

Doctors' opinions, knowledge and attitudes towards cancer pain management in a university hospital

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ÖZET

Bir Üniversite hastanesinde doktorların kanser ağrısı tedavisi ile ilgili fikir, bilgi ve tutumlarının değerlendirilmesi

Kanser hastalarında ağrı tedavisinin günümüz tıbbındaki ilerlemelere rağmen çeşitli nedenlerle yetersiz olduğu ve bu durumun ciddi sorunlara neden olduğu bildirilmektedir. Bu çalışmada üniversite hastemizdeki dahili ve cerrahi anabilim dallarında çalışan araştırma görevlisi ve uzman doktorların kanser ağrısı tedavisi ile ilgili fikir, bilgi ve yaklaşımlarının anket yöntemiyle değerlendirilmesi amaçlanmıştır. Çalışmaya dahil edilen doktorların (n=428) %80'ine ulaşılabilmiş (n=341) ve bu doktorların da %83'ünden (n=284) yanıt alınabilmiştir (yanıt oranı %66.4). Yüzde 60'ı ağrısı olan kanser hastalarıyla haftada en az bir defa karşılaşan bu doktor grubunun, 2/3'nün tıp fakültesinde, 4/5'inin uzmanlık eğitimleri sırasında ağrı tedavisiyle ilgili eğitimi almadığı; alınan eğitim ise nicelik ve nitelik olarak kısıtlı, doktorları tatmin etmekten uzak olarak tanımlandığı görülmüştür. Doktorların ağrının yaygınlığının farkında oldukları, ancak gerçekte ve kendi çalışma koşullarında tedavi edilebilirliği konusunda kötümser oldukları gözlenmiştir. Çalışmanın sonuçları ağrı tedavisinde sorunların giderilmesi için planlanacak eğitim ve stratejik yaklaşımlara özgün hedefler göstermektedir. Doktorların çoğunluğu sağlık personeli ya da sisteminin, hastalardan kaynaklanan sorunlardan daha önemli olduğunu düşünmekte; ağrı tedavisine, kanser tedavisine göre öncelik vermekte, ancak yarısı opioid reçetesi yazarken, yasal düzenlemeler nedeniyle etkilenmekte; yaklaşık 3/4'ü ise, opioid kullanımının yüksek oranlarda psikolojik bağımlılık ya da ilaç suistimaline neden olduğuna inanmaktadır. Doktorların 2/3'ü kendini yetersiz hissetmekteyken, özellikle opioidlerle ilgili bilgi, beceri, eğitim ve deneyim gerektirebilecek bazı konularda yoğunlaşan yetersizliklerin söz konusu olduğu gözlenmiştir. Opioidler ya da adjuvan ilaçlar düşük oranlarda tanınmakta, ağrı fizyolojisiyle ilgili nosiseptif terimi ise doktorların yalnızca % 15'i tarafından doğru olarak bilinmektedir.

Anahtar Kelimeler: Kanser ağrısı tedavisi, tedavi engelleri, eğitim, opioidofobi

SUMMARY

Cancer pain management is still reported to be inadequate despite of recent developments in medicine, resulting in serious outcomes. This study is to evaluate opinions, knowledge and attitudes of doctors working and/or being trained in surgical and medical departments in our university hospital, towards cancer pain management via a questionnaire. Of all doctors approached, eighty percent could be reached and 83% of them completed the questionnaire. In this group of doctors, reportedly 60% evaluating cancer patients with pain at least once in a week, most had not have any formal education about cancer pain management during their medical school or residency training and the ones reporting "any" education, described this as "limited in quality and as hours of lessons" and were not satisfied. The results of this survey suggest specific targets for the strategic and educational projects to overcome some of the barriers against the optimal cancer pain management. Most of the doctors believe that barriers originating from health professionals and systems are more important than the ones resulting from patients and give high priority to treatment of cancer pain relative to the treatment of cancer; but still half of them report that legal regulations have some influence on opioid prescription; and almost three quarters of them believe that opioid use may cause high rates of psychological addiction or abuse. Two thirds of the doctors feel themselves "insufficient" in cancer pain management, being more prominent in tasks requiring knowledge, skill, education and experience about opioid use.

Key words: Cancer pain management, treatment barriers, education, opioidophobia.

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Introduction

Cancer is a widespread, serious health problem and is the second leading cause of death in Turkey (Türkiye İstatistik Yıllığı, 2004). Despite the current knowledge that cancer related pain can be relieved effectively in 80-95 % of patients, cancer pain management is still reported to be suboptimal and significant number of patients (14-100 %) needlessly suffer from pain (NIH, 2002; Miaskowski C, 2005). Literature cites various barriers in cancer pain management which can be classified as barriers attributable to the health professionals, health systems, or the patients themselves and their caregivers (Miaskowski C, 2005). Identification of these barriers is a prerequisite for developing educational and strategic projects to improve cancer pain management. The aim of this study was to evaluate opinions, knowledge and attitudes of doctors working and/or being trained in our university hospital, towards cancer pain and its management.

Method

The study was carried out between May and August 2006 and 428 doctors working and/or continuing residency programs in medical (Departments of Internal Medicine, Pediatrics, Physical Therapy And Rehabilitation, Radiation Oncology, Emergency Medicine and Chest Diseases) and surgical (Departments of Orthopedics and Traumatology, General Surgery, Plastic and Reconstructive Surgery, Obstetrics and Gynecology, Urology, Neurosurgery, Pediatric Surgery, Ophthalmology, Thoracic Surgery, Cardiovascular Surgery, Otorhinolaryngology, Anesthesiology and Reanimation) departments of a tertiary care university hospital in Ankara, Turkey are approached for study purposes. Some medical departments such as Cardiology, Dermatology, Neurology and Psychiatry were not included in this study since they do not have primary responsibilities for patients with cancer, despite their important roles in the treatment of cancer pain.

A standardized questionnaire was tailored for study purposes, based on questionnaires of previous studies (Von Roenn JH, 1993; Sloan PA, 1998; Sapir R, 1999; Ger LP, 2000; MacDonald N, 2002; Green CR, 2003). The questionnaire consists of two parts (6 pages). The first part is designed to identify doctors' personal and demographic features, educational status regarding cancer pain management, frequency of dealing with

patients with cancer pain, and presence of cancer in their families and their opinion about the pain management of their relatives (if any). The second part aims to evaluate doctors' opinions and attitudes towards cancer pain management, querying the status of cancer pain treatment in their priority list, perceived barriers against optimal pain management, opioid-related problems, the effect (s) of legal regulations, and their knowledge of pain epidemiology, pathophysiology, pharmacology and, also inquires their self-assessment about various problems faced in pain management.

The questionnaire was pre-tested in a similar group of doctors for relevance and comprehensibility. It took about 15-20 minutes to complete a questionnaire. The survey intended to conduct face-to-face interviews, but due to heavy workload of doctors, occasionally (n= 343) the questionnaire was distributed to be completed by themselves and were collected afterwards. It was emphasized that this study is anonymous and the data would be used only for scientific research. Participation was voluntary and oral approvals were taken from each study participant. Institutional approvals from each department were also obtained. Additional ethical committee approval was not sought.

Data analysis included frequency and percent distributions, Chi-square test was used for group comparisons. SPSS 13.0 for Windows (Statistical Package for Social Sciences; Chicago, IL, ABD) is used for statistics.. Stepwise linear regression is performed for some of the opinion, attitude and knowledge parameters to further determine possible explanatory characteristics.

Results

Eighty percent (79.7%, n=341) of the 428 included doctors could be reached and 83.3 % of all (n=284) completed the questionnaire. Sixty percent of the participating doctors were male, 68% of them were younger than 30 years of age, and 79.4% were continuing the residency program. The average time passed from their graduation from medical school was 4.5 years and average length of clinical practice in the department was 3.2 years. Distribution of medical/surgical departments was even, 53%/47% respectively.

More than half of the participants (59.5%) participated in the care of cancer patients with pain at

Table 1. The frequency of doctors attending cancer patients with pain

Frequency	(%)
Everyday	25.4
More than once a week	27.5
Once a week	6.7
Less than once a week	40.5

least once in a week (Table 1). There was no significant effect of being resident or specialist or working in medical or surgical departments on the frequency of cancer patients with pain. Half of the respondents reported that they give equal or high priority to treatment of pain when compared with treatment of cancer itself or its complications (Table 2). More than one third of the respondents (37.3%) reported that they had at least one relative with cancer and 39.8% of them reported that the management of cancer pain was insufficient for their relatives.

Table 2. The priority assigned to management of pain compared to the treatment of the cancer and its complication by doctors in their clinical practice.

	(%)
(1) Much less of priority	2.1
(2) A less priority	14.1
(3) A lesser, but almost equal, priority	29.6
(4) Equal priority	38.7
(5) A more priority	13.4
Total	97.9

*Median=4.00, Standard Deviation=0.971

About Opioids

The majority of the doctors estimated that iatrogenic psychological dependence and abuse incidence following opioid use for cancer pain management was higher than 1/1000, 73.6% and 73.3%, respectively (table 3).

While 18.7% of the doctors reported that they do not prescribe or order opioids, almost half of them (48.9%) reported that they are affected by the legal regulations on opioids (either prescribed smaller doses or number of pills or avoid

Table 3. Doctors' estimation of incidence of iatrogenic development of psychological dependence and abuse when opioids were used for cancer pain management

	Psychological Dependence (%)	Abuse (%)
(1) High (>1/10)	16.2	14.1
(2) Moderate (1/10- 1/100)	23.6	23.2
(3) Low (1/100 - 1/1000)	31.7	34.2
(4) Very low (<1/1000)	25.7	26.1
Total	97.2	97.5
Median	3.00	3.00
Standard Deviation	1.040	1.010

opioid prescription and prescribe another analgesic drug out of the regulatory schedules). However, only about one third of them recognize “doctors’ reluctance to prescribe opioids” (39.1%) or “regulatory regulations on analgesic drugs” (33.1%) among the barriers against optimal cancer pain management.

Doctors were asked to mention the four most commonly encountered opioid side effects in their clinical setting. Respiratory depression was the most commonly reported side effect with 82%; and the following were nausea and vomiting, sedation and constipation (67%, 66% and 64%, respectively). When the four most common opioid side effects that the doctors found hard to control were asked, sedation and constipation were reported to be the leading (37% each) side effects followed by nausea and vomiting and sleeping difficulty (31% and 27%).

Evaluation of Pain

Most of the doctors (77%) reported that pain severity can best be evaluated by the patient himself. However, doctors working primarily with pediatric age group (pediatricians and pediatric surgeons) significantly admit that pain severity can well be evaluated by the patients’ doctor or the ward nurse, if the patient is hospitalized (Table 4).

More than two third of the doctors (67.6) repor-

Table 4. Doctors' opinion about who evaluates the severity of the pain best.

	(%)	Doctors working primarily with pediatric patients (n)	Doctors not working primarily with pediatric patients (n)	(p)
Patient himself	77.1	83	68.8	0.02
Patient's relative	3.9	2.8	7.8	>0.05
Patient's doctor in charge	14.8	11.5	26.6	0.009
Ward nurse, if the patient is hospitalized	9.9	7.6	18.8	0.016

ted that they do not use any scale in evaluating pain severity. Visual Analogue Scale and Numeric Rating Scale were used more frequently (55% and 43 %, respectively) than Faces Scale (19%).

Cancer Pain and Education

One third of respondents (35%) reported to have formal education about cancer pain management during their medical school training and only one fifth of them during the residency training. Most of them (half and three quarters of the above groups, respectively) reported that this formal education was only of 2 hours or less:very few of them found their education sufficient (7% for medical school and 4% for residency training).

Doctors were asked the drugs they know to use in cancer pain management: majority (85%) reported that they have adequate knowledge on the potent opioids (Morphine, Pethidine or Fentanyl) but adequacy of their knowledge was less common for weak opioids (any of the Tramadol, Codeine, Codeine plus Paracetamol combinations) or adjuvant drugs (65% and 63%, respectively, Table 5). Antiemetic drugs were known only by one third of the doctors while Non-Steroidal Anti Inflammatory Drugs (NSAIDs) or Paracetamol were reported to be familiar by about three quarters (79% and 75%) of the doctors. Doctors from medical departments are more familiar with the drugs as Fentanyl, Tramadol, Codeine, Dexamethasone, Calcitonin and Pamidro-

nate than their counterparts from surgical departments for their use in cancer pain management (Table 5).

Doctors were asked to differentiate non-nociceptive pain (foot pain caused by pelvic tumor invading sacral foraminae) from examples of nociceptive pain (abdominal pain from a bowel obstruction, headache from tumor invading the base of skull or the back pain from a metastasis in a vertebral body). Most of the doctors either reported that they do not know what "nociceptive" means (42%) or could not differentiate the non-nociceptive pain from the nociceptive pain examples (44%).

Epidemiology of Cancer Pain

Important proportion of respondents admitted that more than 75% of the patients with cancer experience pain that is severe enough to warrant analgesic therapy during the advanced and terminal stages of their disease (64% and 75%, respectively). Only one fifth of the respondents (22%) believed that satisfactory pain control can be achieved for more than 75% of the cancer patients and very few of the respondents admitted that this goal was achieved in their own practice settings for cancer pain in general (4%) or for advanced (3%) and terminal stages (7%).

Self-assessment

Only 33.2%of the doctors reported that they feel

Table 5. Drugs that doctors reported to be familiar enough to use for cancer pain management

	Total (%)	Medical Departments (%)	Surgical Departments (%)
Morphine	64.80	69.2	64.4
Pethidine	50.70	50.3	54.6
Fentanyl	69.40	81.1*	61.4*
Tramadol	44.70	55.2*	36.4*
Codeine	37.70	47.9*	29.6*
Codeine + Paracetamol	36.60	40.6	34.9
NSAIDs	78.50	81.7	81.1
Paracetamol	74.60	79.6	75
Amitriptyline	23.20	25.2	22.7
Carbamazepine	11.60	11.2	12.9
Gabapentine	29.60	34.5	26.5
Methylphenidate	1.10	0	2.3
Pamidronate	10.90	18.9*	3.1*
Baclofen	6.00	7	5.3
Dexamethasone	29.20	42*	17.4*
Diazepam	37.30	38.5	38.6
Calcitonin	8.80	14*	3.8*
Valproate	6.70	5.6	8.3
Metoclopramide	29.60	25.2	36.4
Ondansetron	31.30	29.4	35.6
Any one of the potent opioids	85.2	84	86.6
Any one of the weak opioids	65.14	69.3	60.5
Any one of the adjuvant agents	63.4	68.7	57.5
Any one of the antiemetic agents	37.7	32.7	43.3

* Statistically significant difference between medical and surgical departments ($p < 0.05$)

moderately or more sufficient (3 or more on 5 point Likert Scale; 1=very insufficient, 2= insufficient, 3= moderately sufficient, 4= very sufficient, 5= extremely sufficient) for cancer pain management in general. When it comes to prevention or treatment of pain caused by diagnostic or therapeutic procedures, management of pain in advanced or terminal stages of cancer or management of opioid side effects, about one third of them reported that they feel themselves moderately sufficient but very few found themselves “very sufficient” or “extremely sufficient” (4 or 5 on 5 point Likert Scale).

In using opioids and other analgesics; majority of the doctors feel themselves insufficient about dose calculations, when switching between opioids (75%); use of “rescue doses” (71%); use of opioid infusions (63%); use of controlled-release formulation of opioids and titrating the opioids dose in patients with poor pain control (51%), while most of them evaluate themselves as moderately or more sufficient about use of nonopioid analgesics for mild pain (88%).

About specific subjects of pain management; more than half of the respondents (56%) reported that they feel themselves insufficient in management of pain caused by compression of nerves by tumor while similar proportions of them reported moderate to high index of sufficiency about management of bone pain, procedural or postoperative pain (58%, 65%, and 68%, respectively). More than three quarters of the respondents found themselves moderately or more sufficient about assessment of the cause or the severity of pain (76% and 77% respectively) whereas half of the respondents admitted that insufficient assessment of pain was a barrier against optimal cancer pain management.

Doctors’ Evaluation of Barriers Against Optimal Cancer Pain Management

Majority of the respondents did not admit patient-related problems (e.g., their reluctance to report their pain or take opioids prescribed for pain) as barriers against cancer pain management (74% and 62% as depicted in Table 6) but about half of them reported that problems attributable to health professionals or systems were the main barriers.

Table 6. Doctors' opinion about the barriers against optimal cancer pain management

	Disagree (%)	Maybe (%)	Agree (%)
Lack of access to psychological support services	14.1	20.8	63.7
Inadequate staff knowledge about pain management	12.7	30.6	55.3
Inadequate assessment of pain severity	18.7	30.3	49.6
Lack of neurodestructive procedures	16.2	35.9	46.1
Lack of access to professional methods	21.1	32.4	45.1
Lack of equipment	26.1	27.8	44.7
Doctors' reluctance to prescribe opioids	22.5	37	39.1
Excessive regulations on analgesics	30.6	34.9	33.1
Inadequate availability of analgesics	33.1	32	33.1
Nursing staff's reluctance to prescribe opioids	32.7	35.6	30.3
Patients' reluctance to take opioids	62.3	27.8	8.5
Patients' reluctance to report pain	74.3	16.5	7.7

Consultation Preferences and "The Pain Team"

When doctors were asked to report three persons whom they would consultate a patient with cancer pain, anesthetist/algologist, medical oncologist, psychiatrist and neurologist were prevailing answers and the same group of physicians was also among the ones, the respondents reported to see in a "pain team" (93%, 90%, 72%, and 45%, respectively).

Logistic Regression

Logistic regression is performed for some of the opinion, attitude and knowledge parameters to further determine the predictive ability of various factors.

Age, sex, time period from their graduation from medical school, education during either medical

school or residency training, being a resident or a specialist, working in a medical department or a surgical department, frequency of attending cancer patients with pain or the presence of cancer patient in their families were considered as potential predictors of physicians' perceived priority in treating a cancer patient (pain treatment versus treatment of cancer or its complications). Physicians working in a medical department were 2.23 times more likely (95% CI= 1.34 – 3.68) to give priority to treatment of pain than the physicians working in the surgical departments as physicians attending cancer patients with pain once a week or more were also give priority to pain treatment with the odds ratio of 2.03 (95% CI= 1.22 - 3.38).

Various statements were provided in the questionnaire regarding various aspects of cancer pain management and opioid use. Doctors were requested to check whether they agree with the given statement or disagree. Logistic regression analyses were conducted to determine statistically significant predictors of agreement with a "given" statement.

One of the statements was "estimating the incidence of iatrogenic psychological dependence on opioids is less than 1/1000". The odds of agreement with this statement was 3.05 times higher among physicians working in a medical department than their counterparts working in surgical departments (Table 7). On the other hand, physicians with a cancer patient in their family were 2 times less likely to agree with this statement compared to physicians who reportedly had no cancer patient in the family. Physicians working in the medical department were also 2.23 times more likely to estimate the incidence of iatrogenic opioid abuse as <1/1000; and 2.22 times more likely to agree that "satisfactory pain control can be achieved for more than 75% of the cancer patients" while they were 1.86 times more likely to report that they were affected by legal regulations about opioid use than their counterparts working in surgical departments (Table 7).

Physicians were asked to differentiate non-nociceptive pain among examples of pain of various sources. Physicians working in the medical departments were 4 times less likely to be truly familiar to the term "nociceptive" than their counterparts working in surgical departments while physicians graduated from medical school in pre-

Table 7. Variables with positive correlations with doctors' opinions about opioids, the success rate of cancer pain management, and truly familiarity with the term "nociceptive"

	Explanatory Variables	p
"Reporting that they were affected by legal regulations about opioid use"	"Being male"	0.011
	"Attending cancer patients with pain once a week or more"	0.023
	"Working in a medical department"	0.030
"Estimating the incidence of iatrogenic psychological dependence on opioids as < 1/1000"	"Working in a medical department"	0.000
	"Presence of cancer patient in family"	0.019
"Estimating iatrogenic opioid abuse incidence as < 1/1000"	"Being male"	0.011
	"Attending cancer patients with pain once a week or more"	0.023
	"Working in a medical department"	0.030
"Agreeing that satisfactory pain control can be achieved for more than 75% of the cancer patients"	"Working in a medical department"	0.003
"Being truly familiar to the term nociceptive"	"Working in a medical department"	0.000
	"Being graduated from medical school in previous 5 years"	0.016

vious 5 years were 2 times less likely to be truly familiar to the term "nociceptive" (Table 7).

In this study, physicians were requested to report whether they were familiar (or had used) any drug from a variety of drug groups. Gender and attendance rate for cancer patients with pain were found to be statistically significant predictors of familiarity with potent opioid drugs. Males were two times more likely to be familiar with potent opioid drugs (95% CI= 1.21-5.289 than females, whereas, the odds of familiarity with potent opioids were 3.25 (95% CI=1.53-6.91) times higher among those who attend cancer patients with pain for at least once a week compared to their counterparts with lower attendance rates. "Gender" was found to be statistically significant predictor of familiarity with weak opioids (as males

were 3.09 times more likely to be familiar) besides the other statistically significant predictors as "working in a medical department", "attending cancer patients with pain once a week or more", "giving priority to treatment of pain" and "presence of cancer patient/s in the family" (Odds ratios and Confidence Intervals are depicted at Table 8). Physicians younger than 30 years of age were found to be two times less likely to be familiar with antiemetics or adjuvant agents (Table 8). Participating physicians were grouped into two: as those, who consider him/herself sufficient in a "given" aspect of cancer pain management and those who do not feel that way. Accordingly, multivariate analyses were conducted to determine statistically significant predictors of "finding him/her self as sufficient" for a "given" modality of care. In logistic regression modeling of predic-

tors of self-sufficiency in cancer pain management in general, those working in a medical department (versus surgical department) were statistically significantly associated with feeling him/her self sufficient with an odds ratio of 3.4 (95% CI= 1.85-6.31). Similarly, the odds of self-sufficiency was 2.49 times (95% CI= 1.34-4.61) higher among males than in females. Physicians below 30 years of age were two times less likely to feel self-sufficient than their counterparts who were 30 years of age or above (95% CI= 0.240 - 0.797). Lastly, attending cancer patients with pain for at least once a week had a 1.96 times (95% CI= 1.08-3.55) higher odds of self-sufficiency in cancer pain management in general. Self-sufficiency for different aspects of cancer pain management was further analyzed, as pain management at advanced or terminal stages of cancer or management of opioid side effects. Predictors for self-sufficiency for management of pain in advanced or terminal stages of cancer were similar with the ones for cancer pain management in general as can be seen at Table 9. In the model for management of opioid side effects, the odds of self-sufficiency was 1.80 times (95% CI=1.0–3.11) higher in physicians who report “using any scale for

assessment of pain severity” and 1.69 times (95% CI=1.00–2.87) higher in physicians attending cancer patients with pain once a week or more; whereas those graduated from medical school in previous 5 years were two times (95% CI=0.30–0.86) less likely to be self-sufficient (Table 9).

Discussion

The aim of this study was to evaluate opinions, knowledge and attitudes of doctors working in or continuing their residency training in surgical and medical departments in our university hospital, towards cancer pain management, as a primary step of educational and strategic management projects for optimal pain control in this specific patient population. The results of our study indicate specific targets for future educational and strategic projects for improvement of quality of care for cancer patients with pain. The respondent doctors in our institution are aware that pain is an important and endemic problem and perceive that their education and clinical settings are insufficient for optimal cancer pain management. They are highly pessimistic about the success of pain therapy, possibly because of their lack of

Table 8. Variables with positive correlations with familiarity of the doctors' to any of the drug in each group.

Drug Groups	Explanatory Variables	p
Potents Opioids	“Attending cancer patients with pain once a week or more”	0.002
	“Being male”	0.013
	“Being male”	0.000
Weak Opioids	“Working in a medical department”	0.002
	“Attending cancer patients with pain once a week or more”	0.016
	“Giving equal or higher priority to treatment of pain compared to treatment of cancer itself or its complications”	0.020
	“Presence of cancer patient in family”	0.036
Antiemetics	“Attending cancer patients with pain once a week or more”	0.036
	“Being younger than 30 years of age”	0.049
Adjuvant Agents	“Presence of cancer patient in family”	0.001
	“Being a resident”	0.009
	“Working in a medical department”	0.035

Table 9. Variables with positive correlations with doctors' reporting themselves sufficient about cancer pain management

	Explanatory Variables	p
"Cancer pain management in general"	"Working in a medical department"	0.000
	Being younger than 30 years of age"	0.002
	"Being male"	0.005
"Prevention or treatment of pain caused by diagnostic or therapeutic procedures,"	"Attending cancer patients with pain once a week or more"	0.018
	"Being graduated from medical school in previous 5 years"	0.039
Management of pain in advanced stages of cancer"	"Attending cancer patients with pain once a week or more"	0.001
	"Working in a medical department"	0.003
	"Being younger than 30 years of age"	0.004
	"Being male"	0.042
"Management of pain in terminal stages of cancer"	"Working in a medical department"	0.001
	"Attending cancer patients with pain once a week or more"	0.002
	"Being younger than 30 years of age"	0.003
	"Being male"	0.015
"Management of opioid side effects"	"Being graduated from medical school in previous 5 years"	0.011
	"Using any scale for assessment of pain severity"	0.034
	"Attending cancer patients with pain once a week or more"	0.049

education and impressions from the current clinical practice.

Lack of formal education about cancer pain management in theory and practice pronounced by the respondents is reflected on knowledge items and exaggerated concerns about opioids. Important pharmacological agents were poorly known while prominent insufficiency was reported in the tasks requiring knowledge, skill, education and experience about opioid use. Commonly cited barriers were mostly unfamiliar and opioid myths; that "opioids would cause iatrogenic addiction or tolerance or hardly controllable side effects (Thomason TE, 1998; Ger LP, 2000; Paice JA, 2002; Yates PM, 2002) were well established. Despite exaggerated concerns about opioids' addiction or abuse potential, only one third of the respondents admitted that reluctance of opioid prescription and administration by health profes-

sionals, problems in availability of opioids or legal regulations on opioid prescription would be included in barriers against optimal cancer pain management. Majority of the doctors did not admit patients' reluctance to report their pain or taking opioid drugs prescribed for pain management as barriers, which may be explained by cultural differences, as well as the lack of awareness.

Demonstrating a well established myth, respondents put respiratory depression and sedation on the first place as the most common side effects they meet and they found hard to control. On the contrary, respiratory depression is reported to be a rare side effect especially when titrated conveniently for treatment of pain (Collins JJ, 1995; Sloan PA, 1998) and sedation or mental clouding are reported to be infrequent with chronic morphine use, while more subtle functional or cognitive

changes are under investigation, most of the patients receiving oral morphine, were even reported to drive car safely (Vainio A, 1995). Collins reported that high opioid doses which may cause respiratory depression could be required at the end of the life care (Collins JJ, 1995). It is probable that respondents might be meeting with patients at these stages of their disease and consequently, they need to manage respiratory depression commonly.

The respondents' general idea was that cancer pain was treated suboptimally, and barriers against optimal cancer pain management originating from health professionals and systems were more important than the ones resulting from patients. They reported a high degree of insufficiency about themselves but most of them exchanged the truth that they could have solved their problems in consultations with algology unit for most of the time.

When possible explanatory variables were further analyzed, the variables as "working in a medical department", "attending cancer patients with pain more than once a week", "being male" were found to be positively associated with various aspects of doctors' knowledge and attitudes while "being younger than 30 years of age" and "graduating from medical school in the previous 5 years" were found to have some negative associations.

The significant effect of the specialty on positive attitudes and knowledge about cancer pain management was reported by various other studies (Von Roenn JH, 1993; Elliott TE, 1995; Larue F, 1995; Ger LP, 2000). Those studies emphasized anesthesiologists' to be more positive and knowledgeable than oncologists, internists, and the surgeons but the number of anesthesiologists participating in our study was not enough for such a comparison. The surgeons seems to be a special target group for education.

Our study also indicated that doctors "attending cancer patients with pain more than once a week" were more likely to show positive attitudes, as giving priority to pain management and to be more confident about management problems. They tended to be more familiar with opioid or antiemetic preparations but were also more likely to report a concern about legal regulations about opioid prescriptions.

Also doctors of male gender were found to be more confident in cancer pain management, to be more likely to estimate psychological dependence or abuse potential of the opioids and also to be more familiar with opioids but more likely to report limitations of legal regulations on their opioid prescription. How this higher confidence rates would affect those male physicians' decision making on their virtual or hypothetical patients with pain would sure be further investigated as this may be an important source of treatment bias.

Younger doctors were found to be less confident about cancer pain management in general and for patients at advanced or terminal stages of cancer and also they were found to be less familiar with antiemetics and adjuvant agents for pain management. Similarly, graduating from medical school in the previous 5 years was also found to be negatively associated with confidence in managing opioid side effects and with being truly familiar to the term "nociceptive". Their lack of confidence may be related with the increased awareness of their lack of education which may lead for positive attitudes for seeking information sources as post-graduate courses. But the extent of the weakness of the formal education definitely requires urgent interest. Von Roenn reminds that rational prescribing of antibiotics rapidly followed after instruction using structured educational order forms and pocket antibiotic dosing guidelines and similar methods are likely to be successful for education in the appropriate treatment of pain (Von Roenn JH, 1993). But Wells suggests that improving knowledge and changing attitudes can be a very slow process and describes that what is possible and what is generally achieved with regards to pain control can often be very different (Wells M, 2001). Wells gives examples of studies investigating for a change over time or after specific educational efforts, most of them indicating significant change is difficult to achieve and results of a change for the better can sometimes be achieved but for some other instances although there was some improvement was reached, it was not sustained (Wells M, 2001). Significant changes in medical curricula can be considered complex or difficult but many authors commonly suggests similar shifts in education as; incorporation of principles of cancer pain management into therapeutic protocols and residency training programs, improvement of health professionals' evaluation of pain

as a vital sign during routine medical practice, and monitoring pain assessment and relief as indicators of quality of care (Max M, 1995; Bookbinder M, 1996; Weissman DE, 1997; Cleeland CS, 2000; Weinstein SM, 2000; MacDonald N, 2002; Yun YH, 2005).

The results of our study show that these suggestions are applicable for our institution, especially for improving knowledge and attitudes of doctors. Our results also target an urgent need for establishment of an effective “Pain Team” besides an institutional commitment for assessment of pain severity and its relief.

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