

# Evaluating Resident Physicians' Knowledge, Attitude, and Practice Regarding the Pain Control in Cancer Patients

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## Abstract

**Background:** Pain has been one of the most debilitating symptoms of cancer. The aim of this study was to evaluate residents' knowledge, attitude, and practice regarding pain control in cancer patients.

**Methods:** In a descriptive study, 69 randomly selected third-year various residents practicing in teaching hospitals of Shahid Beheshti School of medicine participated in this study. They have provided their demographic characteristics and completed a questionnaire, based on their "knowledge", "attitude" and "practice" regarding cancer pain and its management. Data analysis has performed using SPSS v.19. A p value of less than 0.05 has considered as significant.

**Results:** Obtained Data from 69 participants including 32 anesthesiology residents has included to our study. The average scores were  $35.8 \pm 6.1$  (ranging from 20 to 49) for the residents' attitude,  $25.1 \pm 9.1$  (ranging from 0 to 53) for their knowledge and  $11.2 \pm 4.1$  (ranging from 0 to 17) for their practice. The overall scores of the questions have related to attitude and knowledge were higher for residents of anesthesiology but the difference was not statistically significant (A:  $37.1 \pm 4.9$  vs.  $34.7 \pm 6.8$ ,  $p=0.106$ , K:  $27.2 \pm 11.8$  vs.  $23.3 \pm 5.6$ ,  $p=0.076$ ). The average score for questions on physician' practice was significantly higher in residents of anesthesiology (P:  $12.8 \pm 3.2$  vs.  $9.7 \pm 4.2$ ,  $p=0.001$ ).

**Conclusion:** In order to provide patients with adequate pain relief, it has seemed advisable for medical schools to focus on improving the educational curriculum and integrating it into clinical practice.

**Keywords:** Attitudes; knowledge; Practice; Cancer pain control

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## Introduction

Pain was one of the most debilitating symptoms of cancer that affects patients' function and quality of life; thus it was a very concerning issue for both physicians and patients [1]. Patients that did not respond to treatment receive palliative care provided by expert medical team consisting of physician, nurse, pharmacologist, social caregiver and psychiatrist [2]. Cancer related pain was one of the most common type of pain complaints in clinic [3]. Despite recent advances in medications and medical interventions, cancer pain would be still a major medical challenge [4]. Poor control of pain could

decrease quality of life, while effective pain control has increased patients' willingness to survive and their cooperation and compliance for treatment [5]. Despite recent advances in medicine, only 50-70% pain control has achieved in cancer patients and many patients have still suffered from pain [6]. Barriers to adequate pain control have imposed by physicians, nurses, healthcare services, patients and their caregivers, of which physician related issues were the most important [7]. One of the major contributing factors to inadequate treatment of cancer patients was improper education of physicians regarding pain management in these patients [8, 9]. In addition, healthcare provider's

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knowledge and insight could affect pain control [10]. Problems that physicians face in their approach to pain control in cancer patients include: Lack of knowledge, inadequate evaluation of pain, concerns regarding patients' addiction to medications, patient's tolerance and adverse effects of medications have used in pain control [11, 12].

In order to achieve appropriate level of pain control, we should pay deep attention to evaluation of pain, medical and nonmedical treatment choices, and continuity of pain management [13, 14]. Most of the patients have not shown a significant improvement and usually suffer from adverse effects and toxicity of pain control medications such as salicylates, acetaminophen and NSAIDs [15-17].

Patient access to pain control centers has limited in Iran, besides it is disproportional to the cancerous population [18]. Most patients have treated for pain in a single office visit by their physician and only a few receive specialized treatment by pain specialists [19]. Most hospitals in Iran could access to oral and parenteral opioids. Therefore, due to the importance of pain management for improving quality of life in cancer patients, and then considering this fact those physicians might not be equipped with the necessary knowledge and adequate skills to manage the pain properly.

The aim of this study was to evaluate residents' knowledge, attitude, and practice regarding pain control in cancer patients.

## Materials and Methods

In this descriptive study, third-year various residents practicing in educational institutes of Shahid Beheshti School of Medicine have chosen using accidental numbers assigned by computer. Numbers of samples were 69 residents. Written consent has signed by all participants regarding their knowledge, attitude and practice to pain management. The "questionnaire" has designed by statistics and epidemiologist consultants using a 0.9 Cronbach Coefficient. The "questionnaire" has consisted of questions on demographics, 25 questions on residents' attitude, 14 questions on residents' knowledge, and 15 questions on physicians' practice. Scoring has performed according to the number of correct answers. For items on resident's attitude, a score of 4 has given to questions 1-3, score of 3 to questions 4-10, score of 2 to questions 11-18, and score of 1 to questions 19-

25. For items on resident's knowledge, a score of 4 has given to questions 26-28, score of 3 to questions 29-33, score of 2 to questions 34-38, and score of 1 to question 39. Finally for items on resident's practice, a score of 2 has given to questions 40-43, and a score of 1 to questions 44-54. The total scores for questions on attitude, knowledge and practice were 56, 38 and 19 respectively. Data have collected by a physician assigned to collect questionnaire which has directly filled by resident.

Data analysis has performed using SPSS v.19. Normality of data has assessed by Kolmogorov-Smirnov test. Chi square tests and t-tests have calculated between qualitative and quantitative variables respectively. A p value of less than 0.05 has considered as significant.

## Results

The mean value of participants' age was  $33.2 \pm 4.9$  with a minimum of 26 and a maximum of 49 years. 50 (72.5%) respondents were male and 19 (27.5%) were female. 32 (46.4%) participants were resident physicians of anesthesiology, 8 (11.6%) general surgery, 2 (2.9%) gynecology, 7 (10.1%) internal medicine, 9 (13%) neurosurgery, 6 (8.7%) orthopedics, 2 (2.9%) urology, 1 (1.4%) pediatrics, 1 (1.4%) ophthalmology, and 1 (1.4%) neurology. 20 (29%) of the responders have been completed their residency training in Akhtar Hospital, 20 (29%), in Taleghani Hospital, 8 (11.6%), in Emam-Hosein Hospital, 10 (14.5%), in Shohada-e-Tajrish Hospital, 7 (10.1%), in Loghman Hospital, 1 (1.4%), in Masih-Daneshvari Hospital, 1 (1.4%), in Mofid Hospital 2 (2.9%) and in Labbafi-Nejad Hospital 22 (31.9%). participants had a positive family history of cancer. In general, the average scores were  $35.8 \pm 6.1$  (ranging from 20 to 49) for the residents' attitude,  $25.1 \pm 9.1$  (ranging from 0 to 53) for their knowledge and  $11.2 \pm 4.1$  (ranging from 0 to 17) for their practice.

The number of correct answers to each individual question has compared between residents of anesthesiology and other courses, could be found in detail in table 1 (questions on attitude), table 2 (questions on knowledge) and table 3 (questions on practice). Also the comparison of mean scores for residents' insight, awareness and approach between

**Table 1.** Comparison of correct answers numbers to individual questions, in physicians' Attitude towards pain control, between residents of anesthesiology and residents of other specialties

Questions on Insight	Residents of Anesthesiology	Residents of Other Specialties	p-Value
1. Pain is the discomfort experienced after an injury	25 (78.1%)	27 (73.0%)	0.620
2. Lack of pain expression does not mean lack of pain	24 (75.0%)	31 (81.3%)	0.366
3. Pain is categorized into three different subgroups: acute, chronic, and cancer pain	18 (56.3%)	14 (37.8%)	0.126
4. Only pain specialists are in charge of pain control in cancer patients	28 (87.5%)	34 (91.9%)	0.547
5. Severity of pain is best defined when expressed by the patients themselves	30 (93.8%)	29 (78.4%)	0.070
6. Pain expression, pain perception and pain treatment are important subjects in psycho-oncology	30 (93.8%)	25 (67.6%)	0.007*
7. Knowledge of the pathophysiology of pain is not curial to pain management	10 (31.3%)	10 (27.0%)	0.7
8. Opioids are the best medications for relieving cancer pain	10 (31.3%)	11 (29.7%)	0.891
9. To adequately control pain, it is important to be aware of non-pharmacological approaches of pain management	30 (93.8%)	35 (94.6%)	0.881
10. To adequately control pain, it is important to be aware of non-opioid approaches of pain management	31 (96.9%)	32 (86.5%)	0.127
11. Pain in cancer patients can be caused by psychological, spiritual physical or social factors and requires treatment	30 (93.8%)	32 (86.5%)	0.319
12. Cancer pain is adequately controlled in 50-75% of cases	4 (12.5%)	6 (16.2%)	0.662
13. Pain control is an inseparable part of cancer treatment	31 (96.9%)	35 (94.6%)	0.643
14. Continuous assessment of the efficacy of pain control measures is essential for effective pain management	29 (90.6%)	31 (83.8%)	0.4

15. Placebo trial is often an acceptable means of defining the existence of actual pain	13 (40.6%)	16 (43.2%)	0.826
16. End stage cancer patients require maximal dose of analgesics	19 (59.4%)	11 (29.7%)	0.013*
17. Concerns about addiction is one of the reasons behind inadequate pain control	15 (46.9%)	22 (59.5%)	0.296
18. Patients asking for higher doses of analgesics, are experiencing more pain	19 (59.4%)	12 (32.4%)	0.025*
19. A scoring system is available for determining the severity of pain	17 (53.1%)	21 (56.8%)	0.762
20. Nociceptive pain can be acute or chronic, while neuropathic pain is always chronic	15 (46.9%)	14 (37.8%)	0.448
21. Continuous evaluation of the efficacy of pain control measures is an essential part of pain management	30 (93.8%)	34 (91.9%)	0.767
22. Cancer pain can be of nociceptive or neuropathic type	26 (81.3%)	22 (59.5%)	0.050
23. Neuropathic pain is definitely related to the sympathetic system	8 (25.0%)	14 (37.8%)	0.254
24. Inappropriate administration of analgesics results in severe adverse effects and carries a risk of addiction to these medications	21 (65.6%)	28 (75.7%)	0.359
25. Knowledge of toxicological screening testes is not mandatory in assessing the risk of opioid abuse in cancer patients	14 (43.8%)	17 (45.9%)	0.855

**Table 2.** Comparison of correct answers numbers to individual questions ,in physicians' knowledge of pain management, between residents of anesthesiology and residents of other specialties

Questions on Awareness	Residents of Anesthesiology	Residents of Other Specialties	p-Value
26. Adequately pain control does not require a knowledge of opioids and their function	29 (90.6%)	31 (83.8%)	0.4
27. An understanding of analgesics' function is not mandatory in monitoring pain relief	27 (84.4%)	30 (81.1%)	0.719
28. I prefer the parenteral administration of medications to oral or spinal route.	15 (46.9%)	23 (62.2%)	0.203
29. The first step in pain management is the administration of simple analgesic instead of opioids	24 (75.0%)	33 (89.2%)	0.121
30. In case a patients requires an opioid, I prefer pethidine to morphine	22 (68.8%)	19 (51.4%)	0.142
31. Pethidine has less long-term adverse effect compared to other opioids	17 (53.1%)	12 (32.4%)	0.082
32. Administering opioids on a P.R.N schedule reduces their adverse effects	26 (81.3%)	14 (37.8%)	0.0001*
33. An adequate dosage of morphine is the amount required to relieve patient's pain	8 (25.0%)	17 (45.9%)	0.071
34. Administering opioids on a P.R.N basis reduces their adverse effects	17 (53.1%)	15 (40.5%)	0.296
35. Absorption of morphine through GI mucosa is a slow process, therefore even when the patient is capable of eating, I do not prefer the oral route of administering morphine	3 (9.4%)	6 (16.2%)	0.4
36. Concomitant use of antidepressants increases the analgesic effect of opioids	29 (90.6%)	23 (62.2%)	0.006*
37. Evaluation of the adverse effects of opioid starts with administration of the first dose	21 (65.6%)	27 (73.0%)	0.508
38. Identifying patients that are high risk for narcotic abuse is mandatory	28 (87.5%)	35 (94.6%)	0.297
39. It is advisable to use infusion pumps to administer medications in cases of pain that is resistant to treatment	21 (81.3%)	27 (73.0%)	0.417

**Table 3.** Comparison of correct answers numbers to individual questions, on physicians' practice regarding pain management, between residents of anesthesiology and residents of other specialties

Questions on Approach	Residents of Anesthesiology	Residents of Other Specialties	p value
40. NRS specifies pain on a scale of 0 to 10	23 (71.9%)	16 (43.2%)	0.017*
41. Based on NRS pain intensity is divided as follow: 0: no pain, 1-3: mild pain, 4-7: moderate pain, and 8-10: severe pain.	27 (84.4%)	18 (48.6%)	0.002*
42. For moderate to severe pain a combination of analgesic + opioid is used	28 (87.5%)	24 (64.9%)	0.030*
43. Sympathetic nerve-related pain can be controlled by ganglion nerve block	26 (81.3%)	27 (73.0%)	0.417
44. To control mild pain, acetaminophen 10g q8h can be administered	24 (75.0%)	28 (75.7%)	0.948
45. Management of mild cancer pain does not require the administration of amitriptyline 25mg BD along with analgesics	12 (37.5%)	14 (37.8%)	0.977
46. Application of TENS is acceptable in the treatment of chronic cancer pain	11 (34.4%)	7 (18.9%)	0.145
47. patient controlled analgesics infusion is not acceptable in the pain management of cancer patients	18 (56.3%)	17 (45.9%)	0.393
48. Local perineural or intra-articular injection of anesthetics with or without cortisone is an acceptable pain control therapy	25 (78.1%)	26 (70.3%)	0.459
49. Spinal infusion pump implant cannot be used to control pain in cancer patients	13 (40.6%)	12 (32.4%)	0.480
50. Denervation is indicated in the control of pain that is refractory and resistant to treatment	28 (87.5%)	21 (56.8%)	0.005*
51. Stellate ganglion block near C6-C7 vertebrae through anatomic or image-guided techniques is indicated in the management of pain caused by breast cancer	20 (62.5%)	17 (45.9%)	0.169
52. Celiac plexus neurolysis using alcohol is indicated in the management of pain caused by pancreatic cancer	22 (68.8%)	21 (56.8%)	0.305

53. Spinal infusion of narcotics results in nausea and vomiting that can be controlled with P.R.N parenteral administration of 16mg ondansetron	27 (84.4%)	19 (51.4%)	0.004*
54. Emergence of urinary retention in parenteral or spinal injection of narcotics in cancer patients is not an indication to stop the infusion	5 (15.6%)	10 (27.0%)	0.252

**Table 4.** Average scores for residents knowledge, attitude and practice of pain management ,compared between residents of anesthesiology and residents of other specialties

	Residents of Anesthesiology	Residents of Other Specialties	p value
Attitude Score	37.1±4.9	34.7±6.8	0.106
Knowledge Score	27.2±11.8	23.3±5.6	0.076
Practice Score	12.8±3.2	9.7±4.2	0.001*

the both residents of anesthesiology and other specialties has summarized in table 4.

## Discussion

The current study has provided valuable information on knowledge, attitude and practice of various residents training in different hospitals of Shahid Beheshti Medical University, Iran.

Previous studies on the same subject have reported different degrees of inadequacy in knowledge and attitude of residents towards pain evaluation and management [20-28]. In this study, attitude and knowledge of anesthesiology residents were higher than other groups, but have not shown a statistically significant difference, while their practice level proved to be significantly higher than other specialties. Our results have shown that attitudes of residents of various specialties towards pain definition, pain classification, pain evaluation and management, and concerns for addiction was quiet similar and generally positive. In their study Yunn et al. [11] has reported that Korean clinicians had an overall positive attitude, while Ger et al. [4] and Weinstein et al. [29] have reported overall negative attitudes among physicians practicing in Taiwan and Texas, respectively. Physicians' attitude towards limitations of opioid administration has directly prevented effective pain control. Yunn et al. [11] has shown that a negative attitude towards

opioid addiction in cancer patients resulted inadequate administration of morphine for severe cancer pain. Ger et al. [4] has reported that most physicians closely monitor dosage and frequency of administration of medications in order to prevent toxicity and addiction. According to Von Roenn et al. [5], improper attitude of physicians towards opioid addiction was significant barrier to adequate cancer pain management and even more important than clinician's knowledge. Health care provider's incorrect attitude has affected proper evaluation and control of pain [27, 30-34]. Generally, residents of anesthesiology had positive attitude towards analgesics administration and dosage determination, an observation that appears to be a result of their requisite education. Providing residents with extra curriculum education would be necessary to change the attitude of residents of other specialties towards pain management. A study has reported that after a 4 hour educational workshop, a substantial change has observed in resident's attitude towards administering opioids for chronic non-cancer pain treatment [35]. According to another study, different education that residents have received during their residency training, cause specialists' different attitudes toward opioid application in chronic pain management [30]. Culture, training period, and previous experience of pain could probably affect the physicians' attitude [31].

Our results have shown that residents' knowledge of opioids, pain monitoring, route of administration, type of starting medication, type of suitable opioid for pain control, and indications of using infusion pumps were similar, and questions related to these items have answered correctly. Adequate knowledge of pharmacology among all specialties residents could be attributed to proper education in this field. Knowledge of anesthesiology residents on the subjects as adjuvant medications to increase analgesia, or the effect of opioids' route of administration on adverse effects was higher than other specialties residents, perhaps because of the availability of opioids to the anesthesiologists, and the fact that they had more experience of these medications. Stiefel et al. [32] has reported that most physicians have equipped with enough knowledge to use opioid for pain control. However, Gallagher et al. [33] physicians have not shown an adequate knowledge of analgesic dosage necessary for pain relief. In a study by Sapir et al. [10] in which physicians have asked to answer questions on physiology and pathophysiology of pain, risk of iatrogenic addiction to morphine, application of adjuvant analgesia, correct selection of medication and route of administration, opioid dosage calculation and management of adverse effects of medication, wherever the results of the study could not satisfied, pointed to the poor quality of training residents had received on the management of cancer pain [31]. In another study [34] similar results have observed. Proposed educational methods could improve physicians' knowledge in these areas including bedside training and application of case studies. Many studies on reforming medical education have recently suggested that clinical pain control practice should be included in the educational program of graduates [28, 36, 37]. In their study, Von Roenn et al. has recommended that pain control should be included in oncology and medical texts, and then pain management should become an indispensable part of everyday assessment and treatment in cancer patients.

Based on the answers given to questions on application of NRS, definition of pain severity, medical control of moderate to severe pain, control of refractory and resistant pain and spinal infusion of narcotics, residents of anesthesiology have proven that with more accurate practice towards the mentioned subjects compared to residents of other specialties; while for questions on the correct approach towards urinary retention caused by opioid

administration, indications of nerve block, local intra-articular or perineural administration of anesthetics, indications of using TENS, and control of mild pain, their practice was quiet similar [36, 37]. Inadequate assessment of pain has shown by various studies to be the main reason behind inadequate pain relief. However changing physicians' practice has still been a major concern [38-40]. Educational interventions could help change clinicians' practice [40]. Unfortunately, to date, no effective educational tool has been proposed to change physician' practice and attitude towards pain control. Throughout the world, inadequate education regarding pain assessment and control has been identified as one of the main barriers against adequate pain relief [40].

## Conclusion

According to the results of the current study and the differences which have been observed in knowledge, attitude and practice of residents towards pain control in cancer patients, it has recommended that medical schools that provided educational programs on pain management and integrate education with clinical training. We have also recommend provision of guideline booklets to help physicians to make the correct decision regarding pain therapy. It has also advised to involve multispecialty teams for palliative care of cancer patients.

Similar studies with larger sample size have needed to further evaluate this subject.

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## Conflicts of Interest

The authors declare that there are no conflicts of interest.

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