

Knowledge and Attitude towards Pain Management among Medical and Paramedical students of an Ethiopian University

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Abstract

Background: Poor attitude and lack of knowledge about pain has long been demonstrated to encumber the manner in which professionals and their patients respond to the varied dimensions of pain management.

Objective: The aim of the current study was to assess the level of knowledge and attitudes regarding pain management of the 2013 final year students of Medical and paramedical students of College of Public Health and Medical Sciences(CPHMS) of Jimma University, South-west Ethiopia.

Methods: A cross-sectional survey was employed among final year undergraduate students using a validated 23-item consisting four likert scales. Results were depicted using narrations, means, percentages, figure and tables. Comparisons among groups were performed through one way analysis of variance, t-test and Pearson correlation. P-value below 5% level of significance was used to identify the statistical significance of factors for knowledge and attitude about pain management.

Results: A total of 422 graduate class of the college's student have completed a 23-item questionnaire evaluating knowledge and attitude about pain management. The reliability (Cronbach's α) of the tool was 0.89. The overall percentage of correct answers was 52.3%.The mean percentage of correct answers for non-pharmacologic pain management, assessment of and attention paid to pain, general principle of pain management, opioids, and children's pain management items were 80.3, 62.4, 52.1, 40.3, and 31.5 respectively. Only 4.2% of the students scored above the cutoff point (70%) for good knowledge regarding pain management. Nevertheless, though paradoxical, 73% of the participants responded that they have adequately learnt about pain management in their academic carriers. Pharmacy students had a mean score of correct answer of 55.7% followed by medicine 54.7%, anesthesia 51.8%, health officer (HO) 50.9%, Dentistry 50.6%, and nursing 49.9%. There was a statistically significant difference in the number of correct answers among the departments (ANOVA, $P=0.004$). The only differences were between pharmacy vs. nursing or HO students ($p=0.02$).

Conclusion: Unacceptable level of knowledge deficits and poor attitudes were distinguished in this study which augments the universal concern of inadequate knowledge and attitudes regarding pain management. Thus, the situation demands various educational and quality improvement initiatives in pain management that could enhance the student's knowledge in the area of pain management and ultimately improve practices for bettering patients' quality of life.

Keywords: Knowledge on pain; Pain attitudes; Questionnaire; Students; Opioids

Introduction

The international association for the study of pain (IASP) has defined pain as an unpleasant sensory and emotional experience arising from actual or potential tissue damage [1]. Pain is widely prevalent regardless of the setting in which patients are being managed and deemed to be one of the most reasons for patients to seek medical care [2,3]. Approximately 116 million Americans suffer from chronic pain alone [4]. Likewise more than 25 million people experience acute pain as a result of injury or surgery. Unrelieved or undertreated pain can negatively affect an array of person's quality of life, including increasing functional impairment and disability, psychological distress (anxiety, depression), and sleep deprivation [5,6].

Plethora of myths and scientific facts that accompanies the uses and misuses of opioid medication continue to pose a perpetual challenge to appropriately handle chronic pain and thus left chronic pain to be a major medical and social issue [6-8]. The spectrum of issues that revolve around opioids use and misuse includes their multiple adverse side-effects, drug dependency from drug diversion, and ill evinced and exaggerated fear of health care givers towards narcotic abuse [6,7,9]. Studies have found that two of the main barriers for Health care professionals (HCPs) are poor assessment and lack of knowledge about pain. Moreover, physician personal belief systems, attitudes, and fears

has been also demonstrated to be barriers that influence the manner in which they and their patients respond to the varied dimensions of pain management [8,10].

A growing body of evidences showed that many health care professionals lack the proper knowledge and attitude for effectively managing pain, leaving many patients to endure a reduced quality of life [3,7,11]. This lack of knowledge begins in basic educational programs [12,13]. Studies regarding students' knowledge about pain management have been conducted within schools of nursing and Medical students; however, inadequate knowledge of pain and its management has generally been noted in variety of different types of published studies [2,14].

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Here in Ethiopia, a survey conducted by Ethiopian Public Health Association in 2005 G.C among health professionals from Addis Ababa, Gondar and Jimma University regarding their experience how management of pain looks like in their setting demonstrated that pain was undertreated due to various reasons among which lacking pain education in medical and paramedical schools was the paramount. The output of the survey was step forward for the development of the 2007 National Pain Management Guideline [15]. Yet, there is no evidence to understand the real knowledge gap in the country. Thus, this study was conducted to assess the knowledge and attitude of pain management among the 2012/2013 graduate class student of CPHMS of Jimma University which is consecutively ranking to be the top in an Ethiopian context.

Methods

Participants

The study was conducted among students from CPHMS of Jimma University (JU), a public higher educational institution established in December 1999 and located in 352 km towards south-west Ethiopia. It was conducted from January 28, 2013 to April 19, 2013. A Cross-sectional survey was utilized to assess the current knowledge and attitudes of medical Intern, pharmacy, dentistry, anesthesia, HO, and nurse students of graduate class of CPHMS toward pain management. These departments were intentionally selected since they are the one that directly participate with patient care regarding pain and its management. With regard to students' inclusion, all the 487 students were included in the study, of which 103 were HO, 102 were medicine, 90 were nurse, 61 were pharmacy, 41 were dentistry, and 25 were anesthesia students.

Instrument

To assess the knowledge and attitude towards pain, a questionnaire that contain 23 items having a four likert scales called SD (Strongly Disagree), D (Disagree), A (Agree), and SA (Strongly Agree) were prepared from previously validated tools [16,17]. The last item (23rd item) of the questionnaire was added by the investigators to determine the student's opinion whether they have learnt about pain and its management during their academic career. The internal consistency of the 22 knowledge and attitude assessment items was very good as evidenced by the overall Cronbach's Alpha or reliability of the items was 0.89. Moreover, the item total statistics analysis demonstrated that the Cronbach's Alpha would be improved to 0.893 if item number 2 was deleted.

The 22 items focuses on domains which are deemed to be the minimum but crucial competences regarding pain and its management. These includes: attention given to and assessment of pain (Items 1,4,6,11,12,13,15,16,21); opioids related issues (Items 2,5,8,10,17,18,19,20); general principles of pain management (Items 3,4,7,16,22); pain management issues in children(Items 8 and 9); and non-pharmacologic aspect of pain management (Item 14). As it is vividly, seen some of the items are multidimensional assessing more than areas of pain and its management. The correct answer for the items area mutually exclusive agreeing or disagreeing. Each correctly answered item was recorded as '1' (coalescing the strongly or plainly extent for agreeing and disagreeing scales accordingly) and the incorrect one as '0' in a similarly collapsing scheme. Thus, the maximum raw score achievable for an individual participant would be 22 which would be equal to a 100% correct response score.

The correct answer score for each student was the quotient of

the number of correctly answered items as divided by the maximum possible correct answer which is 22. The mean of these scores was used to generate the overall correctness score either for each department or for all students per se. In a similar manner, the correct answer score for each item was calculated by dividing the number of students who correctly answered each item to the total students' number, i.e. 422. The raw scores were analyzed and tabulated to determine the mean score and percentage overall score.

To aid interpretation of the raw and mean scores, only one study was retrieved that used the concept of cutoff point for good (acceptable) level of knowledge and stated 80% score as a cutoff [18]. On the other hand, the American Medical Association (AMA) delivers a certificate to students who accomplished and scored 70% in its recent online course on pain management [19]. Therefore, to be less conservative as it is a first survey, we have chosen 70% as a cutoff point.

Data collection

After properly explaining the objective, the questionnaires to be self-administered were handed by the investigators to the students. To assure its quality, the survey tool was filled and returned quickly by the students either in a class room or their practice site. No freedom was given to students either to consult medical texts or discuss among themselves.

Ethical considerations

After explaining the study objective and procedure, the necessary clearances to conduct the study were obtained from the respective departments, and participants' informed consent were gained prior to dissemination of the questionnaires.

Data analysis

Item-total correlation and Cronbach's alpha were computed using SPSS for Windows version 20. Results were prepared using narrations, means, percentages, figure and table. Comparisons among groups were performed through one way analysis of variance, t-test and Pearson correlation

Results

Socio-demographic characteristics of the study participants

Of the presumed 487 students, only 450 were accessible and willing during the data collection period. Then 28 questionnaires were excluded for various permutations of incompleteness. Finally, a total of 422 students participated in the study making a response rate of 86.7%. Of the 422 participants, 22.5% (n=95) were females and the mean age of students was 23.9 (\pm 1.83) years. Majority of the students from all departments were in the age category of 21-25 years. The students' academic performances as depicted by their mean (SD) Cumulative Grade Point Average (CGPA) were 3.31 \pm 0.12, 3.12 \pm 0.3, 3.03 \pm 0.35, 3.01 \pm 0.19, 2.92 \pm 0.25, 2.91 \pm 0.23 for anesthesia, nursing, pharmacy, dentistry, HO, and medicine respectively in their descending order.

Knowledge and attitude towards pain and its management

The overall correct item score ranged from 23.7% to 82.2% with an overall mean correct answer of 52.3%. This mean score demonstrated that students were able to correctly answer only 52.2% the questions on average. Only 4.2% of the students scored above the cutoff point (70%) for good knowledge regarding pain management. Students of pharmacy and medicine were correct 55.7% and 54.7% of the time

respectively, whereas nursing students 49.9% of the time. Nevertheless, though paradoxical, 73% of the participants responded that they have adequately learnt about pain and its management in their academic carriers. Pharmacy students had a mean score of correct answer of 55.7% followed by medicine 54.7%, anesthesia 51.8%, HO 50.9%, dentistry 50.6%, and nursing 49.9%. It was discovered that only items number 1,7,13,14 and 15 were correctly answered in greater than or equal of 70% scores (Table 1).

Figure 1 elucidates the mean score of all students as per the five areas of pain management. The only aspect that students performed well was regarding the benefit of non-pharmacological ways of managing pain. On the contrary, the domains on general principles pain management, attention paid to and assessment of pain, question pertinent to opioids, and issues regarding pain management in children were only answered correctly in rate way below the 70% reference set by the AMA. Specially, the latter two aspects received the lowest score.

A one way ANOVA test revealed that there was a statistically significant difference in the number of correct answers among the departments ($F_{5,516}=4.5$; $P=0.004$). The corrected Bonferroni post hoc analysis demonstrated that the statistically significant differences ($p=0.02$) were between pharmacy vs. Nursing or HO students. However, no statistically significant link of mean correct answer was observed for gender (t-test, $p=0.796$), age ($r=0.028$; $p=0.561$), CGPA ($r=-0.016$; $p=0.747$) and opinion regarding pain literacy (t-test, $p=0.241$).

Discussion

This study which has assessed the knowledge and attitudes of CPHMS student in JU has to be interpreted in to the current context. Due to the high response rate of the participants and a very good level of the internal consistency of the tool, the findings really reflect the current status of students in this institution at one hand, and on the other hand, owing to curricular similarity of medical schools, it gives an insight to other students' knowledge and attitude towards pain and its management in Ethiopia.

The overall score was consistently lower through all but one the domains assessed as compared to the score set by the AMA for the minimum good level of knowledge. Regarding this issue, most of the studies were conducted among health care providers and few were

among nursing students. For instance, a study conducted among Iranian nursing students showed that their mean correct answer score was 37.8% [20]. A higher score of 68% was seen among senior nursing students in USA [21]. Since the tools used by the above and other studies were detailed, specific to nurses, conducted post lecture and on selected volunteers [2], and included multiple items, direct comparison would not be sounding [2,22]. Thus, it is opted to check students' score against the AMA standard.

The observed statistically significant difference between mean percentages of correct answers of the two department's groups can be a typical example of a statistically significant but clinically or practically not meaningful finding. Since the mean correct answer score by all the departments were below the expected good result, the observed difference in magnitude should not seize that much attention in designing various interventional strategies. Such interdepartmental knowledge and attitude difference, nurse students perpetually scoring less than medical students, had also been documented by other studies [2,14,23-25]. The other worth mentioning issue that has been demonstrated by other studies and not reproduced by the current study is professionals from the anesthesia field of study consistently scored better [16,17,26]. The only scenario significantly higher proportion of students from this department correctly answered was on the item that assessed the use of narcotics in pediatric age groups.

Likewise, the knowledge score difference was not found to be linked to students' difference by gender, academic performance and confidence that pain management is well covered in their education. Thus, the observed persistent knowledge deficits more likely due to a factor inherent to the system than individual differences.

Despite the fact that the students' score acknowledges the pain report by patients, the higher level of misconceptions related to placebo as diagnostic means; the validity of pain estimation by professionals; dosage timing in chronic pain severely disadvantages the score to be below the competency level. Since pain is one of the most common reasons for patients to seek medical attention and one of the most prevalent medical complaints, professionals need to demonstrate competencies in appropriately assessing and reassessing pain based on detailed evaluation of the patient's self-report. The misconception noted in this study regarding the attention paid to and assessment of pain has also been demonstrated in other settings [16,17].

In a similar manner, this survey reveals that the participants were also lacking not only regarding pain assessment skills but also the general principles of pain management. Unfortunately, all students from all the departments scored less than the deemed level in all items categorized in the general principles of pain management. Particularly, higher level of mistaken belief was observed in increasing dose for chronic pain and other form of uncontrolled pain. Preference towards a PRN base and delaying medication till patients become symptomatic was observed in a similar fashion as it was demonstrated in other studies too [11,27,28]. Such misunderstanding would leave patients undertreated and contribute to transformation of minor treatable pains to a centrally sensitized adamant to manage pain.

Due to the fact that the pathophysiology of pain is complex and wide array, its management requires multimodal approach; pharmacotherapy (NSAIDs, adjuvant analgesics, and opioids) and non-pharmacologic ones [6,29]. As elucidated in Figure 1 and Table 1, a considerable number of respondents were correct regarding the role of non-pharmacologic therapy, though performed poor in opioids related items. High prescription rate of IM and PRN were demonstrated to be a sign of poor quality pain management [5,30]. Besides to their

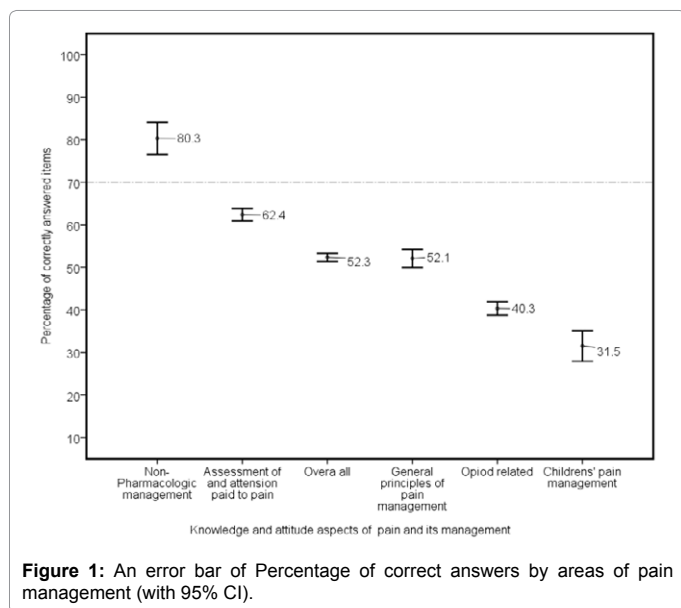


Figure 1: An error bar of Percentage of correct answers by areas of pain management (with 95% CI).

Items	Overall	Pharmacy	Medicine	Anesthesia	HO	Dentistry	Nursing
Lack of pain expression does not mean lack of pain (A).	339(80.4)	51(83.6)	91(89.2)	23 (92.0)	88(85.4)	33(80.5)	53(58.8)
Giving narcotics on a regular schedule is preferred over PRN schedule for continues pain (A).	234(54.7)	39(64.0)	48(47.1)	9 (36.0)	59(57.2)	23(56.1)	56(62.2)
When a patient requests increasing amounts of analgesics to control pain, this usually indicates that the patient is psychologically dependent (D).	145(34.4)	22(36.0)	37(36.3)	13(52.0)	24(23.3)	20(48.8)	29(32.2)
A patient should experience discomfort prior to giving the next dose of pain medication (D).	199(47.1)	30(49.2)	59(57.9)	16 (64.0)	30(29.1)	16(39.0)	48(53.3)
Patient receiving narcotics on a PRN basis may be likely to develop clock-watching behaviors (A).	276(65.4)	45(73.8)	73(71.6)	13 (52.0)	73(70.9)	27(65.9)	45(50.0)
The most accurate judge of the intensity of the patient's pain is the patient (A).	334(79.2)	54(88.5)	93(91.1)	15 (60.0)	81(78.7)	31(75.6)	50(56.7)
When a patient in pain is receiving analgesic medication on a PRN basis, it is appropriate for the patient to request pain medications before the pain returns (A).	236(55.9)	26(44.6)	65(63.7)	16 (64.0)	59(57.2)	25(60.9)	45(50.0)
Because narcotics can cause respiratory depression, they should not be used in pediatric patients (D).	132(31.3)	21(34.4)	28(27.4)	17 (68.0)	20(19.4)	13(31.7)	33(36.6)
Children cry all the time; therefore, diversional activities are indicated rather than actual pain medications (D).	134(31.7)	19(31.2)	37(36.3)	10 (40.0)	24(23.2)	11(26.9)	33(36.6)
The most suitable dose of morphine for a patient in pain is a dose that best controls the symptoms; there is no maximum dose (i.e. a level that must not be exceeded) for morphine (A).	217(51.4)	37(60.7)	47(46.1)	4 (16.0)	62(60.1)	24(58.6)	43(47.7)
It may often be useful to give a placebo to a patient in pain to assess if he is genuinely in pain (D).	126(29.9)	20(32.8)	29(28.5)	9 (36.0)	29(28.9)	7(17.1)	32(35.5)
For effective pain treatment of cancer pain it is necessary to continuously assess the pain and the efficacy of therapy (A).	347(82.2)	55(90.2)	97(91.1)	20 (80.0)	80(77.7)	34(82.9)	61(67.7)
It is the patient's right to expect total pain relief as a consequence of treatment (A).	320(75.9)	49(80.3)	84(82.3)	17 (68.0)	75(72.9)	31(75.6)	64(71.2)
Distraction, for example, by the use of music or relaxation, can decrease the perception of pain (A).	340(80.2)	55(90.3)	92(90.2)	16 (64.0)	79(76.7)	32(78.1)	65(72.3)
16. Estimation of pain by a health professional is a valid measure of pain as a patient's self-report (D).	136(32.3)	20(32.8)	28(27.4)	7 (28.0)	30(28.1)	14(34.2)	37(41.1)
Patients having severe chronic pain often need higher dosages of pain medications than patients with acute pain (A).	245(58.0)	35(57.4)	63(61.8)	11 (44.0)	67(65.1)	23(56.1)	46(51.1)
Increasing analgesic requirements are signs that the patient is becoming addicted to the narcotic (D).	118(28.0)	25(41.0)	21(20.6)	7 (28.0)	24(23.3)	9(21.9)	32(35.5)
If a patient and/or patient family member reports that a narcotic is causing euphoria, she/he should be given a lower dose of the analgesic (D).	156(37.0)	25(41.0)	22(21.6)	14 (64.0)	44(42.7)	10(24.4)	41(45.6)
One fourth of patients receiving narcotics around the clock become addicted (D).	100(23.7)	13(21.3)	17(16.6)	10 (40.0)	26(25.2)	8(19.8)	26(28.9)
The preferred route of administration of narcotic pain relievers to patients with pain is IM (D).	122(29.0)	20(32.8)	22(21.6)	8 (32.0)	27(26.2)	13(31.7)	32(35.5)
Patients can be maintained in a pain free state (A).	319(75.6)	45(75.4)	90(88.2)	17 (68.0)	82(79.6)	29(70.7)	56(62.2)
Patients with chronic pain should receive pain medications at regular intervals with or without the presence of discomfort(A)	273(64.7)	36(59)	81(79.4)	13 (52.0)	71(68.9)	25(60.9)	47(52.2)
Overall correct answer score in percentage	52.3	55.7	54.7	51.8	50.9	50.6	49.9

Table 1: Frequency of correct answers by departments.

Key: A=Agree (correct answer corresponding items) D=Disagree (correct answer for that corresponding items)

in the previous two issues, students score to the questions on correct requirement for increasing the dosage of opioid analgesic and the pharmacologic behavior of dose morphine were severely under scored augmenting previous studies [31,32].

Moreover, the exaggerated fear towards opioid related side effects and addiction, which is proven to be nonexistent to significant level in various studies [6,13,29], was revealed among the participants of this study via the misconception to the item that assessed prevalence addiction in opioid treated patients. Even if the one item that was correctly answered by most students regarding non-pharmacologic management of pain may not demonstrate the students entire knowledge on this aspect, it can at least definitely exhibits their positive attitude towards its role in managing pain.

Of all the areas of pain management assessed, the one on the pediatrics was the least scored among students. The misapprehension to the items can well demonstrate that wont of underestimation and under treatment of pain in children is as common as it is in other settings [16,33], albeit the score in the others' were higher than this study. The global misunderstanding that children do not feel pain has been well disproved by studies that demonstrated that children have lower pain thresholds, poor central modulation, immature inhibitory pathways,

and to the worst unmanaged pain in their early life can produce behavioral derangement in their posterity [34].

Despite the various strengths of this study, the fact that the data was only collected in one geographical area, the possibility of information bias from non-respondents and absence of representation from other groups of professions might compromise its inferential power.

In summary, the survey demonstrated a strong cross-sectional view of the students who, professionally, are directly involved in managing patients in pain. The global consensus that pain education is poorly emphasized in medical and paramedical schools is augmented and substantiated by the findings of this study that student less scored below the expected good level of knowledge to handle patients in pain.

Consequently, the knowledge gap observed in the assessment, general and specific principles of management of pain in adults and children and the exaggerated misconception and fear towards opioids should guide in designing nationwide educational programs and initiatives. The observed high score on non-pharmacologic pain management shouldn't be taken as a sign of good competency rather as a gateway in integrating other ways of managing pain since the

demonstrated good attitude it is encouraging. Furthermore, the relatively high level of Cronbach's alpha obtained can guarantee that the tool can be utilized in other setting to evaluate practicing professionals and graduate students.

Conflict of Interest

No conflict of interest exists.

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