



Pain Perception Differences Between Patients and Physicians: A Pain Severity Study in Patients with Low Back Pain

Hastalar ve Hekimler Arasındaki Ağrı Algısı Farklılıkları: Bel Ağrısı Olan Hastalarda Ağrı Şiddeti Çalışması

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ABSTRACT

AIM: Perception, definition and tolerance of pain vary individually because of its subjective character. This study aimed to determine the perception differences between patients with mechanical low back pain (MLBP) and their physicians regarding the assessments of the patients' pain severity.

MATERIAL and METHODS: 181 patients with MLBP and 2 physicians took part in the study. Before the initial examination, the patients filled out a questionnaire consisting of demographic data, pain characteristics, Modified Oswestry Disability Questionnaire (MODQ) and Visual Analog Scale (VAS). The patients' forms were concealed from the physicians. Then physicians examined their patients and rated their pain severity using a different VAS form.

RESULTS: The mean age of the patients was 36.2±12.3 years. 64.6% (n:117) were female, 71.9% (n:13) were highly educated and 57.1% (n:103) were obese. Physicians always rated the patients' pain severity significantly lower than the patients rated their own pain regardless of all demographic data (p<0.001). Correlation between the VAS scores of patients and physicians were detected as 0.41 (p<0.001) and the power of the study was calculated as 91.5%. The mean MODQ score of the patients was calculated as 54.4±21.1. Reliability of the questions in MODQ was calculated as alpha:0.87. A moderate correlation between VAS ratings and MODQ was observed (r:0.52, p<0.001).

CONCLUSION: As a main factor directly affecting many outcomes, good communication between patient and physician, is essential to assess the patients' pain more accurately.

KEYWORDS: Modified Oswestry disability questionnaire, Pain severity, Pain perception differences, Visual analog scale

ÖZ

AMAÇ: Ağrı algısı, ağrının tanımı ve toleransı, subjektif karakteri nedeniyle, kişiden kişiye değişiklik gösterir. Çalışmanın amacı, hastaların ağrı şiddetini değerlendirmeleri konusunda, mekanik bel ağrısı (MBA) olan hastalar ile doktorları arasındaki algı farklılıklarını ortaya koymaktır.

YÖNTEM ve GEREÇLER: Çalışmada, MBA'sı olan 181 hasta ve 2 hekim yer almaktadır. Muayeneye başlamadan önce, demografik bilgiler, ağrı karakterleri, Modifiye Oswestry Özürlülük Anketi (MOÖA) ve Vizüel Analog Skala (VAS)'dan oluşan bir anket formu, hastalar tarafından dolduruldu. Hastaların formları, doktorlardan gizlendi. Sonra doktorlar, hastalarını muayene ettiler ve farklı bir VAS formu doldurarak hastalarının ağrı şiddetini puanladılar.

BULGULAR: Hastaların; ortalama yaşı 36,2±12,3, %64,6'sı (n:117) kadın, %71,9'u (n:13) yüksek öğrenim görmüş ve %71'i (n:103) obez idi. Demografik bilgilerden bağımsız olarak, hekimler hastalarının ağrı şiddetini, hastaların kendi ağrı şiddetlerini puanladıklarından, her seferinde belirgin olarak daha düşük puanladılar (p<0,001). Hastaların ve hekimlerin VAS skoru arasındaki oran 0,41 (p<0,001) olarak saptandı ve bu çalışmanın gücü %91,5 olarak hesaplandı. Hastaların ortalama puanı MOÖA'ya göre 54,4±21,1 idi. MOÖA'daki soruların güvenilirliği alpha:0,87 olarak hesaplandı. VAS puanları ve MOÖA arasındaki ortalama oranın (r:0,52, p<0,001) olduğu görüldü.

SONUÇ: Hastalar ve hekimler arasındaki doğru iletişim, hem ortaya çıkan pek çok sonucu etkilemekte, hem de hastaların ağrılarını daha doğru değerlendirmek için temel bir faktördür.

ANAHTAR SÖZCÜKLER: Modifiye Oswestry özürlülük anketi, Ağrı şiddeti, Ağrı algısı farklılıkları, Vizüel analog skala

INTRODUCTION

The International Association for the Study of Pain (IASP) has defined pain as an unpleasant sensory and emotional experience, usually associated with actual or potential tissue damage (26). The perception, definition and tolerance of pain may show great individual variation (3). Pain is always subjective and influenced by many different factors such as ethnic and sociocultural differences, pain-related beliefs, and the education and cognitive awareness of the patients. Therefore, it cannot be easily and objectively assessed by the physicians (7). Pain may also affect the social and emotional well-being of the individual via impairments in his or her daily life activities. In patients exhibiting lower pain threshold such as cancer, osteoarthritis, joint diseases and chronic low back pain, higher doses of analgesics and prolonged duration of analgesia may be needed to provide adequate pain management. The lack of adequate pain assessment and the presence of disagreement in pain severity may result in undertreated and unhappy patients (22).

Many studies have examined the patient-physician disagreement about the patients' pain severity and it has been noted that there are many important physician-related factors that may play critical role in adequate pain assessment such as physician experiences and education regarding pain assessment, patient-physician communication and thorough questioning of the patient (10). Since pain is subjective and there is no specific laboratory test to analyse the pain intensity and severity, there may be significant differences between the perceptions of the patients and physicians regarding pain severity (21). Effective management of the pain depends on its appropriate assessment. This includes a comprehensive evaluation of the patient's pain, symptoms and clinical history with reasonable laboratory tests. Valid and reliable pain assessment tools should also be used to quantify the severity of the patient's pain (3,19).

Pain has different meanings for both patients and physicians. In the physician's opinion, pain is a symptom that may be a single sign of an organic pathology or an underlying medical condition. Physicians perform a number of diagnostic procedures to identify this situation. However, for patients, pain is a personal experience that cannot be easily expressed to others and understood by others, and something emotional that has great impacts on his or her quality of life, mainly because of its complex and individually based nature (16,17). In the assessment of pain, perception of patient's pain severity and effects the pain on physical functioning in daily life (ie., inability to fall asleep at night) should be considered (11). Ultimately, accurate assessment of the patient's pain severity has critical importance to obtain clinical data regarding the underlying cause and patient's presenting needs to provide effective treatment.

Low back pain accounts for a large proportion of the patients encountered in primary care settings and the most common cause of low back pain is mechanical low back pain (MLBP) (15). MLBP is a general term that refers to any type

back pain caused by strain on muscles of vertebral column due to excessive use and abnormal stress (14). Though it is also common in children and adolescents, MLBP has high prevalence rates in all ages (6). Most people who experience activity-limiting MLBP continue to have recurrent episodes. Work related low back disorders are one of the significant and increasing problems worldwide. Additionally this condition causes considerable economic and social impacts (8).

In this study, we aimed to determine the perception differences between patients and physicians regarding the severity of the patient's pain and grade the differences and similarities with standard scales.

MATERIAL and METHODS

Study Design

This prospective study based on self report questionnaire and clinical evaluation of the physicians took place in a Neurosurgery Department in Ankara, Turkey.

Participants

All participants were selected from the patients who presented at the neurosurgery department with MLBP. They were all volunteer adults, 18 years and older, speaking Turkish language well enough to follow the instructions and understand the questions. An informed consent form was signed by all patients included in the study. Patients who were receiving concomitant medications or those with acute or chronic comorbidities were excluded along with pregnant patients. Two physicians (both male) participated in the study work-up.

Patient Data

A questionnaire form consisting of three parts was prepared for the study. The first part had demographic data including age, height, weight, sex, education status, smoking habits and questions about the characteristics of MLBP such as duration of pain, presence of morning stiffness, factors increasing or decreasing pain during daily life and relationship between pain and exercise or rest. The second part was VAS to rate pain severity and finally the last part was Modified Oswestry Disability Questionnaire (MODQ) to determine the impact of pain on daily life.

Patients filled out the form under the instructions of a study nurse before initial examination. The study physicians were blinded to the form. Consequently, the physician examined the patient and rated his or her pain severity using a different VAS form while blinded to the patient. During the whole study, two physicians examined and rated a total of 181 patients individually. Meanwhile, 31 randomly selected patients were rated by two physicians regarding their pain severity in order to detect the consistency between the two physicians in rating pain severity.

Instrumentation

The second part of our questionnaire form was VAS. It is

a tool widely used to measure pain. This simple validated unidimensional measurement instrument does not include verbal language to estimate the pain severity (20). VAS is usually a horizontal line, 100 mm in length, anchored by word descriptors at each end with 'No Pain' on the left side and 'Very Severe or Unbearable Pain' on the right side. The patient marks on the line point that represents his or her current pain. VAS score is determined by measuring in millimeters from the left side to the point that the patient marks.

The third part of our questionnaire form was MODQ. This self report questionnaire has been designed by Fairbank et al. to provide information for physician about how the back pain has affected a patient's ability in daily life (9). Validation of the Turkish version of the Oswestry Disability Questionnaire was developed by Yakut et al. (27). This questionnaire includes 10 sections of questions that evaluate the activities of daily living. These sections are pain intensity, personal care, lifting, walking, sitting, standing, sleeping, social life, travelling and changing degree of pain. Each section has 6 possible answers, and statement 1 is graded as 0 points while statement 6 is graded as 5 points. After all 10 sections are completed, the patient score is calculated as follows: patient score: (total scored / total possible score) x100.

Interpretation of the scores are as follows; 0-20% minimal disability, 21-40% moderate disability, 41-60% severe disability, 61-80% crippled and 81-100% as either bed bound or exaggerating their symptoms (5).

Statistical Analyses

Data were analysed with SPSS for Windows ver.15.00 (SPSS Inc.Chicago, IL, USA). In all descriptive analyses, numerical variables were given as numbers and percent measurement variables as mean±standart deviation. The distributions of continuous samples were analyzed using the Kolmogrov-Smirnov, goodness of fit test. The means between related groups were compared with paired samples t test and the means between unrelated groups were compared using the independent samples t test. Correlations between the variables were analysed by Pearson's correlation analysis. Cronbach's alpha coefficient was performed to estimate the reliability of physicians' VAS ratings. p values <0.05 were defined as statistically significant.

RESULTS

A total of 181 patients (117 female, 64 male) were included in the study. 31 of the patients were rated by two different physicians. The mean age (\pm SD) of the patients was 36.22 ± 12.28 years. Hundred and thirty (71.9%) were in the highly educated group and 104 (57.1%) were in the overweight-obese group. There was no significant difference between the mean values of physicians and patients. Physicians always graded the pain of patients significantly lower than the patients graded their own pain ($p < 0.001$) (Table I). When the subgroups of patients such as gender, education status, body mass index, working status were compared with the mean VAS ratings, there was no significant difference.

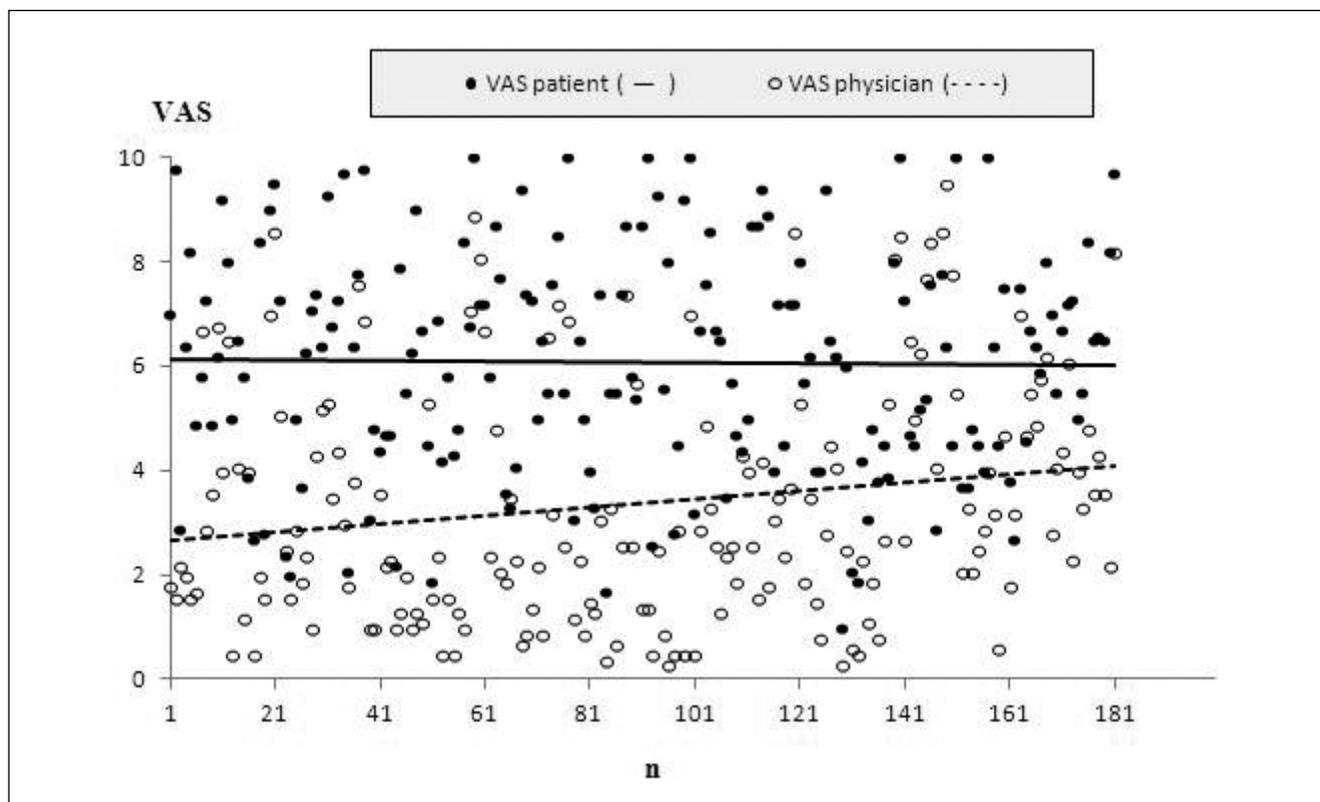


Figure 1: Comparison of VAS ratings of physicians and patients.

Table I: Comparison of Mean VAS Ratings with Demographic Characteristics of the Patients

Demographic Characteristics			VAS		
			n (%)	Mean-SD	p
Sex	Male	Patient	117 (64.6)	6.1±2.1	<0.001
		Physician		3.5±2.4	
	Female	Patient	64 (35.4)	6.1±2.3	<0.001
		Physician		3.1±2.0	
Educational status	Elementary	Patient	51 (28.1)	6.4±2.4	<0.001
		Physician		3.2±2.1	
	High	Patient	54 (29.9)	6.1±2.0	
		Physician		3.5±2.4	
University	Patient	76 (42.0)	5.8±2.0		
	Physician		3.3±2.2		
Body mass index (kg/m ²)	Normal	Patient	78 (43.1)	6.0±2.2	<0.001
		Physician		3.0±2.3	
	Overweight	Patient	77 (42.5)	6.3±2.1	
		Physician		3.7±2.2	
	Obese	Patient	26 (14.4)	5.9±1.9	
		Physician		3.6±2.2	
Working status	Yes	Patient	111 (61.3)	6.02.1	<0.001
		Physician		3.42.3	
	No	Patient	70 (38.7)	6.12.2.2	
		Physician		3.2±2.2	
Smoking	Never	Patient	77 (42.5)	5.8±2.2	<0.001
		Physician		3.2±2.2	
	Ex-smoker	Patient	34 (18.8)	6.1±2.2	
		Physician		3.5±2.3	
	Sometimes	Patient	20 (11.0)	6.0±2.1	
		Physician		3.2±1.7	
Smoker	Patient	50 (27.6)	6.3±1.9		
	Physician		3.4±2.4		

The mean score of the patients was calculated as 54.4±21.1 in the MODQ. Nearly 3 of 4 patients reported severe limitations on everyday living activities due to MLBP (Table II). In the lower educated group, daily activities were more affected than in the highly educated group.(p:0.034). Gender, body mass index, working status and smoking appeared not to affect daily performance.(p>0.005) (Table III).

Low back pain lasting over 4 weeks was reported by 68.5% of the patients. Nearly 2 of 3 patients reported that their pain decreased with rest. 71.3% of the patients reported that their pain increased with standing or exercise. 77.9% of the patients reported that they had morning stiffness, but 62.4% of these reported the duration of morning stiffness as less than 30 minutes. Comparison of the VAS rating of patients with pain characteristics revealed that longer duration of morning stiffness was associated with increased pain severity (p:0.046).

Comparison of the MODQ scores with low back pain characteristics revealed that increasing pain with exercise was significantly associated with impairment in daily performance (p:0.029). The presence of pain with morning stiffness and prolonged duration of the stiffness increased the disability of patients in daily life (respectively, p:0.004, p:0.040) (Table IV).

To determine the pain severity perception differences between patients and physicians, we analysed the VAS ratings. Patients always graded higher than both of the physicians (respectively, p <0.001 and p:0.012). Both physicians rated the VAS lower than the 31 patients rated. There was no significant differences between the two physicians in rating patients' pain (p:0.625). When correlations between VAS ratings of the physicians were analysed, the correlation between patients and first physicians in VAS rating was 0.41 (p<0.001) and the power of the study was calculated as 91.5% (Table V).

Table II: Distribution of Patients in Response to MODQ

Stage		n	%
1	Minimal disability	8	4.5
2	Moderate disability	39	21.8
3	Severe disability	55	30.2
4	Crippled	56	30.7
5	Patients are either bed-bound or exaggerating their symptoms	23	12.8

Table III: Comparison of Demographic Characteristics of the Patients with MODQ Scores

Demographic Characteristics		Mean-SD	p
Sex	Male	55.1±21.7	0.599
	Female	53.4±20.1	
Educational status	Elementary	61.8±20.9	0.035
	High	51.6±20.0	
	University	51.9±20.9	
Body mass index (kg/m ²)	Normal	53.2±22.7	0.789
	Overweight	54.7±20.9	
	Obese	56.9±18.1	
Working status	Yes	53.7±21.6	0.639
	No	55.5±20.3	
Co-morbidities	Yes	55.3±20.9	0.715
	No	54.0±21.4	
Smoking	Never	52.5±22.2	0.659
	Quit	53.5±20.4	
	Sometimes	58.0±19.7	
	Smoker	56.2±20.6	

Table IV: Comparison of Pain Characteristics with VAS Ratings and MODQ Scores

Pain Characteristics		n	%	VAS		MODQ	
				Mean-SD	p	Mean-SD	p
Duration of pain	0-1 week	13	7.2	6.5±2.1	0,196	54.6±29.1	0.085
	≥1 week-1 month	44	24.3	5.4±2.0		48.7±16.2	
	≥1 month	124	68.5	6.1±2.2		57.6±21.8	
In which part of day does your pain increase?	Morning	78	42.5	6.35±2.1	0.129	55.3±22.1	0.662
	Evening	103	57.5	5.8±2.2		53.5±20.4	
Does your pain decrease with rest?	No	58	32.0	6.3±2.2	0.207	58.6±22,1	0.070
	Yes	123	68.0	5.9±2.1		52.4±20.5	
Does your pain increase with exercise?	Yes	129	71.3	6.2±2.1	0.309	56.6±20.5	0.029*
	No	52	28.7	5.8±2.2		48.5±21.8	
Do you have morning stiffness?	Yes	141	77.9	6.1±2.1	0.372	56.8±21.1	0.004*
	No	40	22.1	5.8±2.1		45.2±19.0	
Duration of morning stiffness	0-15 minutes	57	31.5	5.4±2.0	0.046	50.7±21.5	0.040**
	≥15-30 minutes	56	30.9	6.3±1.9		55.5±18.5	
	≥30 minutes	68	37.6	6.5±2.3		61.9±22.1	

Verbal categories; mild, moderate and severe pain correspond to different values on the VAS. On commonly used VAS, points under 4 cm are usually defined as mild whereas 4-7 points are moderate and over 7 is severe. In our study, only 17.1% of patients rated they have mild pain, while first physician graded mild pain in 2 of 3 patients (65.2%) ($p < 0.001$) (Table VI).

Cronbach's alpha number for ten section MODQ was calculated as alpha:0.87. There was a moderate correlation between VAS scores of patients and MODQ scores ($r=0.52$, $p < 0.001$)

DISCUSSION

In this study, differences and similarities between patients and physicians in terms of the assessment of the patients' pain severity were measured by using VAS. The main finding of the study is that physicians always rated the patients' pain significantly lower than the patients themselves. Furthermore, there was no difference between two different physicians' rating about the severity of pain in 31 patients.

In a study conducted in the Department of Family Practice and Community Health at the University of Minnesota consisting of 401 patients, physicians' mean rating of patient pain was found to be significantly lower than patient mean rating (3.52 vs 4.37, $p=0.001$) (23).

A convenience cohort study asked 71 patients in a tertiary care teaching hospital to rate their pain on arrival to the Emergency Department using a VAS and a numerical rating scale (NRS). These ratings were compared with those given to their nurse and physician; both physicians and nurses rated statistically significantly lower NRS and VAS pain than those rated by the patients (12).

According to a study conducted in an Emergency Department in France to investigate the differences between patients and physicians in their assessments of the patients' pain, patients (n:200) and their physicians (n:48) rated the patients' pain using a VAS both on arrival and discharge (18). Their results showed that physicians gave significantly lower ratings than did patients both on arrival and at exit. While physicians estimate patients symptoms as mild-moderate in severity, patients are prone to report their symptoms as moderate-severe (12). This disagreement may be associated with patients' opinion of 'If I explain my symptoms more severely than I feel, the physician will evaluate me more carefully'.

In the study, a relationship between rating pain severity and demographic data such as gender, age, education status and body mass index was not observed. Both male and female patients graded their pain higher than their physicians graded it. Similarly in the study of Sutherland et al., there was no significant difference in the mean differences in ratings

Table V: Comparison Between Pain Perceptions of Patients and Physicians in Their VAS Ratings

Parameters	Patient(n)	Mean-SD	Minimum-maximum	
Patients' VAS ratings	181	6.08±2.16	1-10	
First physician VAS ratings	181	3.36±2.27	0.3-9.5	
Second physician VAS ratings	31	4.26±1.72	0.5-7.4	
General comparison of groups			p	
Comparison of VAS ratings of patients and first physician			<0.001	
Comparison of VAS ratings of patients and second physician			0.012	
Comparison of VAS ratings of first physician and second physician			<0.625	
Correlation between groups		n	r	p
Patients	- First physician	181	.414	<0.001
Patients	- Second physician	31	.526	0.002
First physician	- Second physician	31	.828	<0.001

Table VI: Comparison of VAS Verbal Categories

VAS categories	Groups	n	%	Mean ±SD	Median	Minimum Maximum	P
Minimal (<4)	Patient	31	17.1	2.9±0.7	2.9	1.0-3.9	<0.001
	First physician	118	65.2	1.9±0.9	1.9	0.3-3.8	
Moderate (≥4-7)	Patient	83	45.9	5.4±0.9	5.5	4.0-6.9	<0.001
	First physician	44	24.3	5.1±0.9	4.9	4.0-6.9	
Severe (≥7)	Patient	67	37.0	8.3±0.9	8.2	7-10	<0.001
	First physician	19	10.5	7.9±0.7	8.1	7-9.5	

among subgroups compared. The mean ratings of physicians were always significantly lower than patients' ratings (23).

There has been some past studies about physicians' attitudes toward female patients. It has been noted that physicians were likely to identify their female patients' sufferings as psychosomatic, especially if their patients seemed to be labile in emotion (18). Perception of pain and its assessment is possibly more complicated. Some related factors may be physician gender, patient gender, expertise of the physician and physician's wrong estimation of the cause of pain.

One of the reasons of the differences in pain assessment may be that while physicians think that they are examining a routine case, patients possibly think they are experiencing the worst pain they have ever had (12,13,16, 23).

Physicians and patients have different methods in the understanding, management and explanations of an illness. While physicians typically take pain as a sign more related with anatomy or biology, patients appear to understand pain more associated with social and behavioral factors. In a study on 22 general practitioners who were asked 'why do you think women get urinary tract symptoms?', most of the physicians (82%) related the problem to 'anatomy' (4).

Physicians usually assess their patients by the biomedical model of illness and think all illnesses have a single underlying cause (24). In fact, psychosocial factors may influence the patients' beliefs of illness seriously. Considering the biopsychosocial approach in clinical practice should provide physicians more effective and adequate treatment opportunities and will help to decrease the differences between the patient and physician in their assessment of the patient's pain (1).

The diagnostic evaluation of the patient and the treatment decision substantially depends on the pain perception of the physician. Although the physician is the responsible one who decides on the severity of the problem, and the number, content and duration of analgesic therapy and discharge time of the patient, medical professionals usually do not receive sufficient education including pain assessment or give particular importance to such factors as malingering or fear of side effects of drugs. Since pain is perceived subjectively and there is no laboratory test to analyse it, a difference and disagreement between patient and physician in their pain perception is understandable (22).

There have been some neurophysiological and biomedical studies to define the pain intensity as perceived by the patient. When the role of brain in pain processing is considered, cerebral imaging or metabolic studies may be useful (2).

LIMITATIONS

An investigation about the potential causes of systematic differences between patients and physicians in their assessments of the patients' pain made by Marquie et al, have reported that this difference may be associated with

physician gender, physician experience (novice or expert) and the obviousness of the cause of pain (18). As limitations of the study, the gender factor as well as the experience status were not interpreted because both physicians were male and had similar experience and the diagnosis was the same, MLBP, in all patients in the study.

CONCLUSION

Overall, a good communication between patient and physician, as a main factor directly affecting many outcomes, will alleviate the symptoms' severity, increase the patient's ability and ease the control of the pain. We suggest that it would be useful to use pain assessment tools as a standart part of clinical practice to evaluate the patients more accurately.

DECLARATIONS

Ethical approval: Kecioren Training and Research Hospital Ethic Committee, 13.06.2012

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