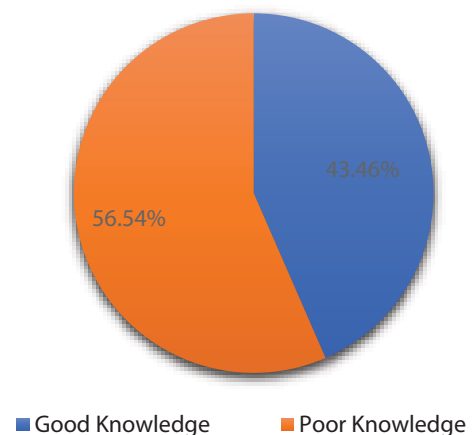


Figure 1: Level of knowledge of nurses towards post-operative pain management at referral hospitals of Amhara region North West Ethiopia, 2019.

(AOR=3.125, 95%CI (2.53-20.11)) and two times [(AOR=2.10, 95%CI (1.86, 9.05) more knowledgeable than nurses who had at diploma level, respectively. This result was supported by the study conducted in Bangladesh, Ghana, and Uganda [18,29,33]. In fact, as the level of education increases, the knowledge of nurses about what and how-to manage POP would be improved.

The likelihoods of having good knowledge among nurses who had 5-10 years, and 10-15 years of working experience had 2.66 times [(AOR= 2.661, 95%CI (1.278, 5.540), and had 2.581 times [(AOR=2.581 95%CI (1.758, 11.938)] more knowledgeable than its counterpart, respectively. As well as the odds of having good knowledge among nurses who had 15-20 and >20 years of work experience had almost five times [AOR=4.62, 95%CI (1.28, 6.68) and 7.27 times [AOR=7.27, 95%CI (1.44, 11.95) more knowledgeable as compared to its counterparts, respectively. This finding was argue with a study conducted in Nigeria [34]. The possible explanation could be due that the duration of

**Table 3:** Bivariable and multivariable logistic regression analysis of factors associated with knowledge of nurses about postoperative pain management (N=405).

Variable		Knowledge		COR 95%CI	AOR 95%CI
		Good	Poor		
Gender	Male	103(49.5)	105(50%)	1.66(0.55,1.707)	1.398(0.892,2.191)
	Female	73(37%)	124(63%)	1	1
Age	20-30	67(40%)	99(60%)	1.184(0.119, 2.037)	4.912(0.805,29.989)
	31-40	102(47%)	115(53%)	1.552(0.263, 1.658)	3.404(0.609,19.027)
	≥40 years	8(36%)	14(64%)	1	1
Marital status	Single	78(42.4%)	106(57%)	1.634(1.091,2.447)	2.114(0.472,9.460)
	Married	99(47%)	112(53%)	5..239 (1.028,26.691)	1.955(0.442,8.651)
	Divorced	6(75%)	2(25%)	0.779(0.226,2.689)	8.482(0.840,85.610)
	Widowed	4(33.3%)	8(66.7%)	1	1
Educational level	BSc	144(44.1)	182(55%)	2.425(1.215, 4.840)	2.104(1.86,9.05)*
	MSc	18(56%)	14(44%)	3.306(1.272, 8.590)	3.125(2.53,10.12)*
	Diploma	12(25.5%)	35(75.5%)	1	1
Work experience in years	<2 years	11(20%)	45(80%)	1	1
	2-5	52(37.6%)	86(62.6%)	2.595 (0.933, 3.749)	1.398(0.892,2.191)
	5-10	75(40%)	82(60%)	3.741(1.425,5.562)	2.661(1.278,5.540)*
	10-15 years	21(61%)	13(39%)	6.6(1.533,9.420)	2.581(1.758,11.938)*
	15-20	10(71%)	4(29%)	10.22(2.028,27.735)	4.616(1.278,6.682)*
	>20 years	5(83%)	1(17%)	20.45(1.612,139.583)	7.273 (1.443,11.5)*
Working unit	Surgical	58(45%)	70(55%)	1	1
	Recovery	42(48%)	45(52%)	1.076(0.623,1.857)	1.105 (0.593,2059)
	OR	45(44%)	59(56%)	1.034(0.615, 1.739)	1.286 (0.693,2.387)
	Orthopedics	29(33.5%)	57(67.5%)	0.647(0.368, 1.136)	
protocol and guideline for pain assessment	Yes	60(46.5%)	63(53.5%)	1.343(1.878,2.056)	1.011(0.479,1.272)
	No	117(41.7%)	165(59.3%)	1	1
Education on assessment tool	Yes	87(44.9%)	105(56.1%)	1.132(0.764,1.678)	1.10(0.586,1.428)
	No	90(42.7%)	123(57.3%)	1	1
Familiar with assessment tool	Yes	130(46.8%)	160(53.2%)	1.175(0.549,1.318)	1.519(0.920,2.508)
	No	47(40%)	68(60%)	1	1
Availability of pain assessment tool	Yes	141(44%)	178(56%)	1.100(0.679,1.782)	1.109(0.635,1.936)
	No	36(40%)	50(60%)	1	1
Prioritize of pain management by unit team.	Yes	110(46%)	130(54%)	1.268(0.702,1.562)	1.02(0.582,1.527)
	No	66(40%)	99(60%)	1	1
staff communication	Yes	113(46.5%)	130(53.5)	1.365(1.853,1.909)	1.120(0.479,1.270)
	No	63(39%)	99(61%)	1	1
Training on post-operative pain management.	Yes	104(48.5%)	107(51.5%)	1.6(1.07,4.2376)	1.59(1.06,2.39)*

working experience has a positive impacts on the knowledge of nurses towards POP management. This is due the fact that the nurses are expected to receive an updated POP management guidelines or different supportive learning materials, and also training concerning to POP management in the long run of the service duration. Besides, the nurses would read different books, and they have chance of learning from their staff.

The odds of having good knowledge among nurses who received training was nearly two times [AOR=1.59, 95%CI(1.06,2.39) higher than its counterpart. This finding was supported by study conducted in Iran [13], and Ethiopia [35]. This could be due to the reason that, it is a fact that receiving training can update the knowledge of nurses regarding POP management by offering the essential and significant information to them. Whereas, in turn, this could have the impact of motivating the nurses to read and do in collaboration with their staffs for the effective management.

Conclusion

This study indicated that the good level of knowledge towards POP management was poor. The multivariable logistic regression analysis showed; educational level, working

experience and receiving training were significantly associated with nurses' level of Knowledge towards POP management.

This study has investigated the problem and this could be the foundations for the healthcare providers, and hospitals to create the plan and find out the strategies to abate this critical issue. Finally, we recommend that the training program for nurses concerning to the POP management guidelines and treatment protocols should be designed to improve their knowledge. Further, health education program for nurses may be necessary to take place.

Authors' contributions

All the authors analyzed, critically revised, edited the manuscript, and finally all authors have reviewed and approved the last version of the manuscript.

Funding

The study was funded by University of Gondar.

Ethics approval and consent to participate

The study was approved by school of nursing research



ethical review committee on behalf of University of Gondar. Then, official letter was submitted to Amhara referral hospitals and permission was gained. All the study participants were informed about the significance and objectives of the study. Also, they were insured about the confidentiality of information obtained and their names were not asked. Finally, verbal consents were attained from each study participants.

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