

# Practice towards Postoperative Pain Management and Associated Factors among Nurses Working in Referral Hospitals: A Cross-sectional Study

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# ABSTRACT

**Introduction:** The proportion of surgical operations conducted is rising globally. There is a challenge of effectively managing Postoperative Pain (POP) because of the increase in the figure of surgical operations conducted. POP management is a major responsibility of all healthcare providers, but nurses in particular. This is because the nurses are the frontlines for the patient care. So that, knowing the nurses level of practice towards POP management and associated factors is a critical and significant issues to sthreangthen the recovery of the patients from their pain earlier. However the practice towards POP management and associated factors among nurses working in a surgical track in the study area is unknown.

**Objectives:** The aim of the present study was to assess practice towards POP management and associated factors among nurses working in Amhara Regional State Referral hospitals, northwest Ethiopia.

**Methods:** A cross-sectional study was conducted on 405 working in the surgical track at five refereal hospitals in Amhara Regional State in northwest Ethiopia. The data were collected from March 8 to April 23, 2019 by self-administered questionary and observational technique. The data were analyzed by using SPSS version 20 Software.

**Result:** The present study showed that the prevalence of nurse's good practice towards POP management was 47.65% (95%CI, [42.5, 52.8]). The multivariable logistic regression analysis showed: having BSc educational qualification (AOR= 2.774, 95% CI [1.284, 5.99]), having MSc educational qualification (AOR=4.546, 95% CI [1.53, 13.47]), having good level of knowledge regarding POP management (AOR=2.02, 95% CI [1.33, 3.06]), lack of workload (AOR=1.794, 95% CI [1.185, 2.718]) and receiving training about POP management (AOR=1.877, 95% CI [1.259, 2.80]) were factors significantly associated with nurses level of practice towards POP management.

**Conclusion:** The present study showed that the prevalence of nurse's good practice towards POP management was low. Educational level, level of knowledge, training about POP management and lack of workload were factors significantly associated with nurses level of practice towards POP management. Finally, training for nurses on POP management is recommended to be considered. Further, health educational program is also required to take place for nurses on this area in order to improve their level of practice.

Keywords: Practice; Associated factor; Nurse; Post-operative pain; Pain management

# INTROCDUTION

Pain can be defined as a displeasing sensory and emotional experience related to actual or potential tissue damage[1]. POP is the type of acute pain that is present in a surgical patient meanwhile of a preexisting surgical procedure or a combination of disease and procedure-related sources [2]. POP is classified as a serious public health problem both in the developed and in developing countries [3]. Out of an estimated 23.9 million surgical

procedures performed in the United States of America, eight in every ten (80%) of patients' experience moderate to severe postoperative pain. And more than half of patients have inadequate postoperative pain relief [4]. Unalleviated pain after surgery is highly prevalent and have greatly impacts on the morbidity and mortality of patients [5]. Unremitting pain can enable both short and long-lasting deleterious outcomes for patients, affects the quality of life, function, and functional recovery, increase the risk

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of developing chronic pain and risk of post-surgical complications [6].

Globally, there is documented data that revealed numerous challenges with postoperative pain management. However, these challenges are more profound in developing countries [7]. Developing countries continue to face challenges with establishing and maintaining effective programs for the improvement of post-operative pain due to of lack of expertise and resources. Noncompliance with guidelines, poor knowledge and inadequate training are the problem to treat POP in developing countries [8,9].

In Africa, the problem of pain has been sightsaw largely in relation to AIDS and cancer, nevertheless pain from surgical Procedures possess a far greater burden on the patients [10,11]. A prospective longitudinal study in Ethiopia indicated that the prevalence of moderate to severe postoperative pain was present in 88.2% of patients; However, only 41.6% of these patients pain take adequately treated. In the other hands 58.4% of this patients had not get adequate treatment and not in line with international recommendations and standards [12]. A study conducted in Addis Ababa, revealed that the prevalence of moderate to severe postoperative pain was found to be 28.6% [13].

Identifying and reporting pain is the duty of nursing staff, who are the primary caregivers and spend most of the time with the patients [14]. However, different studies have revealed that management of post-operative pain by nurses still remains huge problem. Insufficient education and lack of training for nurses were among the problems reported as poor POP management [15]. In addition, inadequate knowledge and practice related to POP management can significantly contribute to mistaken in pain assessment and management [16].

There has been increased consideration for improving postoperative pain management as a result of numerous new guidelines and improvements of techniques in managing perioperative pain. Despite these improvements, postoperative pain management is often unsatisfactory and increase the risk for patients to develop chronic pain conditions [17]. Besides to this, POP management founds a healthcare challenge requiring knowledge in how to prescribe and administer drugs, assess and reassess post-operative pain [18].

Nurses rally patients in pain in a variety of settings, for instance in acute care, outpatient, and long-term care settings, as well as in the home. Therefore, they need to be cognizant of the important role play in the assessing, treating, and evaluating POP in the surgical track by using appropriate tool for the individual patient [19]. Assessment is an ongoing process to maintain continuity over time being performed during activity as well as at rest. Assessment is regarded as the fifth vital sign and documented on the patient's observation chart. Staff need to develop both pieces of knowledge in the harmful effects of unrelieved pain and the confidence to prescribe analgesics in a multimodal fashion [20,21].

As briefly explained above POP is a critical problem occurred and its incidence is increasing worldwide. However, there is lack of the studies that address the practice and factors associated towards POP management among nurses who were working in referral hospitals at the study areas. Therefore, the present study was intended to assess practice and factors associated towards POP management among nurses who were working in referral hospitals at study areas. The result from the present study would aware the hospitals, healthcare professionals, government, stakeholders and the researchers who want to conducted the study on this critical problem to manage and control its associated problems which is which growing alarmingly globally.

## Objectives

**General objectives:** To assess practice and associated factor towards postoperative pain management among nurses working in Amhara regional referral hospitals in northwest Ethiopia.

**Specific objectives:** To determine the level of practice towards postoperative pain management among nurses working in Amhara regional referral hospitals in northwest Ethiopia. To identify factors affecting the level of practices towards postoperative pain management among nurses working in Amhara regional referral hospitals Northwest Ethiopia.

## **METHODS**

## Study area and period

The Study was conducted in Amhara region referral hospitals, Northwest Ethiopia. Currently, it has eleven administrative zones and 67 public hospitals and five referral hospitals which were Gondar University comprehensive specialized referral hospital, FelegeHiwot referral hospital, Debremarkos referral hospital, DebreBerhan referral hospital and Dessie referral hospital. Each hospital serves as a referral centre for more than five million people in the catchment area [22]. The study was conducted from March 8 to April 23, 2019.

#### Study design

Institution based cross sectional study was conducted among nurses working in Amhara regional state referral hospitals in Northwest Ethiopia.

## Source population

All staff nurses working in the postoperative care in Amhara regional state referral hospitals in Northwest Ethiopia.

## Study population

All staff nurses working in surgical, orthopedic, recovery, OR, and trauma wards at Amhara regional state referral hospitals during the study period.

## Eligibility criteria

**Inclusion criteria:** Nurses who were working in the surgical track and volunteer to participate in the study.

**Exclusion criteria:** Nurses who were severely ill and who were not mentally and physically capable to complete the questionary at the time of data collection were excluded from the study.

Sample size determination: Since a survey was undertaken, all staff nurses who were working in the surgical track of referral hospitals in Amhara Regional State and volunteer to participate in the study were included in the survey. The final sample size was 437.

Sampling technique and procedure: Since the survey was undertake, all the five Amhara regional state referral hospitals were selected with purposive sampling method. Then, all staff nurses working in the post-operative care within these referral hospitals were included within a survey. Next, all staff nurses present on the days of data collection period, and who were willing to participate in the survey were included in the study.

## Study population

All staff nurses working in surgical, orthopedic, recovery, OR, and

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trauma wards at Amhara regional state referral hospitals during the study period.

## Study variables

Dependent variables: Practice of nurses towards postoperative pain management

## Independent variable

Socio-demographic characteristics: Gender, age, marital status, religion, level of education, and work experience

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

Professional related factors: Attitude of nurses, communication, and priority for pain management.

#### Operational definition

Good knowledge: The Knowledge Status of nurses when they scored mean and above the mean value [23].

**Poor knowledge:** The Knowledge Status of nurses when they scored below the mean value.

**Good practice:** The practice Status of nurses when they scored mean and above the mean value [23].

**Poor practice**: The practice Status of nurses when they scored below the mean value.

#### Data collection instrument

Self-administered questionnaire and an observational checklist was used to collect the data from study participants. The questionnaire contains three parts which include nurses' socio-demographic status, knowledge of POP assessment and management, and practice of POP assessment and management. The questionnaires was adapted after an intense review of the related literatures [23-25]. It was prepared in English.

#### Data collection procedure

Data were collected by trained seven diploma nurses and supervised by three BSc nurses. The principal investigator took the responsibility of coordinating the nurses and discussing the purpose of the study then based on their willingness to participate, a questionnaire was distributed and orientation was given on how to fill the questionnaire and clarification for any difficulty was provided accordingly.

## Data quality control

The quality of data was assured by using pre-test of the questionnaire on 5% of the sample size for their accuracy and consistency prior to data collection period. Data collectors and supervisors were trained for one day on the data collection instrument and data collection procedure. The reliability of the questionnaire was checked by the reliability analysis and a Cronbach's alpha value was 0.792 for practice which shows a reliable tool. Moreover, the supervisors and principal investigator were offered a feedback on daily basis for the data collectors. Finally, the collected data were checked carefully on a regular basis.

#### Data processing and analysis

The collected data were entered into Epi info version 7 and then it was exported to Statistical Package for the Social Sciences (SPSS) version 20.0 (IBM Corporation, North Castle Drive, Armonk, NY, U.S.A) for statistical analysis for further analysis. Descriptive statics such as frequency, percentage, means, and standard deviation was used to describe the data. Bi-variable and multivariable logistic regression analysis was done to find associated between dependent and independent variables. Both Crude Odds Ratio (COR) and Adjusted Odds Ratio (AOR) with the corresponding 95% Confidence Interval (CI) were calculated to display the strength of the association. Model fitness was checked by Hosmer-Lemeshow's goodness-of-fit test for knowledge and practice while the result was p-value=0.225 for practice. Finally, p<0.05 were considered statistically significant.

## RESULTS

#### Socio demographic characteristics of study participants

A total of 405 nurses were enrolled in the study with a response rate of 92.6%. Among this almost half of them 208 (51.4%) were male and the age range of the participants were between 22-46 with the mean age of (SD 31  $\pm$ 5.381). Majority of the nurses 278 (71.1%) were orthodox Christian followers and 326 (80.5%) were Degree holders. From the total respondents, almost four in every ten (38.8%) had 5-10 year work experience and a bit less than a third (31.6%) of the respondents were working in surgical ward (Table 1).

 Table 1: Socio-demographic characteristics of nurses in Amhara regional

 referral hospitals northwest Ethiopia 2019 (n=405).

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

#### Practice of nurses towards postoperative pain management

The nurses' level of good practice towards post-operative pain management was 47.65% (Figure 1).



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

# Nurses item score on questions raised on practice of pop

#### management

From the number of 405 participants, 117 (28.9%) Use a pain assessment tool and record the pain relief measures provided to the patient in the nursing records 225 (55.6%) (Table 2).

# Factors affecting the practice of nurses towards pop management

Among those factors; nursing workload, working experience, lack of availability of assessment tools, educational level on assessment tools, familiarity with tools, lack of protocols and guidelines on pain assessment and management, training and poor staff communication were positively associated with nurses' level of practice regarding POP management in binary logistic regression. However only educational level, nurses workload, and training on POP management were positively associated with nurses level of practice towards in POP management.

The odds of having good practice among nurses who have BSc educational qualification were almost three times [AOR=2.774, 95% CI (1.284, 5.99)] and MSc holders were nearly five times [AOR=4.546 (1.53, 13.47)] more than those who have diploma holders. In addition, the likelihoods of having good level of practice among nurses who have good level of knowledge had almost two times [(AOR=2.02, 95% CI (1.33, 3.06)] more likely knowledgeable than its counterpart.

The probabilities of having good practice among nurses who had no workload were nearly twice [AOR=1.794, 95% CI (1.185, 2.718) more likely when compared to its counterparts. The likelihoods of having good practice among nurses who received training was nearly twice [AOR=1.877, 95% CI (1.259, 2.80)] higher than its counterpart (Table 3).

Table 2: Practice of nurses about postoperative pain management at referral Hospitals of Amhara Region in Northwest Ethiopia, 2019 (n=405).

	Yes		No	
Variable	Ν	%	Ν	%
Formal pain rating scale is utilized by nurses in the ward?	171	42.2%	234	57.8%
There is communication among the nurse with a patient with				
respect to the pain management in the word?	251	62.0%	154	38.0%
	100	46.00/	215	<b>52</b> 10/
Record the pain rating on patient's observation chart:	190	40.9%	215	55.1%
Use comfort measures, e.g. change of position, massage, to provide	106	48 4%	200	57 6%
pain relief?	170	70.770	207	52.070
Assess pain when the patient is at rest?	187	46.2%	218	53.8%
Use a pain rating scale to identify the intensity of pain				
	232	57.3%	173	42.7%
experienced by the patient?				
Use a pain assessment tool?	117	28.9%	288	71.1%
Record the pain relief measures provided to the patient in the				
	225	55.6%	180	44.4%
nursing records?				
Assess pain by looking at their facial expressions and asking about				
	226	55.8%	179	44.2%
their level of pain to give it a score?				

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Table 3: Bi-variable and Multivariable logistic regression analysis of factors associated with the practice of nurses about POP management, 2019 (n=405).

Variable	Category —	Prac	Practice		
		Good	Poor	- COR 95%CI	AUR 95% CI
Gender -	Male	95(43.6%)	102(56.4%)	1.006(0.681,1.486)	1.255(0.798,1.974)
	Female	100(51.4%)	108(49.6%)	1	1
	20-30	108(58.6%)	58(41.4%)	2.473(2.400 ,5.622)	2.151(0.983,4.271)
Age in years	31-40	94(43%)	123(57%)	3.452(1.385, 8.603)	0.815(0.169,3922)
	≥ 40	8(43%)	14(57%)	1	1
	Single	121(50.7%)	90(49.3%)	2.190 (1.462,3.279)	1.255(0.739,2.132)
Marital status	Married	70(44.5%)	114(55.5%)	1.02(0.226,4.216)	0.492(0.70,3.442
	Divorced	3(25%)	5(75%)	1.629(0.100,26.455)	1.085(0.287,4.094)
	Widowed	5(41.6%)	7(58.4%)	1	1
	Male	95(43.6%)	102(56.4%)	1.006(0.681,1.486)	1.255(0.798,1.974)
Educational level _	Female	100(51.4%)	108(49.6%)	1	1
	20-30	108(58.6%)	58(41.4%)	2.473(2.400 ,5.622)	2.151(0.983,4.271)
	31-40	94(43%)	123(57%)	3.452(1.385, 8.603)	0.815(0.169,3922)
	≥ 40	8(43%)	14(57%)	1	1
Work experience	Single	121(50.7%)	90(49.3%)	2.190 (1.462,3.279)	1.255(0.739,2.132)
Work experience –	Married	70(44.5%)	114(55.5%)	1.02(0.226,4.216)	0.492(0.70,3.442
	Divorced	3(25%)	5(75%)	1.629(0.100,26.455)	1.085(0.287,4.094)
	Widowed	5(41.6%)	7(58.4%)	1	1
	Surgical	56(64%)	31(38%)	~	1
W/and in a Linit	Recovery	65(51%)	31(49%)	1.75(1.203,3.938)	0.439(0.245-0.788)
Working Unit –	OR	51(49%)	53(51%)	1.07 (0.556,1.565)	1.159(0.642,2.094)
	Orthopedic	46(53.4%)	40(46.6%)	0.897(1.45,1.47)	1.131(0.610,2.094)
	Yes	86(58%)	62(42%)	1.903(1.198,2.714)	1.794(1.185-2.718)
Nursing workload	No	107(68%)	150(32%)	1	
Protocol and guideline for pain	Yes	69(56%)	54(44%)	1.582(1.033,2.424)	1.151(0.853.,4.271)
asst	No	124(44%)	158(56%)	1	1
Education on asst tool –	Yes	103(48%)	110(52%)	1.0177(1.025,1.452)	1.941(0.899,13.527)
	No	92(48%)	100(52%)	1	1
Familiarity with asst tool.	Yes	143(49.3%)	147(50.7%)	1.1785((0.55,1.309)	0.798(0.482,1.320)
	No	52(45%)	63(55%)	1	1
Availability of pain asst tool –	Yes	47(54.6%)	39(55.4%)	1.392(0.863,2.246)	0.720(0.410,1.262)
	No	148(46.4%)	171(53.6%)	1	1
Priority of pain management by	Yes	122(51%)	118(49%)	1.303(0.875,1.940)	0.957(0.586,1.563)
unit team	No	73(43.8%)	92(56.2%)	1	1
Staff Communication – Availability of morphine in your _	Yes	115(51%)	110(49%)	1.578(1.056,2.358)	0.616(0.376,1.008)
	No	67(41.3%)	95(58.7%)	1	1
	Yes	92(51%)	88(49%)	1.307(0.882,1.937)	0.726(0.444,1.188)
stock	No	80(44%)	100(56%)	1	1
Training on postoperative pain	Yes	118(56%)	93(44%)	1.911(1.286,2.84)	1.877(1.259,2.800)
management.	No	77(40%)	116(60%)	1	1
Attitude –	Favorable	124(47.6%)	136(52.4%)	1.0042(0.563, 1.27)	1.632(0.221,1.201)
	Un favorable	69(47.5%)	76(52.5%)	1	1
	Good	104(58.8%)	73(41.2%)	2.145(1.438,3.199)	2.019(1.334,3.057)
Knowledge	Poor	91(40%)	137(60%)	1	1

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# DISCUSSION

# Practice of nurses regarding POP management and associated factors

The objective of the present study was to assess practice and associated factors towards post-operative pain management among nurses working in Amhara regional referral hospitals in northwest Ethiopia.

The present study showed that the nurses' level of good practice regarding postoperative pain management was 47.65% (95% CI [42.5,52.8]). This finding was in line with study conducted in Ethiopia (52.1%) [23]. The possible explanation might be because; there were similar tools and study design used during both the studies. Besides since both studies were conducted in Ethiopia, they have similar treatment guidelines, training protocol, and also similar study curriculum for nurses during their learning program in the higher education.

However, the result of the present study finding was lower than studies conducted in Bangladesh (77.8%) and Norway (72%) [16,26]. This difference might be due to method of data collection technique in the previous studies, the level of practice the nurses was assessed by self-administered questionnaire while observational checklist was used in this study. In fact, this could overestimate the level of practice in the previous studies.

The odds of having good level of practice among nurses who have good level of knowledge had almost twice [(AOR=2.02, 95% CI (1.33, 3.06)] more likely knowledgeable than its counterpart. This finding is supported studies conducted in Bangiladish and Uganda [26, 27]. The alternative explanation could be in fact that as the level of knowledge of nurse increased their level of practice is improved.

The likelihoods of having good practice among nurses who have BSc educational qualification were almost three times [AOR= 2.774, 95% CI (1.284, 5.99)] and MSc holders were nearly five times [AOR=4.546, 95% CI (1.53, 13.47)] more than those who have diploma holders respectively. This finding was supported by a studies conducted in Ghana and Uganda [27, 28]. This may be due to the fact that professionals with increased academic level have more apply their knowledge into practice and skills can be developed more easily if one has prior knowledge of the task to be accomplished.

The probabilities of having good practice among nurses who had no workload were nearly twice [AOR=1.794, 95% CI (1.185, 2.718) more likely as compared to its counterparts. This finding was supported by a studies conducted in Ghana and Nigeria [14,29]. This is due to the fact that Heavy workload limits the time given to the interaction between patients and nurses for adequate pain assessment and management.

The chances of practice among nurses who work in recovery wards had 56.1% less likely to practicing than nurses who were working in surgical wards. This finding was in agreed with studies conducted in Rwanda and Ethiopia [9,23]. This might be due to work overload of study of participants. Another possible reason is in the emergency situation inability to administer medication until a diagnosis is made, patient's reluctance to report pain and use of alcohol or other recreational drugs by patients may limit nurses to perform with standards.

The likelihoods of having good practice among nurses who received training was nearly twice [AOR=1.877, 95% CI (1.259, 2.80)] higher than its counterpart. This finding was supported by a study

conducted in Ethiopia [23] and Uganda [21]. This may be due to receiving training can make nurses more skillful on postoperative pain management.

# CONCLUSION

The present study showed that the prevalence of nurse's good practice towards POP management was low. Educational level, level of knowledge, training about POP management and lack of workload were factors significantly associated with nurse's level of practice towards POP management.

Moreover, present study offers significant evidence for support of the communites residing in the study area in Ethiopia. It also provides a cornerstone to encourage healthcare providers to consider POP management and encourage them to focus on and plan the methods to prevent these issues. Finally, we recommend training for nurses on POP management is should be considered. Further, health educational program is also required to take place for nurses on this area in order to improve the level of practice.

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# **AUTHORS' CONTRIBUTIONS**

Desalegn Tariku Jaleta, Techane Sisay Tuji and Addisu Dabi Wake were conceived the study and wrote the manuscript. All the authors analyzed and interpreted the data, critically revised and edited the manuscript. Finally, all authors have reviewed and approved last version of the manuscript.

# FUNDING

The study was funded by University of Gondar.

# AVAILABILITY OF DATA AND MATERIALS

The data used to support the findings of this study are on the hands of the corresponding author.

# ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical clearance was obtained from school of nursing research ethical review committee on behalf of University of Gondar. Then, official letter was submitted to Amhara referral hospitals directors and then, Permission was obtained from those bodies. Prior to data collection; all participants recruited to the study was received written information sheet about the study. Respondents were insured about the confidentiality of information obtained and the respondent's names were not asked. Then verbal consents were obtained from each study subjects after explaining the objectives of study and procedures.

# COMPETING INTERESTS

The authors declare that there is no any conflict of interest.

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