



Cross-sectional Study

Emergency nurses perceived barriers to effective pain management at emergency department in Amhara region referral hospitals, Northwest Ethiopia, 2021. Multi-center cross sectional study

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ABSTRACT

Background: Quality of pain management in emergency departments may be affected by nurses' perceived barriers. Poorly managed pain may lead to altered physiological and psychological function which affect patients' quality of life as well as increase costs to the health care system.

Objective: This study aimed to assess emergency nurse's perceived barriers to pain management and associated factors at emergency departments, 2021.

Methods: A multi-center cross-sectional study was conducted with 153 nurses from eight emergency departments from May1-May 30, 2021 with semi-structured questionnaire. All volunteer nurses were included. Epi-info version 7 and SPSS version 20.0 were used for data entry and analysis respectively. We used descriptive statistics to report results of the study in the form of text and table. Student t-test, one way ANOVA and Post hoc test were applied to assess relationship between socio-demographic characteristics of the participants with perceived barriers.

Result: Of the 20 items, overcrowding 3.24 ± 0.9 , nursing workload 3.16 ± 1.03 , and lack of pain management guidelines/protocol 2.5 ± 1.15 were the highest reported barriers to pain management at an emergency department. In addition, years of work experience as emergency nurses ≤ 1 (p-value = 0.01), BSC level of education (p-value = 0.04), married (p-value = 0.04) and frequency of training ≤ 1 (p-value = 0.02) were significantly associated with nurses perceived barriers on pain management.

Conclusion: and Recommendation: Overcrowding, nurses' workload, absence of pain management tool, year of experience as emergency nurse ≤ 1 , married, BSC nurses and frequency of training ≤ 1 were the perceived barriers to pain management in the emergency department. The stakeholders in each facility should make an effort to increase the ratio of nurses to emergency patients. Professionals should develop local pain assessment and management protocol. Training should be given regularly and the opportunity of education should be maximized.

1. Introduction

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage [1]. Pain is the frequent presenting reasons for patients visit to health care facility [2–4]. Pain accounts over 70% of emergency department visits globally and of which 35% were mild pain and 65% were moderate to severe pain [5]. (2). In previous studies the incidence of

moderate to severe pain accounted 95.1% during emergency department presentation [6].

According to the study done in the Eritrea lack of pain assessment and management protocols, overcrowded facility, workload of health care provider, strict opioid regulation, and unavailability of analgesics were factors that affect quality of pain management in emergency departments [7]. Emergency department overcrowding, inadequate knowledge and negative perception towards pain were among the

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barriers to achieve effective pain management in emergency departments [8,9].

Limited involvement of emergency physicians, gender bias, poor knowledge, ethnic bias, age difference, absence of training, fear of opioid side effect, lack of pain assessment or management protocol and poor documentation were barriers that affect quality of care [10]. Furthermore, waiting until the primary diagnosis made and inadequate pain assessment were barriers to manage pain [11].

Review done in Dublin, Ireland in 2008 revealed that lack of time, low level of education, inadequate policy or standard, inadequate knowledge, staff attitudes, poor pain assessment, and fear of complication were possible factors related to poor pain management [12].

A studies done on pain management stated that reluctance to prescribe analgesia, insufficient time, nurses workload, and inadequate knowledge about opioids were perceived barriers to inadequate pain management [13,14]. Beside, studies found that reluctant to accept self-report pain, level of understanding of patient suffering, personal opinion regarding opioids choice, fear of opioid side effects, and passive participation in pain assessment as well as management were among the most common barriers of pain management at emergency settings [15–22].

Poorly managed acute pain may lead to chronic pain, decrease patient satisfaction, increase cost of the health care system, delay recovery time and alter physiological function as well as patients' quality of life.

2. Methods

2.1. Ethics approval and consent to participant

Ethical clearance was obtained from the Institutional Review Board (IRB) of the College of Medicine and Health Science, University of Gondar. Confidentiality was maintained during the data collection process by removing identifiers and locking the questionnaires in a secured area. To keep the confidentiality names were not included in the data collection format. After data entered to the computer, the data was locked by password and the data were not disclosed to any person other than the principal investigator. A written consent was obtained from each study subjects before interviewing them. Every participant was allowed to discontinue participation on the study if they did not want to continue. The article has been registered with the UIN of the research registry (8056) and it has been reported in line with the STROCSS criteria [23].

2.2. Inclusion criteria

All volunteer nurses during study period were included.

2.3. Study design and period

Multi-center, cross-sectional study done from May 1 to May 30, 2021.

2.4. Study area

Amhara regional state consists eight referral hospitals, which serve large populations referred from regional hospitals and health centers.

Emergency department of eight referral hospitals has found in Amhara region.

University of Gondar Comprehensive Specialized Hospital (UoGCSH) is found at Gondar town, which is located about 738 km, Northwest from the capital city of Ethiopia (Addis Ababa) and about 180 km from the capital city of Amhara regional state (Bahir Dar).

Tibebe Ghion teaching and specialized hospital (TGTSH) and Felege Hiwot referral hospital (FHRH) is found in Bahir Dar city capital city of Amhara region which is located 492 km from capital city of Ethiopia (Addis Ababa).

Debre Tabor referral hospital (DTRH) which is located 654.5 km far from Capital city of Ethiopia (Addis Ababa).

Woldia referral hospital (WRH) located 516 km from Addis Ababa.

Dessie referral hospital (DRH) which is located 401 km away from Addis Ababa.

Debre Berhan referral hospital (DBRH) which located 130 km North of Addis Ababa, Ethiopia Debre Markos referral hospital (DMRH) which located 300 km Northwest of Addis Ababa.

2.5. Population

2.5.1. Source of population

Nurses who were working at emergency department in referral hospitals of Amhara region.

2.5.2. Study population

Nurses who were working at adult emergency department of referral hospitals in Amhara region during study period.

3. Variables

3.1. Dependent variables

Perceived barriers to pain management.

3.2. Independent variables

Socio-demographic variables: Educational level, age of participants, gender, year of work experience as a nurse, year of work experience as an emergency nurse, previous training, prior pain management course taken, and working hours per week.

Nurses related variables: Attitude of emergency nurses, insufficient analgesia, fear of addiction, Nursing workload, knowledge of emergency nurse for assessment and management tools.

Setting related variables: Emergency department overcrowding, lack of assessment or management protocols/tools, strict regulation of opioids, insufficient availability of analgesics.

Patient related variables: Patient or family requests, patient instability, patient's inability to communicate.

3.3. Operational definitions

Perceived barriers: refers to the perception of study participant that hinder them from optimal pain management [24].

3.4. Sample size

Data was collected from 188 nurses who were working at adult emergency department in all referral hospitals (Fig. 1).

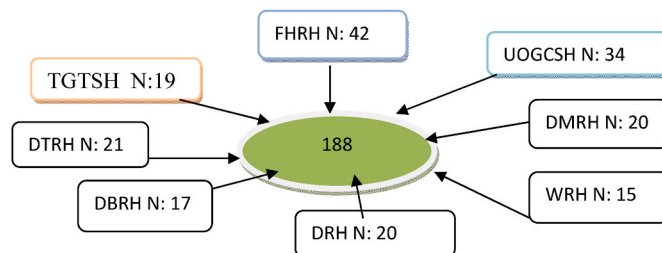


Fig. 1. Study participant distribution at adult emergency department of referral hospitals to assess nurse's perceived barriers to effective pain management from May1-May 30, 2021.

3.5. Sampling procedure

The survey was used and all nurses who have been working at the adult emergency department from each referral hospital were the study participants.

3.6. Data collection tool and procedures

After we obtained ethical approval to collect data from each study area, data collectors from each study area were oriented via face to face or phone. From the English version semi-structured self-administered questionnaire, 10 of them focused on sociodemographic characteristics and work related variables, the rest 20 focused on nurses perceived barriers were given for respective data collectors from each referral hospital. The important information's for the data collection had provided by respective data collector in each study area. Questionnaires were completed by the study participants without referring text books then returned to respective data collectors. We have used standardized instruments that were developed by pain experts in Canada and Eritrea to collect data regarding nurse's perceived barriers. Furthermore, the content validity was done and reliability of the instrument was established with Cronbach's alpha 0.8(25) [7].

The responses of participants were classified into 5-point scales, in which scale of 0%(never), 1–25% (seldom), 26–50% (sometimes), 51–75%(often), and >75% (routinely). During analysis, this was graded as 0, 1, 2, 3, and 4 respectively, and the total score was summed up from 0 to 80.

3.7. Quality management

To certain quality of data, orientation had given to data collectors and supervisors in each study area. Participants were oriented for how to fill the questionnaire and data collection were supervised by nurse leaders of each emergency departments. The data collection tool were pretested with 10nurses and not included in the main study. Data were checked for the accuracy and completeness by supervisors and investigators.

3.8. Data processing and analysis procedures

Epi-info version 7 and SPSS version 20.0 were used for data entry and analysis respectively. We have used descriptive statistics to report results of the study in the form of text and table. One way ANOVA, student t-test and the Post hoc test were applied to assess the relationship between socio-demographic characteristics of the participants with perceived barriers. To explore the relationship between nurses' perceived barriers with their demographic characteristics and work related factors, independent t-test and one-way ANOVA were used.

4. Results

One hundred eighty eight nurses who were working at the emergency department in the study area were identified during the study period. Among those, 159 nurses met the inclusion criteria with a response rate of 89.8%. From 159 respondents, six of them have missed data and removed data. Finally, 153 respondents were used for analysis.

4.1. Socio-demographic characteristics

The mean age distribution of the respondents was 29.5 ± 4.2 years. Of the total 153 participants, 92 (60.1%) were males while 61 (39.9%) of them were females. Thirty (19.6%) of the participants were MSC holders, while 123 (80.4%) of the respondents were BSC holders. Majority 96 (62.7%) of the respondents were 6 year and bellow of work experience. About two third 100(65.4%) of the participants had 1 year and less year of work experience as emergency nurse. Above one third

46 (30.1%) of the nurses had took training on pain assessment and management methods (Table 1 and Table 2).

4.2. Barriers to pain management at emergency department

Overcrowding (3.24 ± 0.9), Nurses workload (3.16 ± 1.03) and lack of pain management guidelines/protocol (2.5 ± 1.15) were among highly reported barriers to pain management at an emergency department. The language barrier was the least reported barriers to pain management at emergency department (Table 3).

4.3. Socio-demographic and work related variables with perceived barriers for effective pain management

The comparable analysis revealed that the average score of the perceived barriers to pain management was significantly associated with their year of experience as emergency nurses, marital status, educational level, and frequency of training (Table 4).

To determine if one or any of the groups of emergency nurses work experience is significantly different from the other, a Post Hoc pair wise test was conducted.

There were differences between the pairs of groups, nurses with 2–3 and >5 year of experience being significantly different from nurses with <1 and 4–5 years' experience (Table 5).

5. Discussion

This study was intended to explore the barriers that were hindering effective delivery of quality pain management services in the ED of all referral hospitals. Identifying such barriers could facilitate stakeholders in each hospital to design and develop strategies to improve quality of pain management services.

In this study nurse had encountered a barrier to pain management in ED similar to previous studies [7,25,26]. Overcrowded health care facility was among the most frequent barriers to pain management at an emergency department [27,28]. This might be explained by, at overcrowded ED patients were prioritized for pathology rather than pain management. These might hinder early assessment and delay to start analgesics that prolong patients suffering as well as affecting the quality of recovery [8,27,29,30]. Patients with acute abdomen have assessed

Table 1
Socio-demographic characteristics of respondents in study area from May1-May 30, 2021(N = 153).

Variables	Category	Frequency (n)	Percent (%)
Gender	Male	92	60.1
	Female	61	39.9
Age	<25	19	12.4
	25–29	70	45.75
	30–34	46	30
	≥35	18	11.76
	Marital status	Single	75
Marital status	Married	76	49.7
	Widow	1	0.65
	Divorced	1	0.65
	Level of educational	MSC	30
Level of educational	BSC	123	80.39
	Year of work experience as nurse: Median 6, IQR(3,8)	<2 3-4	23
5–6		37	24.18
7–8		36	23.52
>8		27	17.64
		30	19.6
Work experience as emergency nurse: Median 1, IQR(1,2)	≤1	100	65.35
	2–3	40	26.14
	4–5	9	5.88
	>5	4	2.6

MSC: Master of science; BSC: Bachelor of science; IQR, Interquartile range.

Table 2

Work related variables of nurses working at emergency department of all referral hospitals May1-May 30, 2021(N = 153).

Variables	Category	Frequency (n)	Percent (%)
Previous training regarding pain	Yes	46	30.1
	No	107	69.9
Frequency of training regarding pain management	1	34	22.2
	>1	12	7.8
Previous pain management course taken	Yes	91	59.5
	No	62	40.5
Working hour per week: Median 40, IQR(40,56)	≤40	98	64.1
	>40	55	35.9

IQR: Inter quartile range.

and received analgesics first compared to patients with back pain [31]. Even though nurses could identify the patient’s complaint, emergency department nurses and other health professionals did not always give priority for pain relief due to triage system [30,32].

Absence of pain assessment tools and management guidelines were also identified as a barrier for pain management in ED which was similar to findings of Eritrean and Taiwan study [7,14]. Study done on perception of pain in the ED revealed that nurses who used a pain assessment tool reported lower pain score compared to nurses who did not use pain assessment tools [33]. Furthermore, pain assessment guidelines were essential for proper pain management and this might be explained by having pain management guideline was best to decrease numbers of patients visiting a health care facility [34,35]. A similar study stated that implementation of pain assessment protocol decreased time to early starting analgesia [36]. Consistent with the current study, in developing country lack of availability of pain assessment and management protocols or guidelines were among the most frequent barriers [37].

Nurses work load in emergency departments were another perceived barrier for effective pain management in this study and this was in line with the finding of studies done in Eritrea, Saudi Arabia, New Zealand and Taiwan [7,12,25,26]. Despite nurse received high patient flow in emergency departments, inadequate nursing staffs were allocated in emergency departments that may leads excessive working hours and fatigue, the lack of time, and high workload reduces nurses’ motivation to relieve the patients’ pain even may leads to nurses to feel overwhelmed and burned-out [28,32]. Furthermore, increasing the ratio of

Table 3

Barriers for pain management at emergency department of all referral hospitals, May1-May 30, 2021(N = 153).

Statements	Participants response					
	Mean ± SD	Never 0%	Seldom <25%	Sometime 25–50%	Often 50–75%	Routine >75%
Emergency department overcrowding	3.24 ± 0.9	2(1.3)	8(5.2)	17(11.1)	50(32.7)	76(49.7)
Lack of pain assessment protocols	2.5 ± 1.15	19(12.4)	19(12.4)	50(32.7)	50(32.7)	15(9.8)
Nursing workload in emergency department	3.16 ± 1.03	3(2)	12(7.8)	17(11.1)	47(30.7)	74(48.4)
Strict regulation of opioids	2 ± 0.9	13(8.5)	20(13.1)	76(49.7)	41(26.8)	3(2)
Insufficient availability of analgesic	2.1 ± 1	14(9.2)	22(14.4)	67(43.8)	39(25.5)	11(7.2)
Lack of pain management protocol	2.1 ± 1.1	17(11.1)	21(13.7)	61(39.9)	44(28.8)	10(6.5)
Fear of opioids addiction	1.9 ± 0.95	9(5.9)	34(22.2)	71(46.4)	29(19)	10(6.5)
Poor documentation of pain assessment and management	1.84 ± 0.94	11(7.2)	42(27.5)	67(43.8)	26(17)	7(4.6)
Patient unable to communicate (unconscious patient)	1.87 ± 1	17(11.1)	34(22.2)	60(39.2)	36(23.5)	6(3.9)
Poor communication of professionals for pain management	1.8 ± 0.95	15(9.8)	41(26.8)	59(38.6)	36(23.5)	2(1.3)
Insufficient analgesia dosage prescribed	1.6 ± 1.1	30(19.6)	35(22.9)	52(34)	32(20.9)	4(2.6)
Lack of familiarity with assessment tools	1.8 ± 1	20(13.1)	31(20.3)	66(43.1)	32(20.9)	4(2.6)
Patient instability(unstable hemodynamic)	2.1 ± 1	11(7.2)	30(19.6)	59(38.6)	42(27.5)	11(7.2)
Inadequate knowledge on pain management	1.8 ± 1	18(11.8)	40(26.1)	61(39.9)	27(17.6)	7(4.6)
Sedation interfering with pain management	1.9 ± 1.1	20(13.1)	37(24.2)	53(34.6)	30(19.6)	13(8.5)
Low priority given for pain management by emergency team	1.8 ± 1.1	24(15.7)	38(24.8)	54(35.3)	26(17)	11(7.2)
Patient/family refusal for analgesics	1.8 ± 1.2	28(18.3)	33(21.6)	37(24.2)	45(29.4)	10(6.5)
Language barriers	1.59 ± 1.1	33(21.6)	31(20.3)	58(37.9)	28(18.3)	3(2)
Lack of designated area for documentation	1.25 ± 1.1	48(31.4)	48(31.4)	31(20.3)	23(15)	3(2)
Lack of protocols/guidelines for pain assessment	2.14 ± 1.1	20(13.1)	23(15)	38(24.8)	60(39.2)	12(7.8)

nurses to emergency patients improved patient outcome [29]. This supported by previous study done in Iran introduced Insufficient nurse-patient ration might increase the nurses’ workload and decrease the time available for assessing the patients’ pain and planning suitable pain reduction strategies [38].

The previous study in Iran stated that language barrier between physicians and patients suggested

That physicians are not fully aware of the culture and the language of the people they are treating, this can profoundly affect the pain management process, especially in pain assessment and evaluating the outcomes of pain-relieving interventions [38]. However, in this study language barrier has been found the least perceived barriers for effective pain management in the emergency department. It might be explained by communication media of nearly all people living in the study area was Amharic language. Therefore, patients and health care providers can communicate easily.

In our study statistically significant relationship has been found in between the year of experience as emergency nurse and perceived barriers for pain management in the emergency department. This might be explained by previous study done in Eritrea stated that work experience of the participants had significant association with their knowledge on pain assessment and management [7]. Therefore participants of higher work experience had good knowledge regarding pain management and had less perceived barriers to pain management [7,39].

In this study nurse trained more than one time on pain assessment and management in emergency department had the lowest score of nurse’s perceived barriers to adequate pain management. In line with the current study, lack of training nurses’ towards pain management had found to be a barrier to adequate pain management at emergency department [40].

In this study, nurses having educational level of master degree had lower score for perceived barriers in line with previous study [7]. This could be explained by undergraduate nursing students had no sessions dedicated to pain assessment and management [41,42]. Furthermore, a low level of knowledge and attitude on pain assessment/management strategies had found on undergraduate nursing students [43,44]. Therefore, inadequate knowledge and poor attitude towards pain management might be improved through implementing of a brief nurse-driven pain education programs [45].

Having single marital status had found significant associations with nurses perceived barriers to effective pain management at emergency department which is similar with other study [7]. This could be due to

Table 4

Factors associated with perceived barriers for effective pain management in referral hospital, 2021 (N = 153).

Variable	N(%)	Mean ± SD	F/t-test	P-value
Gender				
Male	92	40 ± 9.55	t = 1.43	0.15
Female	61	38.46 ± 1.84		
Marital status			F = 2.83	0.04
Single	75	41.19 ± 10.59		
Married	76	39 ± 9.24		
Widow	1			
Divorce	1			
Prior pain training				
Yes	46	39.7 ± 11.2	t = 0.16	0.9
No	107	39.98 ± 9.67		
Frequency of training				
≤1	34	37.94 ± 12	t = -2.4	0.02
>1	12	44.67 ± 6.2		
Working hour				
<40	98	39.4 ± 11.46	t = 0.77	0.4
≥40	55	4.75 ± 7.14		
Educational level				
MSC	30	41.57 ± 10.67	F = 2.8	0.04
BSC	123	39.49 ± 9.98		
Experience as nurse				
≤2	23	43.2 ± 10	F = 1.01	0.31
3-4	37	37.86 ± 11.8		
5-6	36	42.1 ± 9.1		
7-8	27	39.56 ± 9.9		
>8	30	37.4 ± 8.49		
Year of experience as emergency nurse				
≤1	100	39.3 ± 10.49	F = 3.6	0.01
2-3	40	42.45 ± 8.1		
4-5	9	41.3 ± 10.7		
>5	4	26.25 ± 6.29		
Age of the participants				
<25	19	38.53 ± 1.97	F = 0.43	0.7
25-29	70	4.63 ± 10.59		
30-34	46	40.07 ± 8.78		
≥35	18	38.08 ± 10.9		

Table 5

Post hoc paired test.

Year of experience as emergency nurse	Mean difference	95%CI	P-value
<1 year vs 4-5 year	-2.04	10.96:6.88	0.93
<1 year vs 2-3 year	-3.1	-7.96:1.64	0.32
<1 year vs >5 year	13	-0.3:26.1	0.51
2-3 year vs >5 year	16.2	2.76:29.64	0.01

the reason that married professionals may have diverged attention and thus they may not give emphasis for pain management.

5.1. Strength and limitation of the study

Studying all the source population was feasible in terms of budget and time. This study may initiate nurses to give emphasis for pain management service in the emergency department. Identifying the barriers of pain management in the ED may help to fill the gaps easily and accordingly.

This study focused only the nurse's barrier of pain management.

6. Conclusion and Recommendations

Overcrowding, nurses' workload, absence of pain management tool, year of experience as emergency nurse ≤1, married, BSC nurses and frequency of training ≤1 were the perceived barriers to pain management in emergency department.

The stakeholders in each facility should make an effort to increase the ratio of nurses to emergency patients. Professionals should develop local pain assessment and management protocol. Training should be

given regularly and the opportunity of education should be maximized.

Researchers can conduct a study by incorporating other health professionals working in emergency departments.

Competing interests

All authors declared that there is no conflict of interest.

Ethical approval

Ethical clearance and permission letter were obtained from institutional ethical review committee of school of medicine, university of Gondar to collect data. After a brief explanation about the study and questioner, written informed consent was obtained from each study participant.

Sources of funding

Not applicable.

Author contribution

This study was carried out in collaboration among all authors. The principal investigator (Belete Muluadam) has conceived the idea of the title, developed the proposal, analyzed the data, interpreted the result and prepared the manuscript. The 2nd author (Girmay Fitiwi) has approved the idea of this title, participated in comment, assisted with data analysis and interpretation of the result. The third author (Yonas Admasu) has participated in comment, assisted with data analysis and interpretation of the result. The 4th author (Biresaw Ayen) has involved on commenting, editing the manuscript, assisted with data analysis, interpretation of the result and sending for publication in your journal.

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Availability of data

The data used to analyze the study is available from the corresponding author on request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Consent

Not applicable.

Registration of research studies

1. Name of the registry: Research registry
2. Unique Identifying number or registration ID: 8056
3. Hyperlink to your specific registration (must be publicly accessible and will be checked): <https://www.researchregistry.com/browse-the-registry#home/>

Declaration of competing interest

There is no conflicts of interest.

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Abbreviations/Acronyms

CI	confidence interval
ED	emergency department
SD	standard deviation
UOGCSH	University of Gondar Comprehensive Specialized Hospital

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2022.104338>.

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