ATTITUDES OF ANESTHESIOLOGY RESIDENTS AND FACULTY MEMBERS TOWARDS PAIN MANAGEMENT

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Abstract

Introduction: There is a large armamentarium of pain-reducing interventions and analgesic choices available to anesthesiologists, but oligoanalgesia continues to be a large problem. We studied the attitudes of residents and faculty members of anesthesiology towards different domains of pain medicine. **Methods**: anonymous questionnaires were mailed to 68 professionals containing demographic and personal data plus 40 items in 10 domains: control, emotion, disability, solicitude, cure, opioids, harm, practice settings, training, and barriers. Internal consistency was 0.70 and the test-retest reliability was 0.80. **Results**: With 81% response rate, we observed desirable beliefs towards all domains except moderately undesirable beliefs towards the domain solicitude. Scores of residents and faculties were not significantly different. **Conclusion**: Continuing education programs on both the international guidelines, routine professional education, are needed to improve attitudes towards pain control.

Introduction

As the treating physicians for a large number of severely painful diagnoses, anesthesiologists have the opportunity to embrace a wealth of principles and interventions used in pain medicine. However, it is surprising that residents of anesthesiology have not established themselves as champions in the optimal management of pain. Oligoanalgesia continues to be a large problem and postoperative pain management in Iran is contextually complex, and may be controversial[1].

Effective pain management requires accurate knowledge, attitudes, and assessment skills. Besides the factors that hinder our effective pain management, including organizational policies, time constraints, and limited communication, the enlightened attitude of practicing physicians may play a central role for facilitation of acute pain service in our country.

In this survey we targeted a sample of Iranian residents and attending staff of anesthesiology to assess their attitudes and beliefs towards different aspects of acute and chronic pain management and their views on their current practice settings, academic training, and barriers to an effective pain management.

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Methods

Sample and setting

This cross-sectional study was approved by the Research and Ethics Committees of the anesthesiology group in Tehran University of Medical Sciences. The participants included the faculty members and residents of anesthesiology at the training hospitals of the university.

A questionnaire was enveloped for every qualified individual, labeled by his/her name, and posted to their working hospital. To increase the reliability of answers, the questionnaires were anonymous and confidential. Those who agreed to complete the questionnaire were invited to put their answer sheets into a collecting box at the central seminar room, in which all the anesthesiology faculty members and residents gather up weekly, between January and March 2007.

Questionnaire

A questionnaire was developed in two sections: The section one included a Personal Data Record (age, sex, profession, time since graduation, highest degree earned, number of years of experience as resident or faculty member, self-assessment of knowledge and experience in the treatment of patients with acute or chronic pain).

The section two contained 40 items (Table 1). Content of this section was established from a brief version of the Survey of Pain Attitudes[2] and other regional and relevant resources[1;3;4]. It was a self applied inventory where the respondents indicated their agreement with each of the statements, on a 5-point Likert scale, ranging from 0 to 4 (0=completely false, 1=almost false, 2=neither true nor false, 3=almost true, 4=completely true).

The items in the section two can be categorized into 10 domains: The domain control (items 1, 8, 11 and 13) refers to how much the respondent believes that pain can be controlled by the patient (personal control over pain). The domain emotion (items 3, 6, 9 and 16) refers to how much the health professional believes emotions influence pain (relationship between emotion and pain intensity). The domain disability (items 14 and 17) refers to how much the professional

Table 1
Section two of the questionnaire

1. Oftentimes the patient can influence the intensity of pain.
2. Whenever someone experiences pain family members should treat him better.
3. Anxiety increases pain.
4. Whenever someone experiences pain people should treat that person with care and concern.
5. It is the responsibility of those who love the person with pain to help him when he experiences pain.
6. Stress increases pain.
7. Exercise and movement are good for people with pain.
8. Pain can be reduced through concentration or relaxation.
9. Depression increases pain.
10. Exercise can worsen pain.
11. Pain can be controlled by altering thoughts.
12. Oftentimes, when someone is in pain, that person does not get enough attention.
13. One can certainly learn to deal with pain.
14. Pain does not keep one from leading a physically active life.
15. Physical pain will never be cured.
16. There is a strong link between emotions and the intensity of pain.
17. A person with pain can do almost everything he did before the pain.
18. If a person with pain does not exercise regularly, the pain will continue to worsen.
19. Exercise can reduce the intensity of pain.
20. There is no medical procedure to alleviate pain.
21. Management of pain has a low priority for chronic pain patients.
22. Acute pain is adequately managed in our daily practice.
23. Training for pain management in medical school and in residency is not satisfactory.
24. Pain has to have a diagnosed physical component to be treated.
25. Inability to access professionals who practice specialized methods in this field is a barrier to good pain management.
26. Inadequate staff knowledge of pain management is a barrier to good pain management.
27. Opioids are adequately utilized in the treatment of acute pain.
28. International guidelines should be disseminated during active continuing education programs.
29. The primary goal of treatment is improvement in symptoms with less importance of functional improvement.
30. Regulatory pressure has not significant impact on use of opioids in treatment of chronic pain.
31. Prescribing opioids should be discouraged due to risk of abuse.
32. Department of anesthesiology is the only responsible for acute pain service.
33. Routine professional education helps improvement in pain control.
34. Postoperative pain management needs not to be shared between surgeons and anesthesiologists.
35. Acute pain service is not a specialized and expert teamwork.
36. Tolerance and dependence do not limit usage of opioids.
37. Opioids should only be prescribed in chronic pain.
38. Expert pain specialists have got most of their expertise by their own.
39. Patients with chronic pain usually receive satisfactory care.
40. Special educational courses in pain management are mandatory for anesthesiology residents.

believes that disability is due to pain (pain as a factor of disability). The domain solicitude (items 2, 4, 5 and 12) refers to how much the professional believes that others, especially family members, should be more attentive toward the person who experiences pain (attentiveness of others toward the person with pain). The domain cure (items 15, 20, 21 and 24) refers to how much the health professional believes in a medical cure for chronic pain (cure through medical means). The domain opioids (items 27, 29, 31, 36 and 37) refers to how much the respondent stays away from prescription of opioids for acute and chronic pain. The domain harm (items 7, 10, 18 and 19) refers to how much the professional believes that pain means injury and that physical exercise should be avoided. The domain practice settings (items 22, 30, 32, 34, 35, and 39) refers to how much the professional believes in the necessity of acute pain service and shortages of pain management at their hospital. The domain training (items 23, 28, 33, 38, and 40) refers to how much the health professional believes in the need for enhanced education in pain medicine. The domain barriers (items 25 and 26) refers to what the health professional believes as barriers to good pain management.

Analysis of the inventory was performed for each domain. The score for each domain was calculated by adding together the points from the responses to each item, and dividing this number by the total number of items answered. The final average score from each scale varied from 0 to 4. There are no cutoff points, right or wrong answers and the scores from the domains are not added together. The responses deemed more "desirable" were labeled as such because they are considered to be hypothetically more adaptive by the authors. The desirable scores for each domain are: control=4, emotion=4, disability=0, harm=0, solicitude=0, cure=0, opioids=0, practice settings=0, training=4, barriers=4, and 2 are neutral points[2].

The scores were classified according to following the cutoff points.

	Score range	
	4	0
highly desirable	>3	≤1
moderately desirable	>2 - 3	>1 – 2
moderately undesirable	>1 - 2	>2 – 3
highly undesirable	≤1	>3

Content validity was established by comparing the scores of five residents and five faculty members of anesthesiology at various levels of pain management expertise at another university of medicine in Tehran. Internal consistency was reported at 0.70 and the test-retest reliability as 0.80.

Data analysis

We started with the hypothesis that the characteristics of health professionals can influence their beliefs. The data were analyzed using SPSS 15.0. A significance level of P = .05 was used. This was done to reduce the probability of identifying differences erroneously.

Results

A total of 37 residents and 18 academic staffs filled out 55 questionnaires out of the 68 mailed surveys (81% response rate). The characterization of the sample is shown in Table 2 and the descriptive statistics of the respondents' beliefs are shown in Table

Table 2
Characterization of sample (n=52)

Characteristics	Residents	Faculty members
Sex, n (%)		
Female	6 (11)	5 (10)
Male	28 (54)	13 (25)
Age		
mean (SD)	33 (2.3)	46 (6)
median (range)	31 (28-42)	42 (38-66)
Time since graduation		
mean (SD)	5 (1.5)	14 (6)
median (range)	4 (1-12)	10 (1-36)
Self-evaluation of experience with chronic pain, n (%)		
Little experience	23 (44)	2 (4)
Average experience	11 (21)	12 (23)
Extensive experience	0 (0)	4 (8)
Number of pain patients seen per month, n (%)		
From 1 to 5 patients	8 (15)	1 (2)
From 6 to 10	6 (12)	6 (12)
From 11 to 20	12 (23)	4 (8)
21 or more	8 (15)	7 (13)

Table 3
Descriptive statistics of the respondents' beliefs (n=55)

Domain	Desirable score	Mean	Median	Standard deviation	Minimum	Maximum
Control	4	3.1	3.1	0.24	1.0	4.0
Emotion	4	3.7	3.7	0.09	1.75	4.0
Disability	0	1.6	1.6	0.89	0	4.0
Solicitude	0	2.4	2.5	0.26	0.5	4.0
Cure	0	0.5	0.5	0.37	0	3.25
Opioids	0	0.8	0.5	0.74	0	3.5
Harm	0	1.1	1.1	0.53	0	4.0
Practice settings	0	0.9	0.7	0.68	0	3.75
Training	4	3.7	3.9	0.46	1.0	4.0
Barriers	4	3.6	3.6	0.46	1.25	4.0

3. The professionals presented "highly desirable" attitudes for the domains control, emotion, cure, opioids, practice settings, training, and barriers. Meanwhile they revealed "moderately desirable" beliefs towards the domains disability and harm, and "moderately undesirable" beliefs towards the domain solicitude, as shown in Table 3. The response frequency for the 40 items of the 10 domains in the questionnaire is presented in Table 4. There were no instances of significant difference between residents and faculty members in their scores for the ten domains of the section two.

Discussion

All the professionals evaluated (n=55) have academic education; 18 (35%) of them are anesthesiologist with varying years of experience as attending staff; and 37 (65%) of them are being trained as residents of the first to the fourth year after they had already spent 5.5 years of education in medicine, 1.5 years of internship at educational hospitals, and at least two years of practice thereafter before beginning residency. One would suppose that their beliefs on pain would be entirely appropriate and that the most qualified and experienced would present the most desirable beliefs, but this was not always the case.

Most of the respondents demonstrated desirable beliefs on the influence of emotion on pain, on the possibility of personal control over pain and that worsening pain is not always related to a worsening injury; and a great number believed that pain and disability are not related. However, 55% believed that solicitude is desirable and a significant portion believed that exercise can worsen pain. Besides a general agreement that opioids are underutilized in the treatment of acute pain, 38% undesirably declared that prescription of opioids should be discouraged due to risk of abuse. Almost all of these anesthesiologists believe that postoperative pain management should be shared with surgeons; while 37% voted for delegation of the responsibility of acute pain service only to the department of anesthesiology which is undesirable (Tables 3 and 4). Desirable and undesirable mean these beliefs are more or less functional/adaptive, aiding or not in recovery and not "right" or "wrong" as such. Less functional/adaptive beliefs contribute to disability and unrealistic expectations[4]. Undesirable beliefs and clinician's biases may ultimately impact accurate assessment and optimal management of pain[5].

In the domain control, 78% of the responses were in the desirable range (personal control over pain is possible), which shows that a portion (22%) of those interviewed still has doubts about this belief. Pain is made up of both sensation and emotion, and modulated by the interaction between the harmful stimulus, cognitive and emotional factors such as mood, beliefs, expectations, previous experience, attitudes, knowledge and the symbolic meaning attributed to the complaint[6]. Not believing that the patient is capable

Table 4
Response frequency by item and domain

Item	Domain/statement	Completely false (%)	Almost false (%)	Neither true nor false (%)	Almost true (%)	Completely true (%)
	Control					
1	Oftentimes the patient can influence the intensity of pain	0	7	9	38	46
8	Pain can be reduced through concentration or relaxation	0	2	9	40	49
11	Pain can be controlled by altering thoughts	0	7	20	35	38
13	One can certainly learn to deal with pain	7	9	17	29	38
	Emotion					
3	Anxiety increases pain	2	0	0	14	84
6	Stress increases pain	0	0	5	15	80
9	Depression increases pain	0	2	7	18	73
16	There is a strong link between emotions and the intensity of pain	2	0	9	14	75
	Disability					
14	Pain does not keep one from leading a physically active life	44	31	11	11	3
17	A person with pain can do almost everything he did before the pain	18	13	16	31	22
	Solicitude					
2	Whenever someone experiences pain, family members should treat him better	13	18	25	33	11
4	Whenever someone experiences pain, people should treat that person with care and concern	9	9	22	38	22
5	It is the responsibility of those who love the person with pain, to help him when he experiences pain	9	11	14	31	35
12	Oftentimes, when someone is in pain, that person needs to receive more attention	13	11	23	31	22
	Cure					
15	Physical pain will never be cured	53	31	13	3	0
20	There is no medical procedure to alleviate pain	76	15	7	2	0
21	Management of pain has a low priority for chronic pain patients	89	9	2	0	0
24	Pain has to have a diagnosed physical component to be treated	46	25	20	5	4
	Opioids					
27	Opioids are adequately utilized in the treatment of acute pain	78	15	5	2	0
29	The primary goal of treatment is improvement in symptoms with less importance of functional improvement	49	20	11	9	11
31	Prescribing opioids should be discouraged due to risk of abuse	13	27	22	25	13
36	Tolerance and dependence do not limit usage of opioids	82	14	4	0	0
37	Opioids should only be prescribed in chronic pain	75	14	2	4	5
	Harm					
7	Exercise and movement are good for those with pain	63	24	9	2	2
10	Exercise can worsen pain	18	27	22	22	11
18	If a person with pain does not exercise regularly, the pain will continue to worsen	31	31	24	14	0
19	Exercise can reduce the intensity of pain	47	29	9	11	4
	Practice settings					
22	Acute pain is adequately managed in our daily practice	91	5	4	0	0
30	Regulatory pressure has not significant impact on use of opioids in treatment of chronic pain	54	22	18	4	2
32	Department of anesthesiology is the only responsible for acute pain service	24	24	15	24	13
34	Postoperative pain management needs not to be shared between surgeons and anesthesiologists	67	27	6	0	0
35	Acute pain service is not a specialized and expert teamwork	58	29	7	4	2
39	Patients with chronic pain usually receive satisfactory care	22	34	13	22	9
	Training					
23	Training for pain management in medical school and in residency is not satisfactory	0	2	3	33	62
28	International guidelines should be disseminated during active continuing education programs	0	0	0	2	98
33	Routine professional education helps improvement in pain control	0	0	2	7	91
38	Expert pain specialists have got most of their expertise by their own practice	11	11	7	18	53
40	Special educational courses in pain management are mandatory for anesthesiology residents	0	0	0	0	100
	Barriers					
25	Inability to access professionals who practice specialized methods in this field is a barrier to good pain management	4	7	5	26	58
26	Inadequate staff knowledge of pain management is a barrier to good pain management	0	0	2	4	94

of controlling/influencing his own pain may dissuade professionals from teaching self-care strategies thus increasing the feeling of helplessness and disability[7]. In the domain emotion, 91% of the responses were "almost true" or "completely true" for emotions influence pain, which is desirable.

Considering that emotion and perception of control are cognitive processes, it was expected that the mean scores for these beliefs would be similar. Greater acceptance of pain and emotion is perhaps related to greater verbalization by the patient of this fact or a way of blaming the patient for therapeutic failures. It is common for professionals to state, in an almost condescending manner, that "emotional problems" are responsible for exacerbating pain, ignoring the fact that fear, depression, anxiety, stress, interfere in the mechanism for perceiving painful phenomena[7].

In the domain disability, 33% of the responses showed that pain, on various levels, is not the cause of disability. This belief may be related to excessive dismissal from work, family dependence and withdrawal of the patient. Complaints of disability vary greatly between individuals and appear to be a culturally learned attitude and behavior. Disability can be inadvertently reinforced by friends, family members, colleagues from work[8;9] and health professionals[10]. When the health professional has appropriate beliefs and knowledge on the control of pain and not necessarily a cure, on dysfunction and not necessarily injury, on pain and not necessarily disability, he can advise patients to enroll in educational and rehabilitation programs. Rehabilitation programs are costly and require time, both for the patient and healthcare provider. Sometimes it is more "advantageous" for both to opt for invasive treatment. These treatments, however, can add to frustration, worsen disability, lead to seeking out professionals that promise "magic" treatments and expose the patient to increasingly difficult situations.

With regard to the domain harm, 67.5% of the responses show an understanding that pain is not related to a "physical injury". The traditional biomedical model that focuses the treatment of chronic pain on the existence of physical injury is still the most widely understood and accepted by health professionals[11]. The treatment of chronic pain requires an understanding of how physical, psychological and social factors affect the neurophysiology of nociception, of the perception of pain, of the modulation of pain, of suffering and the behavior of pain[6;7;11].

With regard to the domain solicitude, most of the responses indicated a belief that solicitude is desirable, which is not always true. Attention and encouragement are almost universally accepted as having positive effects on suffering and adaptation to disability by chronic patients. However, if excessive, it can reinforce and encourage an increased occurrence of pain behavior, greater disability and difficulty in adjusting. Solicitude is acceptable for acute pain, because of its short duration, the need for rest and immobilization due to the presence of injury, but this is not the case for chronic pain. Health professionals that believe that solicitude is highly desirable may be encouraging dependence and disability[4].

Our respondents' attitude towards opioids in the treatment of chronic pain resemble the American Pain Society (APS) survey on its member pain specialists in 1992[12]. First, most surveyed stated that they did treat at least some patients with chronic pain with opioids, but there were reservations expressed about this practice. Second, there was consensus that opioids are underutilized, and that fear of addiction is overemphasized, but there was concern expressed about dependence and tolerance. Third, there was strong agreement that the primary goal of therapy should be functional improvement.

The majority (98%) of physicians recognized the importance of pain management priority and 76% of the physicians acknowledged the problem of inadequate pain management in their settings. Most cited inability to access professionals who practice specialized methods in this field, and inadequate staff knowledge of pain management as barriers to good pain management. A large majority of them expressed dissatisfaction with their training for pain management in medical school and in residency.

It seems that a culture of suspicion, limited research, diverse and often difficult patient populations, and challenging clinical environments have plagued our physicians before special training in their approach to pain management. Pain management is deficiently dealt with in our medical school curricula, and the treatment of pain is almost never given a format for

formal teaching to medical students. This lack of education was demonstrated in a survey of medical students as freshmen and then repeated as seniors. Weinstein et al[13] found that prejudice toward the use of opioid analgesics had increased during the 4 years of medical school training. Opiophobia (prejudice against the use of opioid analgesics) is used to describe a barrier to the use and prescription of narcotic analgesics. Regulatory and licensing concerns, suspicion of ‘‘drug-seeking’’ behavior, concern for addiction or dependence, and lack of follow-up or continuity of care produce a culture in which adequate treatment of pain is difficult to achieve[14]. Weinstein and colleagues[15] found that working physicians have significant opiophobia, display lack of knowledge about pain and its treatment, and have negative views about patients who have chronic pain.

Opportunities to affect change in attitude and improve treatment of pain should focus on medical students and residency training programs. On a positive note, residents' beliefs and concerns about using opioids for chronic noncancer pain changed after participating in a 4-hour interactive workshop[16]. This training-induced change in attitude has already been revealed in another way within the National Physician Survey by Turk et al in 1994. They showed that specialists have different attitudes towards prescribing opioids for chronic pain based on their specialty training; surgeons were most concerned and rheumatologists were least concerned[17]. Different cultural ethnicity, years in training, and previous self-experience of pain also affect individual’s pain beliefs[18]. Our survey resembles much to a similar study by Garcia and colleagues[4] in the methods, although we had dealt more with acute pain service and we had extended domains on training, opioid prescription, practice settings, and barriers to effective pain management. However, we observed more desirable responses overall, which may be justified by our specialist and academic sample with more clinical pain practice. This is another instance in which appropriate training has led to inline improvement in beliefs and attitudes. Interestingly, we observed no significant difference between the attitudes of residents and their attending staff towards the ten domains in our survey. This is consistent with the evidence that doctors' specialty, but not demographic factors and level of education, impacts their attitudes and beliefs[19].

Changing the practice patterns of established physicians remains extremely difficult. Nationwide distribution and publication of practice guidelines for the treatment of back pain have shown poor results in changing behavior among working physicians[20]. As an example, Werner and colleagues showed that a low back pain (LBP) mass media campaign with educational initiatives aimed at healthcare providers did not result in important improvement in LBP beliefs of providers exposed to the campaign[21]. On the contrary, systematic educational intervention strategies may change behavior of practicing physicians as described by Ammendolia and colleagues[22]. They showed a significant reduction in ordering radiography for LBP by chiropractors after an evidence-based educational intervention. Unfortunately, effective training tools to change attitudes about pain and pain control among practicing physicians have yet to be described[14].

Summary

Changing the attitudes of anesthesiologists about pain assessment and management will require attention in several areas of research, education and training. A combination of active continuing education programs and dissemination of international guidelines and routine professional education are needed to bring about significant improvement in attitudes towards pain medicine.

References

1. Rejeh N, Ahmadi F, Mohammadi E, Anoosheh M, Kazemnejad A: Barriers to, and facilitators of post-operative pain management in Iranian nursing: a qualitative research study. *Int Nurs Rev*; 2008 Dec, 55(4):468-75.
2. Tait R, Chibnall J: Developmental of a brief version of the Survey of Pain Attitudes. *Pain*; 1997, 70:229-35.
3. Eftekhar Z, Mohaghegh MA, Yarandi F, Eghtesadi-Araghi P, Moosavi-Jarahi A, Gilani MM, Tabatabeefar M, Toogeh G, Tahmasebi M: Knowledge and attitudes of physicians in Iran with regard to chronic cancer pain. *Asian Pac J Cancer Prev;* 2007 Jul, 8(3):383-6.
4. Garcia DM, Mattos-Pimenta CA: Pain centers professionals' beliefs on non-cancer chronic pain. *Arq Neuropsiquiatr;* 2008 Jun, 66(2A):221-8.
5. Branch MA, Carlson CR, Okeson JP: Influence of biased clinician statements on patient report of referred pain. *J Orofac Pain;* 2000, 14(2):120-7.
6. Melzak R, Wall P: Pain mechanisms: a new theory. *Science*; 1965, 50:971-9.
7. Moseley L: Unraveling the barriers to reconceptualization of the problem in chronic pain: the actual and perceived ability of patients and health professionals to understand the neurophysiology. *J Pain*; 2003, 4:184-9.
8. Rainville J, Carlson N, Polatin P, Gatchel R, Indahl A: Exploration of physicians' recommendations for activities in chronic low back pain. *Spine*; 2000, 25:2210-20.
9. Latimer J, Maher C, Refshauge K: The attitudes and beliefs of physiotherapy students to chronic back pain. *Clin J Pain*; 2004 Jan, 20(1):45-50.
10. Daykin AR, Richardson B: Physiotherapists' pain beliefs and their influence on the management of patients with chronic low back pain. *Spine*; 2004 Apr 1, 29(7):783-95.
11. Shaw SM: Nursing and supporting patients with chronic pain. *Nurs Stand;* 2006 Jan 18, 20(19):60-5.
12. Turk D, Brody M: What positions do APS's physician members take on chronic opioid therapy? *APS Bull*; 1992, 2:1-5.
13. Weinstein SM, Laux LF, Thornby JI, Lorimor RJ, Hill CS, JR, Thorpe DM, Merrill JM: Medical students' attitudes toward pain and the use of opioid analgesics: implications for changing medical school curriculum. *South Med J;* 2000 May, 93(5):472-8.
14. Fosnocht DE, Swanson ER, Barton ED: Changing attitudes about pain and pain control in emergency medicine. *Emerg Med Clin North Am*; 2005 May, 23(2):297-306.
15. Weinstein SM, Laux LF, Thornby JI, Lorimor RJ, Hill CS, JR, Thorpe DM, Merrill JM: Physicians' attitudes toward pain and the use of opioid analgesics: results of a survey from the Texas Cancer Pain Initiative. *South Med J;* 2000 May, 93(5):479-87.
16. Roth CS, Burgess DJ: Changing residents' beliefs and concerns about treating chronic noncancer pain with opioids: evaluation of a pilot workshop. *Pain Med*; 2008 Oct, 9(7):890-902.
17. Turk D, Brody O: Physicians' attitudes and practices regarding long-term prescribing of opioids for non-cancer pain. *Pain*; 1994, 59:201-8.
18. Burnett A, Sze CC, Tam SM, Yeung KM, Leong M, Wang WT, Tan BK, O'sullivan P. A Cross-cultural Study of the Back Pain Beliefs of Female Undergraduate Healthcare Students. *Clin J Pain;* 2009 Jan, 25(1):20-8.
19. Fullen BM, Baxter GD, O'Donovan BG, Doody C, Daly L, Hurley DA: Doctors' attitudes and beliefs regarding acute low back pain management: A systematic review. *Pain*; 2008 Jun, 136(3):388-96.
20 Di Iorio D, Henley E, Doughty A: A survey of primary care physician practice patterns and adherence to acute low back problem guidelines. *Arch Fam Med*; 2000, 9(10):1015-21.
21. Werner EL, Gross DP, Lie SA, Ihlebaek C: Healthcare provider back pain beliefs unaffected by a media campaign. *Scand J Prim Health Care;* 2008, 26(1):50-6.
22. Ammendolia C, Hogg-Johnson S, Pennick V, Glazier R, Bombardier C: Implementing evidence-based guidelines for radiography in acute low back pain: a pilot study in a chiropractic community. *J Manipulative Physiol Ther;* 2004 Mar, 27(3):170-9.