Health Care Workers' Knowledge, Attitude, and Practice About Chronic Pain Management, Shiraz, Iran

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Abstract

Background: Pain can adversely affect every aspect of a patient's daily activity, and consequently, it has a great influence on the quality of life. Studies have shown that health care professionals have little knowledge of and inadequate attitudes toward the assessment of pain and its treatment with analgesics.

Objectives: This cross-sectional study was designed to evaluate the knowledge, attitudes, and practice of health care professionals regarding chronic pain management. It was carried out in six different educational hospitals affiliated with Shiraz University of Medical Sciences in Shiraz, Iran.

Patients and Methods: Participants were given a questionnaire containing 46 questions and demographic characteristics to fill out independently. In total, 213 health care professionals (114 nurses and 99 medical residents) volunteered to take part in this study. In order to ease further analysis, the questions were grouped into three categories: narcotic drugs, non-narcotic drugs, and non-drug-related questions.

Results: The mean correct response rate was 43.13% ± 11.10. Medical residents scored 51.23% ± 9.02% and nurses 36.10% ± 7.31% (P < 0.001). There was no statistically significant relation between field of specialty and the mean scores of medical residents. Narcotic drug questions received the lowest (39.02%) and non-narcotic drug questions received the highest (57.32%) percentages of correct responses. Only 9.3% of participants believed that they had received adequate education about pain and its management.

Conclusions: The findings of this study support concern about inadequate knowledge, attitudes, and practice regarding chronic pain management. We believe that further education and practical training will be needed for adequate pain management.

Keywords: Pain Management, Knowledge, Attitude, Practice

1. Background

Pain was a frequent chief complaint for adults who referred to emergency departments in 2006, and pain severity was stated as moderate to severe by 45.0% of cases in these emergency departments (1). The international association for the study of pain has defined pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage (2).

Despite extensive progress in the scientific understanding of pain over the last decade, pain in health institutions and in the community is still high. Therefore, many patients suffer from unnecessary and avoidable pain (3-5). One obvious example is low back pain, which requires several modalities for appropriate management for most patients (6).

1.1. Literature Review

Studies have shown that health care professionals have little knowledge of and inadequate attitudes toward the assessment of pain and its treatment with analgesics. These deficiencies include misconceptions about pain assessment and the erroneous belief that patients exaggerate their pain, inappropriate beliefs about drug tolerance and addiction, inadequate knowledge of analgesic drugs pharmacology, and a difficulty in assessing pain in children (7-10).

To our knowledge, limited studies have been published regarding pain knowledge in Iran (11, 12). One study was conducted among nursing students and indicated that Iranian nursing students seem to have the least knowledge of pain assessment and management in comparison with international standards (12). But a second study showed that anesthesiology residents and faculty members had desirable beliefs about pain management (11). We were unable to find any published Iranian studies focusing on both

nurses' and physicians' knowledge, attitudes, and practice with respect to chronic pain.

The treatment of pain should encompass a multidisciplinary approach and should ideally involve the evaluation and treatment of patients by the health care team, from physicians to nurses (13).

2. Objectives

The aims of this study were the following: 1) to evaluate the knowledge, attitudes, and practice of physicians and nurses with respect to chronic pain management in the educational hospitals affiliated with Shiraz University of Medical Sciences (SUMS), Shiraz, Iran; and 2) to identify areas where deficiencies exist.

3. Patients and Methods

This cross-sectional study was carried out in six different educational hospitals affiliated with SUMS. A questionnaire was given to medical residents and nurses of different clinical wards of the hospitals including rehabilitation, internal medicine, cardiology, psychiatry, pediatrics, and neurology, and the participants were asked to fill them out independently. In Iran, the residency program starts after seven years of a general physicians program. The duration of the residency program is four years, with residents divided into first-, second-, third-, and fourth-year residents based on their education and practice. A questionnaire comprising 46 items measured the participants' knowledge, attitudes, and practice regarding management of chronic pain (Table 1). The questionnaire included 23 true—false questions, 9 multiple-choice questions, 12 questions using a Likert scale, and 2 case-study questions. Thirty-six questions were adopted from questionnaires used in similar studies (7-10, 14-16) and modified afterwards, and 10 questions (L2, T3, T4, T7, T19, T23, M6, M7, M8, and M9) were designed through the cooperation of the clinical pharmacy department and the center of excellence for electronic learning at SUMS . The questionnaire also consisted of demographic items and job characteristics including age, gender, marital status, field of specialization, year of residency, clinical ward, years of nursing experience, attendance in courses dealing with pain, beliefs regarding self-knowledge about pain, and the efficacy of pain management in their clinical wards.

The content validity of the questionnaire was determined by a group of experts consisting of a rehabilitation specialist, a clinical pharmacy specialist, and an anesthesiologist with a pain management fellowship. The internal reliability of the questionnaire was acceptable (Cronbach's alpha = 0.76).

In analyzing the questionnaire, we did not distinguish among questions that quantified the extent of knowledge, attitudes, or practice separately with respect to pain management. This was due to the overlap of the aforementioned concepts. In order to allow better analysis of the questions, they were grouped into three categories: narcotic drug questions (18 items), non-narcotic drug questions (10 items), and non-drug-related questions (20 items). Two questions (T20, M4) were similar with respect to both the narcotic and non-narcotic drug items.

Correctly answered questions were assigned a score of 1. Incorrectly answered questions and those not answered were assigned a score of 0. The total score was calculated for each participant by adding up the scores for each question.

Continuous variables were shown as mean $\pm$ SD, and categorical values were reported as percentages. An independent sample t-test was used to compare the mean percentage of correct answers between nurses and medical residents. The Chi-square and Fisher exact tests were performed for comparison between categorical variables and the groups. The Pearson correlation test was utilized to assess the correlation between the ages of participants and the percentage of correct answers. Correlations between the year of residency, years of nursing experience, and the mean percentages of correct answers were analyzed using the Spearman correlation test. Comparisons were made between continuous variables and groups using one-way ANOVA. A comparison between the means of the percentage of correct answers to narcotic, non-narcotic, and non-drug-related questions both within subject factors (nurses and medical residents) and between subject factors (nurses and medical residents) was processed by repeated-measure ANOVA. A Kruskal-Wallis test was done to examine the association between the degrees of self-perception of pain knowledge in participants and the average scores they achieved.

The results were analyzed using Statistical Program for Social Sciences (SPSS) version 17.0 for windows. A P-value < 0.05 was considered statistically significant.

4. Results

In total, 213 health care professionals (114 nurses and 99 medical residents) volunteered to take part in this study. The demographic and practice characteristics of the participants are presented in Table 2.

Attendance in courses related to pain management was higher in nurses than in medical residents (14.0% of nurses and 5.0% of medical residents, P = 0.037). There was no relationship between attendance in courses dealing with pain and the mean scores of either medical res-

Table 2. Demographic and Practice Characteristics of the Participants (N = 213)

Characteristics	No. (%)
Sex	
Male	66 (31.0)
Female	147 (69.0)
Age (y), mean ± SD	30.8 ± 5.7
21 - 30	124 (58.2)
31 - 40	73 (34.3)
41 - 50	16 (7.5)
Marital status	
Married	124 (58.2)
Single	89 (41.8)
Specialties of medical residents	
Rehabilitation	12 (12.1)
Internal medicine	17 (17.2)
Cardiology	24 (24.2)
Psychiatry	13 (13.1)
Pediatrics	19 (19.2)
Neurology	14 (14.1)
Nursing experience, y	
1 - 5	70 (61.4)
6 - 10	20 (17.5)
> 10	24 (21.1)
Years of residency	
1	25 (25.3)
2	32 (32.3)
3	30 (30.3)
4	12 (12.1)
Attendance in courses dealing with pain	
Only in initial education process	192 (90.1)
< 5 hours complementary education	6 (2.8)
5 - 10 hours complementary education	8 (3.8)
> 10 hours complementary education	7 (3.3)

idents or nurses (medical residents: P = 0.103, nurses: P = 0.491). Additionally, 37.6% of participants believed that they should receive initial education concerning pain management, 53.1% of them felt that they needed extra courses dealing with pain management, and 9.3% believed that they had received adequate education about pain and its management. But the degree of self-perception of pain knowledge in medical residents and nurses was not related to the average scores they achieved (medical residents: P =

0.769, nurses: P = 0.113).

The mean percentage of correct answers was 43.13 ± 11.10%, consisting of 51.23 ± 9.02% for medical residents and 36.10 ± 7.31% for nurses (P < 0.001). There was no significant difference between the two sexes in the two studied groups (nurses: P = 0.58, medical residents: P = 0.45).

There was no correlation between the ages and mean scores of either medical residents or nurses (medical residents: P = 0.214, r = -0.13 and nurses: P = 0.983, r = 0.00). However, the residency year of medical residents was significantly correlated (P = 0.002, r = 0.30) with their scores.

Although no significant association between field of specialty and the mean scores of medical residents (P = 0.692) was observed, a neurology resident received the highest (54.2%) and a psychiatry resident received the lowest (49.8%) mean scores.

The individual percentages of correct answers to all 46 items are presented in Table 1. The item with the highest percentage of correct answers (89.7%) was number 15 of the true–false questions (The parents' presence usually alleviates the pain experienced by children. [The correct answer was true.]). The item with the lowest percentage of correct answers (1.9%) was number 5 of the multiple-choice questions (percentage of patients who over-report their pain level [The correct answer was 0.0%.]). Results showed that medical residents scored significantly higher than nurses with respect to this item (medical residents: 4.0% vs. nurses: 0.0%, P = 0.045). Among residents, only 21.1% of pediatricians answered this question correctly, and the correct percentages of the other specialties were 0.0%.

Among participants, 62.4% incorrectly believed that opioids were not good drugs and that it was better for patients to tolerate pain as much as possible; 63.6% of medical residents and 95.6% of nurses overestimated the likelihood of addiction following narcotic utilization for pain management (addiction rate > 1.00%). The percentage of correct answers from medical residents was significantly higher than from nurses with respect to this item (P < 0.001).

Of the respondents, 65.3% (41.4% of medical residents and 86.0% of nurses) incorrectly believed that the use of a placebo was a useful test for determining the existence of pain (P < 0.001).

The percentages of correct answers from medical residents and nurses to narcotic drug questions, non-narcotic drug questions, and non-drug-related questions were calculated separately. Medical residents scored significantly higher than nurses in all three categories of pain control methods (the P-value of all was P < 0.001). The mean percentages of correct answers regarding field of specialty are shown in Table 3.

Table 3. The Mean Percentages of Correct Answers to Narcotic, Non-Narcotic, and Non-Drug-Related Questions by Medical Residents Regarding Field of Specialty (N = 99)

Category	Mean % ± SD	P Value
Narcotic questions		0.882
Rehabilitation	43.06 ± 15.91	
Internal medicine	46.73 ± 13.47	
Cardiology	48.15 ± 15.51	
Psychiatry	44.02 ± 13.31	
Pediatrics	47.66 ± 14.26	
Neurology	44.44 ± 13.07	
Total	46.13 ± 14.14	
Non-Narcotic questions		0.008
Rehabilitation	76.67 ± 12.31	
Internal medicine	71.76 ± 13.08	
Cardiology	74.17 ± 10.06	
Psychiatry	63.85 ± 14.46	
Pediatrics	63.61 ± 17.34	
Neurology	78.57 ± 15.12	
Total	71.21 ± 14.80	
Non-Drug-Related questions		0.017
Rehabilitation	52.50 ± 11.18	
Internal medicine	43.53 ± 10.42	
Cardiology	41.88 ± 8.32	
Psychiatry	49.23 ± 7.60	
Pediatrics	49.74 ± 15.41	
Neurology	51.79 ± 9.73	
Total	47.32 ± 11.35	

5. Discussion

The current study examined the knowledge, attitudes, and practice of a sample of medical residents and nurses regarding chronic pain management in Shiraz, Iran. The overall percentage of correct answers was 43.1% (residents: 51.2%, nurses: 36.1%, P < 0.001). Compared with the studies of Visentin et al. (61%) [17] and Van Niekerk et al. (72%) [18], the present study showed a lower correct answer rate. Visentin et al.'s study was conducted on 669 nurses and 225 physicians in Italy, and Van Niekerk et al.'s study was done on 1015 Tasmanian nurses. However, the results of our study did not greatly differ from the results published by Rahimi-Madiseh et al. [12], who conducted a study in two Iranian nursing schools (Shahrekord and Tehran) in Iran, using a questionnaire with 36 items and 2 case studies. In that study, out of 146 nursing students, the percentage of

correct answers obtained was 37%. A further comparison with this questionnaire was not possible, because the questionnaire was different from ours in regards to the type and number of questions. On the other hand, the percent of correct answers from the nurses in our study (36.1%) is similar to that in Yildirim et al.'s study (35.4%), conducted on 68 nurses in Turkey [9].

In our survey, there was a statistically significant difference between the mean percentages of correct answers of the different professional groups (medical residents: 51.2% vs. nurses: 36.1%, P < 0.001). This difference was also noticed by Zanolin et al. [10] and Visentin et al. [17]. Prior to analyzing the results, we did expect the medical residents to be more knowledgeable than nurses, because physicians are responsible for diagnosing the causes of pain and prescribing the appropriate drugs.

After analyzing the answers to individual items, question T15 showed the highest percentage of correct answers (89.7%); this result showed that most of the respondents correctly believed that in the management of pain in children, medication is not the only method by which to alleviate it. However, the lowest percentage (1.9%) of correct answers referred to question M5, where most participants (98.1%) incorrectly believed that patients exaggerated their pain. Surprisingly, all of the nurses answered this question incorrectly. Special attention should be given to this matter, because members of medical staff who believe that patients are over-reporting their pain may be less likely to apply the best pain management strategies. This finding was similar to those of several other surveys [9, 19, 20].

Unlike some earlier surveys, our study showed no difference in the pain management knowledge of nurses from oncology units compared to nurses from other clinical wards. Previous studies [21, 22] may have utilized survey tools containing a disproportionate number of cancer-related items compared to other pain management areas, leading to the better answers of oncology nurses. However, our study used a questionnaire that contained almost a balanced number of questions concerning non-pharmacology, pharmacology, addiction, assessment, and patient-related variables. Overall, our study did not show a significant difference between nurses in different clinical units. Recently, one study reported that no significant difference was seen among nurses working in three different wards [23].

We learned that there was no relationship between years of nursing experience and the mean score of nurses' correct answers. This finding was in contrast to the findings of Lui et al. [24], Lai et al. [25], and Tse et al. [26]. Other studies confirmed the importance of university courses and also of continuing education to improve the level of knowledge and the attitudes of nurses regarding pain

management (27, 28).

The findings of the previous studies (10, 17) reported that medical specialty had a profound effect on the knowledge of and attitudes toward pain management. In contrast to these findings, our results showed that the difference in scores between medical residents with different specialties was not significant. One of the most important reasons for these results is found in the medical educational program at SUMS; pain management education is not related to residents' fields of residency.

There was no correlation between age and the mean scores of either medical residents or nurses. These results were in contrast to the findings of Ali et al. (29) and Salantera et al. (8), where both studies found that the older the respondents, the higher the scores. But Latina et al. supported our finding (23).

Nurses and medical residents who were confident in their knowledge (having a higher degree of self-perception) had no higher scores in pain management than did those who were not. This confidence may lead to inadequate treatment and may prevent these medical staff from improving their knowledge about pain. The findings of Park et al.'s study (30), performed on 1204 South Korean physicians, were not confirmed by our data.

Among participants, 9.4% and 28.6%, respectively, had correct responses to questions C1 and C2. In a previous study, it was reported that nurses were most likely to accept the patient's pain complaint if the patient was grimacing, had elevated vital signs, or was elderly (31). Yildirim et al. conducted a study on 68 Turkish oncology nurses, reporting that 19.1% (for C1) and 35.3% (for C2) of nurses gave a correct response to the same questions (9).

Our results showed that narcotic questions produced the lowest percentage of correct answers followed by non-drug-related and then non-narcotic questions. Only 19.2% of the respondents correctly marked the likelihood of addiction to narcotic drugs as < 1.0%. This result was inconsistent with the results of two other studies (Fife et al., 27% (32), and Rahimi-Madiseh et al., 64.9% (12)). Furthermore, because of the excessive fear of tolerance and addiction, 62.4% of our participants incorrectly believed that narcotics were not good drugs and that patients had better bear the pain as much as possible. This result was quite different from Yildirim et al.'s (9) and Ferrell et al.'s studies (33), which showed, respectively, that 61.8% and 98.0% of respondents correctly believed that patients should not have to bear pain.

Among our respondents, 53.3% did not prescribe narcotics to patients with a history of substance abuse (question T8). However, this behavior is incorrect, because patients with a history of substance abuse can develop medical conditions that cause severe pain, and there is some

evidence that such patients may not be at high risk for developing repeated psychological dependency on narcotic drugs (34). Yildirim et al. reported that only 16.2% of nurses gave correct responses to this question (9). But in another study performed with 2710 Tasmanian nurses, it was reported that 64.9% of participants gave correct responses to this question (T8) (18).

Similar to several earlier studies (9, 17, 19), knowledge deficits were found in our studied population regarding the use of placebos. Nearly 65.3% of the participants believed that injection of a placebo (sterile water for injection) was a useful test for determining the reality of pain reported by patients. Our result was several times higher than the results of the studies of Van Niekerk et al. (19.8%) (18) and Yildirim et al. (8.8%) (9). As mentioned above, these results confirmed that the health care workers in our study did not trust patients in reporting their severity of pain.

According to the previous surveys (31, 35), self-reporting of pain is the single most reliable indicator for pain assessment. The elevation of vital signs has not been recommended as an alternative to self-reporting. It is notable that in our study, most (77.9%) of the medical staff (medical residents: 67.7% and nurses: 86.8%) incorrectly believed that observable changes in vital signs were reliable indicators of pain intensity. This negative attitude was significantly higher in nurses than in medical residents (P = 0.001).

In general, the discrepancy between our study and other studies could be due to the type of studied population as well as the type of questionnaire. Although 78.3% of our questions were essentially the same as those in other studies, the remaining 21.7% difference between questionnaires could impact the final results. Also, this study was conducted in a university hospital with no independent department of pain; therefore, there was no well-organized protocol for pain management. As shown in the results, the pain management method was decided based on the health provider's personal experience. Such a practice can also be seen in other clinical settings in the world (36, 37).

There are some limitations present in this study. First, the sample was collected from only one medical science university, and it is probably improper to generalize the findings to the whole population of Iranian health care providers. Second, our sample represents a much more sophisticated and academic group of clinicians compared to average clinicians. It is quite possible that nurses and physicians in smaller cities might have even less knowledge and more conservative practices and attitudes toward pain management. Third, the questionnaire was designed for this survey and contained some questions that have not been tested in other populations. Also, since pain

is a very broad-spectrum subject, it is possible that some areas of chronic pain management may remain uncovered.

5.1. Conclusions

As a final point, the main finding of this study showed that there was a significant deficit in knowledge, attitudes, and practice regarding pain and its management in the sample of medical residents and nurses who were surveyed. There is an urgent necessity for educational programs and the use of standard treatment guidelines for pain management to help medical staff achieve improved knowledge, attitudes, and practices in order to enhance the quality of life of patients and save the costs of pain management.

Footnotes

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Table 1. Questions and Percent of Correct Answers to Them

Item Question	Correct Answer	Correct Responses
Case studies		
C1: A 54-year-old woman, with a known case of rheumatoid arthritis (RA) from 6 years ago, is hospitalized in the rheumatology ward for pain and inflammation control. As you enter her room, she smiles at you and continues talking and joking with her visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18. On a scale of 0 to 10 (0 = no pain/discomfort and 10 = worst pain/discomfort), she rates her own pain a score of 8. On the patient's record, you must mark her pain on the scale below. Circle the number that represents your assessment of her pain.		
10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0		
Worst pain No pain		
C2: A 54-year-old woman, with a known case of rheumatoid arthritis (RA) from 6 years ago, is hospitalized in the rheumatology ward for pain and inflammation control. As you enter her room, she is lying quietly in bed and grimacing. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18. On a scale of 0 to 10 (0 = no pain/discomfort and 10 = worst pain/discomfort), she rates her own pain a score of 8. On the patient's record, you must mark her pain on the scale below. Circle the number that represents your assessment of her pain.		
10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0		
Worst pain No pain		
Likert Scale Questions		
L1- Giving a narcotic on a regular schedule is preferred over a PRN schedule for continuous pain.	Agree	45.1
L2- Long-time use of Tramadol causes fewer harmful effects (such as tolerance, addiction, and psychological dependence) than other opioid drugs.	Agree	22.1
L3- It may often be useful to give a placebo to a patient in pain to assess whether he/she is genuinely in pain.	Disagree	34.7
L4- Administering opioids in a PRN dosing schedule can decrease the harmful effects of opioids such as tolerance and addiction.	Disagree	29.6
L5- Most patients prefer parenteral administration of medication rather than its oral form for pain management.	Disagree	16.4
L6- Parenteral administration is more efficacious than oral administration in pain management.	Disagree	20.2
L7- A patient's report of pain is as reliable as his/her report of nausea.	Agree	32.9
L8- The dosages of opioids that patients receive should be much lower than the required dosage, for prevention of drug tolerance.	Disagree	21.6
L9- When I prescribe opioids, I would insinuate to patients or their relatives that opioids are not good drugs and that they had better bear the pain as much as possible.	Disagree	3.7.6
L10- 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.	Agree	24.9
L11- For patients with severe nausea and vomiting, abdomen distention, and/or severe constipation, I would prescribe opioids infrequently or with lower dosage.	Disagree	10.8
L12- It is a patient's right to expect total pain relief as a consequence of treatment.	Agree	54.0
True-False Questions		
T1- Patients may sleep in spite of severe pain.	True	49.3
T2- Comparable stimuli in different people produce the same intensity of pain.	False	83.1
T3- Diclofenac and Celecoxib have a synergistic effect as pain killers.	False	54.9
T4- Maximum daily dosage of acetaminophen for a patient with liver failure is 4 g.	False	61.0
T5- Non drug interventions (e.g., heat, music, images) are effective for mild to moderate pain control but not for more severe pain.	False	15.0
T6- The world health organization (WHO) pain ladder suggests using single analgesic agents rather than combining classes of drugs (e.g., combining an opioid with a non-steroidal agent).	False	40.4
T7- For a patient with a history of asthma and aspirin sensitivity, the best NSAID is naproxen.	False	37.6
T8- Patients with a history of substance abuse should not be given opioids for pain, because they are at high risk for repeated addiction.	False	46.5
T9- Elderly patients cannot tolerate opioids for pain relief.	False	72.3

T10- Observable changes in vital signs must be relied upon to verify a patient's statement that he/she has severe pain.	False	22.1
T11- Children less than 11 years of age cannot report pain with reliability, and therefore the clinician should rely on the parents' assessment of the child's pain intensity.	False	56.8
T12- Based on his or her religious beliefs, a patient may think that pain and suffering is necessary.	True	37.1
T13- Children cannot tolerate opioids for pain relief.	False	58.2
T14- 80% of pain can be relieved by appropriate treatment with pharmacological pain relievers.	True	78.4
T15- The parent's presence usually alleviates the pain experienced by children.	True	89.7
T16- Pain medication is equally effective whether given before the onset of pain or when the patient is already experiencing pain.	False	74.2
T17- Naloxone can treat respiratory depression caused by opioids.	True	75.6
T18- If a patient reports that a narcotic is causing, euphoria she/he should be given a lower dose of the analgesic.	False	28.6
T19- The drug of choice for prevention of NSAID-induced peptic ulcer disease is Omeprazole.	True	86.9
T20- NSAIDs cannot increase the respiratory depression of opioids.	True	64.3
T21- Sedation is an effective way of eliminating pain in children.	False	57.7
T22- Elderly people experience pain with less intensity than young adults.	False	21.1
T23- Capsaicin is the best topical pain-relieving drug.	True	56.3
Multiple-choice questions		
M1- The incidence of addiction as a result of the legitimate prescription of narcotic pain-relieving drugs is:	d	19.2%
a. > 50%		
b. 10% - 50%		
c. 1% - 10%		
d. < 1%		
M2- When a patient requests increasing amounts of analgesic to control pain, this usually indicates:	b	18.8%
a. The patient is psychologically dependent.		
b. The patient is experiencing increased pain.		
c. The patient has developed a tolerance to the drug.		
d. The patient is addicted.		
M3- The recommended route of administration of opioid analgesics to patients with prolonged pain is:	a	53.1%
a. Oral		
b. IV		
c. IM		
d. On patient's request		
M4- Which of the following drugs are useful for management of cancer pain?	d	50.2%
a. Morphine		
b. Ibuprofen		
c. Amitriptyline		
d. All of the above		
M5- In your opinion, what is the percentage of patients who over-report the amount of pain they have?	d	19%
a. > 50%		
b. 20% - 50%		
c. 1% - 20%		
d. 0%		
M6- Which of the following medications is suitable for pain relief in a 10-month-old child with mild pain (weight = 12 kg)?	c	57.3%
a. Diclofenac suppository 100 mg q6 h		

b. Naproxen suspension 125 mg q12 h

c. Ibuprofen syrup 120 mg q4 h

d. Acetaminophen suppository 325 mg q6 h

M7- Which of the following medications is considered the drug of choice for the treatment of post-herpetic neuralgia?	c	70.0%

a. Acetaminophen 500 mg QID

b. Naproxen 500 mg TID

c. Gabapentin 300 mg TID

d. Tramadol 100 mg QID

M8- The patient is a known case of rheumatoid arthritis from the past 5 years. She was admitted to CCU with the impression of acute coronary syndrome. According to her drug history, she received naproxen 500 mg TID for joint pain relief. Which analgesic is the best selection for her at this time?	c	34.7%

a. Naproxen 500 mg TID

b. Decrease the dose of Naproxen; 500 mg BID

c. Discontinue Naproxen and alternate Acetaminophen 500 mg QID

d. Alternate Naproxen with Celecoxib 100 mg BID

M9- The patient is a 42-year-old man who is undergoing chemotherapy treatment for metastatic cancer. In order to control the patient's pain, morphine sulfate 5 mg IV q4 h was prescribed. Following administration of his second dose of morphine sulfate, he presented erythema, itching, and burning. Which strategy is the best approach to control the symptoms of allergic reaction to morphine sulfate?	c	23.9%

a. Discontinue IV morphine sulfate and use Meperidine 50 mg q4 h

b. Discontinue IV morphine sulfate and use oral morphine 15 mg q4 h

c. Co-administer Hydroxyzine tab 25 - 50 mg

d. Dilution of morphine sulfate with normal saline and administering through slow IV infusion.