Turkish Neurosurgery 2009, Vol: 19, No: 4, 327-332

Original Investigation

Risk Factors For Low Back Pain and Its Relation with Pain Related Disability and Depression in a Turkish Sample

Bir Türk Örnekleminde Bel Ağrısı İçin Risk Faktörleri ve Ağrıya Bağlı Kısıtlılık ve Depresyonla İlişkisi

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Received : 03.07.2009
Accepted : 17.09.2009

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ABSTRACT

AIM: To investigate the relation of depression and pain-related disability associated with Low Back Pain (LBP).

MATERIAL and METHODS: The Quebec Back Pain Disability Scale, Visual Analogue Scale (VAS) and Zung Depression Scale were sent to 3800 randomly select adults in Kayseri, Turkey. The demographic characteristics of the participants (Socioeconomic status, age etc) and low back pain (frequency, intensity, duration) features together with pain-related factors were investigated in responding participants. The participants who had self-reported LBP during the study period were accepted as the study group

RESULTS: 807 (37.1%) of the participants reported that they had low back pain at the time of interview. The study group had a score of 52.91±24.20 mm for VAS, 52.30±10.67 for the Zung Depression Scale and 24.53±17.22 for the Quebec Back Pain Disability Scale. Age, female gender, smoking (>20 cigarettes per day), low socioeconomical status and living in a rural habitat were found to be associated with low back pain. Depression (P= 0.017) and disability (P= 0.002) were found to be independent risk factors for VAS.

CONCLUSION: Determination of the frequency and intensity of low back pain and related factors is needed for the prevention and management of pain. Mood disorders and self reported restriction in daily activities should be screened in patients with low back pain.

KEYWORDS: Low Back Pain, Depression, VAS, Turkey

ÖZ

AMAÇ: Bel ağrısı ile ağrıya bağlı kısıtlılık ve depresyonun ilişkisini araştırmak

YÖNTEM ve GEREÇ: Kayseri ilinde rastlantısal olarak seçilmiş 3800 yetişkin deneğe doldurmaları için Quebec bel ağrısı kısıtlılık ölçeği, Visual Analog Ölçek (VAS) ve Zung Depresyon ölçeği gönderildi. Katılımcıların sosyodemografik (Sosyoekonomik durum ve yaş) ve bel ağrısı özellikleri (sıklık, şiddet ve süre), ağrıya bağlı faktörler ankete cevap veren deneklerde araştırıldı. Çalışmada bel ağrısı olduğunu belirten vakalar çalışma grubu olarak kabul edildi.

BULGULAR: Katılımcıların 807'si (%37,1) çalışma süresince bel ağrıları olduğunu belirtti. Çalışma grubu VAS ölçeğinden ortalama 52,91±24,20 mm skor alırken, Zung Depresyon ölçeği için 52.30±10.67 ve Quebec bel ağrısı kısıtlılık ölçeğinden 24.53±17.22 puan almışlardı. Artan yaş, kadın cinsiyetine sahip olmak, sigara içmek, (>20 sigara /gün), düşük sosyoekonomik durum, ve kırsal bölgede yaşamak alt bel ağrısı için risk faktörü olarak belirlendi. Depresyon (P= 0.017) ve kısıtlılık (P= 0.002) VAS için bağımsız risk faktörü olarak bulundu.

SONUÇ: Bel ağrısının yönetimi için ağrının sıklığı ve şiddeti ile birlikte bağlı risk faktörlerinin bilinmesi de önemlidir. Mod bozuklukları ve günlük aktivitelerde bildirilen kısıtlılık bel ağrısı olan hastalarda taranmalıdır.

ANAHTAR SÖZCÜKLER: Bel ağrısı, Depresyon, VAS, Türkiye

INTRODUCTION

Low back pain (LBP) is one of the most frequent musculoskeletal disorders in daily practice (8). It is defined as pain between the costal margins and inferior gluteal folds and is usually accompanied by painful limitation of movement, It is often influenced by physical activities and posture in most cases but the etiological factors for LBP cannot be determined (14). Demographic features (age, gender, occupation etc), recurrent weight lifting, using vibrating equipment, sedentary life style, weakness of abdominal wall muscles, obesity, smoking, increased lumbar lordosis, scoliosis, cardiovascular disorders, low socioeconomic level are some of the known risk factors for LBP (15). Apart from disabling individuals in daily activities with reducing health-related quality of life, it causes an important health care expense (frequent office visits, consultations, imaging techniques, treatment costs, and work absenteeism etc.) (23). One of the most important reasons for altering the quality of life of the patients is disability, pain management and depression (13). The link between pain in LBP and depression appears to be a shared neurological pathway. Response to painful physical stimuli is moderated in the brain by serotonin and norepinephrine, which also affect mood (16).

As socio-economical features and coping mechanisms of the patients differ (frequency and perception of pain varies in different ages and sexes), it is important to investigate the frequency of LBP and depression in different populations and regions of the country (11). However, there is a lack of data between the relations of depression and functional disability related with LBP in Turkey. The aim of this study was to investigate the prevalence and risk factors of LBP, pain intensity, LBP-related disability and its relation with depression in a Turkish adult population.

MATERIAL and METHOD

Study Framework and Pattern

In order to represent adult (age >18 years) population of the Kayseri (an industrialized city in the middle Anatolia, Turkey with a population of 1,070,000), we randomly selected 30 schools (17 primary and 13 high schools) that had students with different socioeconomic status as a cluster of both rural and urban areas. 3800 adult family members or relatives living together whose child/children was receiving education in these schools were assigned as randomly selected subjects. After providing short information about the content of this study and use of the scales, with the cooperation of the local representatives of the ministry of education and these schools' teachers, these subjects who were proportionally allocated for each school, received a sealed envelope between January and April 2005. The sealed envelope consisted of a questionnaire, the Quebec Back Pain Disability Scale, the Visual Analog Scale (VAS) and the Zung Depression Scale. The study questionnaire included items about the subject's demographic features, socioeconomic status, pain over the spine and other extremities, pain-related factors, subjects' previous medical consultations related to back pain, use of medication and treatments. The contents of the envelope were received back in ten days.

The exclusion criteria were incomplete response, functional illiteracy, illness affecting the central nervous system, "red flags" for surgical referral (saddle anesthesia, recent onset of bladder dysfunction or anal sphincter impairment, major or progressive motor weakness, sensory level or widespread neurological signs), or other diseases related to back pain (fractures, spondylitis, direct trauma, neoplastic, infectious, vascular, metabolic or endocrine). The sample size of this study was calculated as 2231 adults, considering that the twelve month prevalence of LBP was 35.9% where the significance level was 0.05 (alpha), 1-, (power) = 0.80 and its false rate was 0.08 (d) (4). The response rate was 54.7% (2117 adults). The participants who had self reported LBP during the study period were accepted as the study group and the other participants who reported either no pain or a pain in a different part of the body (other location in the spine or extremities) as control group.

Data Collection Tools

The Quebec Back Pain Disability Scale

The Quebec Back Pain Disability Scale is designed to capture disability due to LBP. It consists of 20 items (each is daily activity) scored on 6-point Likert scale (0 = not difficult at all, 5 = unable to do). The item scores are averaged and transformed to 0-100 and the higher scores indicate the severity where LBP affects individuals' daily living activities. It has no cut-off point (10). Melikoglu et al. (18) have adapted the Quebec Back Pain Disability to Turkish.

They reported that QDS showed excellent test-retest reliability (p<0.001) while it had a Cronbach's Alpha value of 0.94.

The Zung Depression Scale

The Zung Self-Rating Depression Scale is a 20-item self-report questionnaire that is widely used as a screening tool, covering affective, psychological and somatic symptoms associated with depression. Each item is scored on a 4-point Likert scale (1= never, 2= sometimes, 3= often, 4=always). Summing the individual item scores produces a total score that ranges from 20 to 80. Most people with depression score between 50 and 69 while a score of 70 and above indicates severe depression. The scores provide indicative ranges for depression severity that can be useful for clinical and research purposes (24). Duger et al have adapted the Zung depression scale to Turkish (3).

The Visual Analogue Scale

The VAS is a tool used to help a person rate the intensity of certain sensations and feelings such as pain (22). The VAS for pain is a straight line 100 mm in length with one end meaning no pain "0" and the other end meaning the worst pain imaginable "10". A patient marks a point on the line that matches the amount of the pain he or she feels. In reanalysis of data of two randomized controlled trials of postoperative pain, 0 to 4 mm could be considered as no pain; 5 to 44 mm mild pain, 45 to 74 mm moderate pain; and 75 to 100 mm severe pain (9).

Statistical Analysis

Chi-Square and the Mann-Whitney U test were performed to analyze the effects of variables; birthplace, occupation, age, education, income, smoking, regarding occurrence of pain in study and control groups. The scores of VAS was compared with independent variables; the Zung, Depression scale and the Quebec Back pain Disability scale to investigate the relationship with multiple regression model. The relationship between the self-rated restriction level, VAS scale and the Quebec Back Pain Disability Scale was evaluated with Spearman correlation analysis. P <0.05 was regarded as significant. All analyses were performed using SSPS 13.0 (SSPS Inc., Chicago, IL).

RESULTS

A total of 807 (37.1%) subjects (study group) reported that they have LBP. The comparison of the demographic characteristics, scales and the pain features of both groups are represented in (Table I). The study group had a score of 52.91±24.20 mm for VAS. Female participants had higher LBP frequency compared to males (39.9% versus 34.9% x^2=5.772, P= 0.016). LBP frequency had an increasing trend in different age groups as follows: 18-29 years,31.8%; 30-39 years,36.9%; 40-49 years, 40.8%; 50-59 years, 41.3%; 60-69 years, 47.9%; and over 70 years, 37.0% (x^2=17.975 P= 0.003). LBP-related restriction was found to be significantly increased in 18-29, 30-39 and 40-49 years (respectively x^2= 7.904, x^2= 30.205, x^2= 20.602 P <0.001). Women participants in the study group had higher scores for three scales when compared with men as represented in (Table II).

The self-rated restriction level (none, minimum, restriction, maximum) was positively correlated with the VAS scale, and the Zung depression scale (r=0.42, r= 0,170, p< 0.001 respectively). The linear regression model showed that the Zung Depression Scale (P= 0.017) and Quebec Beck Pain Disability Scale scores (P= 0.002) are independent risk factors for VAS scores as presented in (Table III).

DISCUSSION

We have determined that an important ratio of our population had suffering LBP, which is confirmed with other domestic or foreign studies (1, 3, 10, 11). We have determined that age; female gender, rural habitation, low socio economical status and intensive smoking are risk factors for LBP in our population. There is growing evidence that LBP prevalence in adolescents and early youth period is increasing (7). As the reality of LBP is the most activity restricting disease in adult life (< 45 years), our results underlined the importance of health promotion activities (life style changes like) for prevention. Also it is known that women patients suffer more physical, hormonal alterations and have more somatic symptoms compared than males (17). Preconceptional and perinatal care seems to be a proper time for intervention as it is known that more than 50% of the pregnant have LBP and multiparity worsens the situation (11). It was not surprising that female participants in our study had increased severity and frequency of LBP compared with males which is consistent with previous studies. In many other studies individuals with low educational and socioeconomic status have high risk of LBP (21). In this study our logistic regression model revealed that LBP prevalence increases in low-income individuals

Table I: The comparison of the two groups' demographic variables, scales and pain features.

Groups	No pain in lumbar region 1310 (61.8%)	Pain in lumbar region 807 (38.2%)	Statistical Significance
Sex			
Female	576 (60.1)	382 (39.9)	x^2=5.772
Male	794 (65.1)	425 (34.9)	P=0.016
Education			
Less than 12 years	649 (47.4)	450 (55.8)	x^2=14.330
13-15 years	418 (30.5)	209 (25.9)	P<0.001
More than 15 years	303 (22.1)	148 (18.3)	
Occupation			
Housewives	301 (22.0)	252 (31.2)	
White collar	186 (13.6)	99 (12.3)	x^2=39.784
Employee	641 (46.8)	372 (46.1)	P<0.001
Unemployed	29 (2.1)	10 (1.2)	
Student	151 (11.0)	42 (5.2)	
Retired	62 (4.5)	32 (4.0)	
Self-rated income			
Good	420 (31.2)	184 (23.7)	x^2=22.165
Fair	667 (50.9)	412 (53.0)	P<0.001
Bad	223 (17.0)	181 (23.3)	
Restriction level			
None	252 (29.8)	116 (14.7)	x^2=53.863
Minimum	406 (47.7)	430 (54.6)	P<0.001
Restriction	143 (16.8)	177 (22.5)	
Maximum	50 (5.9)	64 (8.1)	
Duration			
For one week	68 (8.4)	37 (4.6)	
For one month	93 (11.4)	48 (5.9)	x^2=30.203
For three month	105 (12.9)	92 (11.4)	P<0.001
More than six months	547 (67.3)	630 (78.1)	
Pain period			
Morning	196 (24.7)	251 (33.7)	
Noon	109 (13.7)	88 (11.8)	x^2=22.824
Evening	276 (34.8)	192 (25.8)	P<0.001
Before bedtime	160 (20.2)	156 (21.0)	
During sleep	52 (6.6)	57 (7.7)	

who are living in rural area. Lastly LBP is reported to be frequent in individuals who are smoking (12). Although the exact mechanism of smoking on LBP is not clear a dual effect is considered. While nicotine decreases the blood circulation of the intervertebral disc it increase the pressure on intervertebral disc by simulating cough. However in our study we found a dose response risk (> 20 cigarettes per day) for LBP. However our results are confirmed with previous studies.

One of the most underestimated facets of the LBP is the physiological aspect. Lifetime depression was found to be an independent risk factor for the individuals who experience first LBP episode (2). Our results indicated that there is correlation between depression with LBP and disability. Depression is a condition that worsens the prognosis of LBP and its poorly recognized and treated in these patients (6). As mentioned earlier the depression and pain management in LBP should be considered

Table II: The study groups' sex-related differences for scale scores.

	Famela SE (range)	Male SE (range)	Z	P
Zung Depression Scale	52.3±0.9 (50.6-54.0)	50.8±0.8 (49.3-52.3)	3.612	<0.001
Quebec Back Pain Disability Scale	28.9±1.3 (26.4-31.4)	22.8±1.2 (20.4-25.3)	6.610	<0.001
VAS	57.01±2.4 (53.5-6.0)	49.6±2.2 (46.4-5.3)	3.351	<0.001

Table III: The multiple linear regression model for independent variables Zung depression scale scores and Quebec Back Pain Disability Scale versus dependent variable VAS.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% CI B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	7.013	1.231		5.695	0.001	4.554	9.471
Quebec LBP Disability Scale	0.05	0.006	0.359	7.773	0.002	0.037	0.090
Zung Depression Scale	0.023	.012	0.101	1.939	0.017	0.001	0.046

Durbin Watson: 1.912

R2= 0.167

together. Although there are several self-reported depression scales are present (Inventory of Depression Symptomatology, Beck Depression Inventory etc), 2-item screening test for depression from Primary Care Evaluation of Mental Disorders Procedure (PRIME-MD) should be very effective and time saving for to judge to screen depression in patients with LBP (5).

However our study has some limitations. First of all our results depend on self-reports and it is known that pain should be perceived highly individually. Although the response rate of our participants should be accepted as satisfactory, some of the under-interviewed and undiagnosed patients might not be excluded from study sample. Also our study design might omit subjects with LBP who have no children at school. Lastly Zung depression scale is used as a screen test and clinical depression must be confirmed after an interview with a physician.

As a conclusion efforts to increase the awareness of the clinicians about the relation of LBP and disability with depression are needed. Also studies investigating the risk factors and its relation with depression and pain related disability are needed from different parts of our country.

Note: The vocabulary and spelling of the manuscript have been edited by San Francisco Editing C.O.

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