



Pain Management Knowledge of Nurses Working in Northwest Amhara Referral Hospitals in Ethiopia During 2018

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ABSTRACT

Background: Pain is an unpleasant emotional and sensory experience that is associated with actual or potential tissue damage. Providing comfort and relief of pain of clients are the fundamental role of nurses in nursing practices. However, inadequate knowledge of appropriate pain management has been reported to be a major obstacle to implementing effective pain management by nurses.

Objective: The objective of this study was to assess knowledge of pain management techniques in nurses working in referral hospitals in northwest Ethiopia.

Methods: An institution-based, cross-sectional, interviewer-administered questionnaire study of the pain treatment knowledge of 411 nurses was conducted in 2018 in Northwest Referral Hospitals in Ethiopia. The sample size was allocated to each selected referral hospital. A systematic sampling technique was used to select study participants. The descriptive data were presented in frequency tables. Binary and multivariable logistic regression analyses were undertaken to identify associated factors to pain management knowledge of nurses. Variables with a P value < 0.05 were considered as a significant variable.

Results: Only 40.6% of nurses were judged to have had adequate knowledge regarding pain management. Number of years of training (adjusted odds ratio = 2.19; 95% CI, 1.39–3.44), prior pain education (adjusted odds ratio = 2.34; 95% CI, 1.45–3.8), and professional rank (adjusted odds ratio = 3.09; 95% CI, 1.37–6.96) were associated factors for pain management knowledge of nurses.

Conclusions: The level of many nurses' knowledge of pain management techniques were inadequate. Lack of pain training in their institution, lack of pain education in their academic curriculum, and professional rank were predictors of these nurses' pain management knowledge. Providing pain management training and employing higher service rank nurses are likely to result in increased nurses' knowledge of proper pain management techniques. (Curr Ther Res Clin Exp. 2021; 82:XXX–XXX)

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Introduction

Pain is an unpleasant emotional and sensory experience associated with actual or potential tissue damage. It has emotional and physical components. It is always subjective. Based on duration, pain can be classified as either acute (lasting a short period of time and easily described) or as chronic (present for more than 3 months and not easily described).^{1–3}

Besides the above classification, pain management techniques can be categorized as invasive and not invasive. Physical ther-

apy and pain medications are noninvasive pain management techniques, whereas injections and nerve blocks are invasive techniques to manage pain. Pain management techniques can be classified in terms of their degree of intervention as noninvasive, nondrug pain management, noninvasive pharmacological pain management, and invasive pain management. Nonpharmacological pain management methods include patient education, cognitive behavioral therapy, relaxation therapy, social support interventions, and self-management.^{4,5}

Nurses have been reported to be more influenced by a patient's behavior than by the patient's self-report of pain, especially in relation to decisions about opioid administration. Nurses are reported to be less likely to administer a previously well tolerated, but the ineffective dose of opioid to a smiling patient than to a gri-

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macing patient. Nurses' personal opinions and lack of understanding about patients' pain influence their choice of opioid doses and to contribute insufficient pain management.⁶⁻⁸

Other studies have concluded that clinical experience is the single most important factor influencing nurses' knowledge and confidence in managing a patient's pain. Nurses with longer clinical working experience were more likely to apply appropriate knowledge of pain in their daily practices. Workload, lack of proper materials, lack of knowledge, and incorrect perceptions about pain were the main determinants of proper pain management.^{9,10}

Knowledge deficits about pain management are common among health care professionals. It has been reported that around 50% of health care providers lack knowledge of proper pain assessment and management techniques but that educational programs are an effective way to increase nurses' level of knowledge and improve attitudes toward pain management.^{11,12}

Although many disciplines are involved in pain management, nurses play a pivotal role in the assessment, relief, and evaluation of pain. Proper assessment and treatment of pain by nurses help to improve the quality of care for patients with pain. However, limited knowledge and training are major obstacles to improved nursing pain management. The aim of this study was to assess pain management knowledge and its predictive factors in a selected population of nurses working at referral hospitals in northwest Ethiopia.

Methods

Study participants and design

This cross-sectional, questionnaire study was conducted among nurses working in 4 selected northwest Ethiopian referral hospitals during 2018. The hospitals were Felegehiwot Comprehensive University, Gonder University, Debre Tabor University, and Debre Markos University. These referral hospitals are located in the northwest parts of the Amahara regions of Ethiopia. They provide a number of clinical services, including medical; surgical; pediatric; gynecology/obstetrics; ophthalmology; dermatology; dental; sexually transmitted disease; trauma; and ear, nose, and throat services. They perform a high number and wide range of elective and emergency procedures.

Sample size determination

The sample size was determined using a single population proportion formula by using the following assumptions: prevalence = 58% of nurses had adequate knowledge of pain management,⁶ marginal error = 5%, confidence level = 95%, and a 10% non-response rate was added and the final sample size was 411.

Sampling procedure

A total of 411 nurses distributed in proportion to the sample size in each selected referral hospital. Nurse numbers were taken from the Metron of each hospital and a sampling frame was made from it. A systematic sampling technique was employed to select nurses from each hospital. The first nurse in the first fourth interval was selected by simple random lottery methods and start from that nurse, every fourth interval was selected. Nurses who had been working in the hospitals for at least 6 months were recruited for this study.

Data collection procedure and techniques

A structured interviewer-administered questionnaire was used to collect the data. The questionnaire was adopted from previous research^{6,13} and modified accordingly.

Data quality control

Training was provided for 4 data collectors and 2 supervisors for 2 days about the objective and process of the data collection. A pretest was carried out and amendments were undertaken. Closer supervision was undertaken during data collection. Every questionnaire was cross-checked daily by the supervisors and the principal investigators. Problems in data collection or doubt were discussed overnight with data collectors and the supervisors and clarified with them.

Data processing and analysis

Each questionnaire was checked visually for completeness and coding was given at the right margin of the questionnaire. Data were entered into Epi-info version 3 (Centers for Disease Control and Prevention, Atlanta, Georgia) and then exported to SPSS version 21.0 (IBM-SPSS Inc, Armonk, New York) for analysis. Crude odds ratio with 95% CI was calculated using bivariate logistic regression analysis. Variables with a P value ≤ 0.05 were fitted to multivariable logistic regression analysis. Finally, multivariable logistic regression analysis was performed to control the potential confounding variables under the study to identify the independent determinant factors at a 5% level of significance.

Operational definitions

Adequate knowledge was defined as nurses who scored above the mean on the knowledge item score.⁶

Table 1
Sociodemographic characteristics of nurse respondents (N = 411).

Variable	Category	Frequency	%
Age (y)	20-30	261	63.5
	31-40	108	26.3
	41-50	30	7.3
	51-60	3	0.7
	>60	9	2.2
Sex	Male	237	57.7
	Female	174	42.3
Marital status	Single	243	59.1
	Married	152	37
	Divorced	14	3.4
	Widowed	2	0.5
Academic qualification	Diploma	40	9.7
	Bachelor of Science	338	82.2
	Master of Science	33	8.1
Years of experience	1-5	180	43.8
	6-10	126	30.7
	11-15	50	12.2
	16-20	20	4.9
	21-25	15	3.6
	26-30	6	1.5
	> 30	14	3.4
Professional nursing level	Junior nurse	97	23.6
	Charge nurse	6	1.5
	Senior nurse	308	74.9
Work unit assigned	Medical	123	30
	Surgical	217	52.8
	Pediatrics	61	14.8
	Gynecology/obstetrics	10	2.4
Prior pain education (h)	None	106	25.8
	0-5	219	53.3
	5-10	62	15.1
	> 10	24	5.8
Accessed pain training at work area	Yes	165	40.1
	No	246	59.1

Table 2
Nurses' knowledge regarding pain management techniques.

Variable [correct response]	Correct response*	Incorrect response*
Vital signs are reliable indicators for the intensity of a patient's pain [false]	30 (7.3)	381 (92.7)
Because their nervous system is underdeveloped, children younger than age 2 years have decreased pain sensitivity and limited memory of pain experience [false]	113 (27.5)	298 (72.5)
Patients who can be distracted from pain usually do not have severe pain [false]	220 (53.5)	191 (46.5)
Patients may sleep despite severe pain [true]	222 (54)	189 (46)
Pain and other nonsteroidal anti-inflammatory agents are not effective analgesics for painful bone metastasis [false]	166 (40.4)	245 (59.6)
Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months [true]	323 (78.5)	88 (21.4)
Combining analgesics that work by different mechanisms (eg, combining a nonsteroidal anti-inflammatory drug with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent [true]	233 (56.7)	178 (43.3)
The usual duration of analgesia after 1–2 mg IV morphine is 4–5 h [false]	130 (31.6)	281 (68.4)
Research shows that promethazine and hydroxyzine are reliable potentiators of opioid analgesics [false]	169 (41.1)	242 (58.9)
Opioids should not be used in patients with a history of substance abuse [false]	116 (28.2)	295 (71.8)
Elderly patients cannot tolerate opioids for pain relief [false]	141 (34.3)	270 (65.7)
Patients should be encouraged to endure as much pain as possible before using an opioid [false]	119 (29)	292 (71)
Children younger than 11 years cannot reliably report pain, so clinicians should rely solely on the parent's assessment of pain intensity in such a child [false]	154(37.5)	257(62.5)
Patients' spiritual beliefs may lead them to think pain and suffering are necessary [true]	298 (72.5)	113 (27.5)
After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response [true]	320 (77.9)	91 (22.1)
Giving patients sterile water by injection (placebo) is a useful test to determine whether the pain is real [false]	144 (35)	267 (65)
Vicodin [†] (hydrocodone 5 mg + acetaminophen 500 mg) PO is approximately equal to 5–10 mg morphine PO [true]	212 (51.6)	199 (48.4)
If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period because this could mask the ability to correctly diagnose the cause of pain [false]	258 (62.8)	153 (37.2)
Anticonvulsant drugs such as gabapentin produce optimal pain relief after a single dose [false]	111 (27)	300 (73)
Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm [true]	284 (69.1)	127 (30.9)
Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviors that include 1 or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving [true]	273 (66.4)	138 (33.6)

* Values are presented as n (%).

[†] Abbott Laboratories, Abbott Park, Illinois.

Results

Sociodemographic characteristics

A total of 411 nurses participated in this study. As described in Table 1, 57.7% of participants were men, 63.5% were in the age group of 20 to 30 years, and 59.3% were single. Most of the nurses had a Bachelor of Science in Nursing degree (82.2%), 43.8% of them had 5 years of working experience, and 74.9% were senior in their level of the profession. Further, 53.3% of respondents educated about pain in their curriculum for 5 hours, and the majority (59.1%) of nurses not accessed training about pain in their work area (Table 1).

Nurses' knowledge regarding pain management techniques

The correctly answered individual item ranged from 7.3% to 78.5%. Overall, 167 (40.6%) of nurses correctly answered the given questions. The results of this study show that many items were incorrectly answered, mainly regarding the vital sign, route of administrations, recommended opioid doses, and ability to assess and reassess pain. About 92.7% of nurses were unable to recognize the presence of pain in the components of vital signs. A majority (65%) of respondents believed placebo of water injection reduces pain and 78.5% understood opioids rarely cause respiratory depressions. Only 34.3% of nurses knew that elderly persons can tolerate opioid drugs (Table 2).

Factors associated with nurses' knowledge of pain management techniques

In bivariate analysis, academic rank, previous pain education, work experience, training reported to have been accessed in the clinical work area, and level of nursing professional were associ-

ated with factors influencing nurses' knowledge of pain management.

Finally, academic rank, reported prior pain education, and training were taken from their institution or other vendor organization during their time of employment were significant factors influencing a nurse's score on the questionnaire assessing knowledge of pain management techniques.

Nurses who had previous pain education about pain more than 5 hours in their curriculum were 2.34 times more likely to be knowledgeable than those not educated in their academic curriculum (adjusted odds ratio [AOR]=2.34; 95% CI, 1.45–3.8).

Nurses who reported receiving onsite training in pain management were 2.19 times more likely to knowledgeable than nurses who did not access onsite pain management training (AOR=2.19; 95% CI, 1.39–3.44). Nurses with a Bachelor of Science degree or higher were 3.09 times more likely to be knowledgeable than diploma nurses (AOR=XX; 95% CI, 1.37–6.96) (Table 3).

Discussion

A total of 411 nurses participated in this study. Only 40.6% of these nurses had what has been reported to be adequate knowledge of proper pain management techniques. This result is similar to what has been reported in studies done at Mulanugo Hospital in Uganda, where only 41% of nurses correctly answered these knowledge questions.¹³ The level of knowledge here is higher than reported in a study done in Gardner-Webb University, where 72.2% of nurses incorrectly answered these same questions.⁷ The level of pain management knowledge in this study is lower than reported for studies conducted in Mekelle City, Ethiopia (58.6%),⁶ Nigeria (60%),¹³ and Bangladesh (66.79%).¹⁴ The differences are likely related to differences in the time period of the studies as well as differences in study participants, including variations in the type and duration of pain management topics covered in the un-

Table 3
Factors associated with respondent nurses' knowledge of pain management techniques (N=411).

Variable	Knowledge*		Odds ratio (95% CI)	
	Adequate	Inadequate	Crude	Adjusted
Academic rank				
Diploma only	9 (22.5)	31 (77.5)	1	
Bachelor of Science and above	158 (42.6)	213 (57.4)	2.56 (1.18–5.52)	3.09 (1.37–6.96) [†]
Pain education history				
None	55 (51.9)	51 (48.1)	1	
Reported having had >5 h	112 (36.7)	193 (63.3)	1.86 (1.19–2.90)	2.34 (1.45–3.8) [†]
Experience (y)				
< 10	121 (39.5)	185 (60.5)	1	
10–20	27 (38)	44 (62)	0.9 (0.55–1.59)	
21–30	10 (47.6)	11 (52.4)	1.39 (0.57–3.37)	
> 30	9 (69.2)	4 (30.8)	3.4 (1.03–11.42)	
Accessed training of pain management in their working institution or other vendor organizations				
Yes	79 (47.9)	86 (52.1)	1.65 (1.10–2.46)	2.19 (1.39–3.44) [†]
No	88 (35.8)	158 (64.2)	1	
Professional nursing level				
Junior nurse	48 (49.5)	49 (50.5)	1.6 (1.01–2.53)	
Senior nurse	119 (37.9)	195 (62.1)	1	

* Values are presented as n (%). 1 = reference.

[†] P value < 0.05.

dergraduate education, postdegree training activities, and continuing education culture between the current study and what is done in other countries.

Academic rank was among the factors associated with a nurse's pain management knowledge. Nurses with a Bachelor of Science degree and above were 3.09 times more likely to be knowledgeable (ie, to score above the mean on the questionnaire knowledge test) about pain than a diploma nurse. This finding is supported by studies done in Asia¹⁵ and is consistent with the generally held belief that educational status increases a professional's body of knowledge.

Nurses trained in pain management were 2.19 times more likely knowledgeable than nontrained ones. Similarly, nurses who had more than 5 hours of previous pain management education in their curriculum were 2.34 times more likely knowledgeable than noneducated nurses. This finding is consistent with studies done in Saudi Arabia,¹⁶ in Jordan,¹⁷ and in Zimbabwe¹⁸ that all reported that being exposed to educational sessions about pain management can influence nurses' knowledge. These studies suggest that ongoing education and training about pain are crucial to increase nurses' knowledge as well as their pain management practices.

Limitations

Our study design does not include the qualitative part. The outcome may be affected because of direct observation of actual pain treatment techniques, the small number of hospitals included the lack of questionnaire validation data, and the difference between what nurses claimed to have had (eg, training) versus what was actually true.

Conclusions

The majority of the nurses participating in this study had a lower level of pain knowledge compared with nurse studies in other regions of Ethiopia and worldwide. Pain management knowledge was significantly associated with academic rank, previous pain education, and reported onsite pain management training. Results suggest a need to improve nurses' pain management training and to increase recruitment of nurses with a Bachelor of Science or higher degree.

Conflicts of Interest

The authors have indicated that they have no conflicts of interest regarding the content of this article.

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A. Dagnev contributed to the design of this study and drafted the manuscript for important intellectual content, and read and approved the final manuscript. A. Dagnev and T. Tewabe conceived and designed the study, collected, analyzed, and interpreted data.

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