



Mood and anxiety disorders in patients with chronic low back and neck pain caused by disc herniation

Fatih Kayhan, İlknur Albayrak Gezer, Ayşegül Kayhan, Serkan Kitiş & Mustafa Gölen

To cite this article: Fatih Kayhan, İlknur Albayrak Gezer, Ayşegül Kayhan, Serkan Kitiş & Mustafa Gölen (2016) Mood and anxiety disorders in patients with chronic low back and neck pain caused by disc herniation, International Journal of Psychiatry in Clinical Practice, 20:1, 19-23, DOI: [10.3109/13651501.2015.1100314](https://doi.org/10.3109/13651501.2015.1100314)

To link to this article: <https://doi.org/10.3109/13651501.2015.1100314>



Published online: 02 Nov 2015.



Submit your article to this journal [↗](#)



Article views: 443



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 8 View citing articles [↗](#)

ORIGINAL ARTICLE

Mood and anxiety disorders in patients with chronic low back and neck pain caused by disc herniation

Fatih Kayhan¹, İlknur Albayrak Gezer², Ayşegül Kayhan³, Serkan Kitiş⁴ & Mustafa Gölen⁵

¹Department of Psychiatry, Faculty of Medicine, Mevlana University, Konya, Turkey, ²Department of Physical Therapy and Rehabilitation, Faculty of Medicine, Selçuk University, Konya, Turkey, ³Department of Radiology, Konya Training and Research Hospital, Konya, Turkey, ⁴Department of Neurosurgery, Faculty of Medicine, Bezmialem University, Istanbul, Turkey, and ⁵Department of Neurosurgery, Faculty of Medicine, Mevlana University, Konya, Turkey

ABSTRACT

Objective: We investigated the prevalence of mood and anxiety disorders in patients with chronic low back and neck pain caused by disc herniation and the relationships between pain and mood, and anxiety disorders.

Methods: In total, 149 patients with disc herniation and 60 healthy subjects were included. Disc herniation was diagnosed based on a physical examination and magnetic resonance imaging. Mood and anxiety disorders were diagnosed using the Structured Clinical Interview of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition/Clinical Version.

Results: The mean age of the study subjects ($n = 209$) was 45.96 ± 11.45 years. Seventy (46.6%) patients with disc herniation met the criteria for at least one mood or anxiety disorder. The prevalence rates of mood and anxiety disorders were 16.6% and 35.8%, respectively. The most common specific diagnoses were major depression ($n = 25$, 16.9%) and generalised anxiety disorder ($n = 19$, 12.8%).

Conclusions: Mood and anxiety disorders were more commonly seen in patients with lumbar or cervical disc herniation than in those without herniation. No relationship was detected between pain severity and mood or anxiety disorders. However, mood and anxiety disorders were associated with neurological deficits.

ARTICLE HISTORY

Received 13 March 2015

Revised 24 August 2015

Accepted 10 September 2015

Published online 28 October 2015

KEYWORDS

Anxiety, depression, pain

Introduction

Chronic pain is one of the most common conditions for which patients seek treatment, as it leads to social and economic problems (Schappert and Nelson 1999; Blyth et al. 2001; Currie and Wang 2004). Chronic pain is defined as pain that persists for longer than the expected time frame for healing or pain associated with progressive, non-malignant disease (Annagur et al. 2014). The prevalence of chronic pain is approximately 8–60% (Schappert and Nelson 1999; Blyth et al. 2001; Currie and Wang 2004). Psychiatric disorders, particularly depression, are more commonly seen in patients with chronic pain. Accordingly, pain is frequent in patients with depression. Depression was three times more likely to occur in patients with chronic pain compared with those without pain, and increased pain severity increased the risk for developing depression (Dworkin and Gitlin 1991; Magni et al. 1993; Taloyan and

Lofvander 2014). The prevalence of chronic pain in patients with depression was 65% (Bair et al. 2003). There is a bidirectional relationship between depression and chronic pain, suggesting that depression and pain exacerbate each other and have similar pathophysiological mechanisms (Gallagher and Verma 1999; Blier and Abbott 2001).

Disc herniation is one of the most frequent causes of chronic low back and neck pain (Finneson and Schmidek 2000). Disc herniation occurs most frequently in patients 20–64 years of age, with maximum prevalence at 35–45 years of age. Neuropathic symptoms such as radicular pain, loss of sensation and motor deficits are common clinical symptoms (Kelsey and Hardy 1975; Weber 1994). Several studies have examined the relationships between pain and psychiatric disorders in patients with chronic low back and neck pain (Bacon et al. 1994; Dündar et al. 2009; Heitz et al. 2009; Ramond et al. 2011;

Guclu et al. 2012; Altug et al. 2015). However, the causes of low back and neck pain were not specified in most of these studies. Our methodology differed from that in other studies, as we determined the causes of pain.

We investigated the prevalence of mood and anxiety disorders in patients with chronic low back and neck pain caused by disc herniation and the relationship of pain with mood and anxiety disorders.

Method

A total of 149 consecutive patients with chronic low back or neck pain who were diagnosed with disc herniation and admitted to the physical and rehabilitation outpatient clinic were consecutively included in the study. Inclusion criteria were ≥ 18 years of age, no prior back or neck surgery, and absence of chronic medical diseases such as hypertension, diabetes mellitus, or hyperlipidemia. Exclusion criteria were < 18 years of age, taking medication for a chronic medical illness, using of narcotics, drug or substance addiction, previous spinal surgery and use of psychotropic drugs such as antidepressant or anxiolytic drugs for a psychiatric disorder or for any other reason in the past 3 months. The study sample also included a control group composed of 60 hospital personnel and their relatives who were matched for socio-demographic characteristics with the disc herniation patients. The control group had the same exclusion criteria as those for the patient group.

Disc herniation was diagnosed based on a physical examination and magnetic resonance imaging (MRI). Mood and anxiety disorders were diagnosed using the Structured Clinical Interview (SCID-I) of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition/Clinical Version (First et al. 1997). A visual analogue scale (VAS) was used to assess pain severity (Wewers and Lowe 1990). The Hamilton Depression and Hamilton Anxiety Scales were used to determine the levels of depression and anxiety, respectively (Yazıcı et al. 1998; Akdemir et al. 2001).

This study was approved by the local ethics committee. The characteristics and procedures of the study were explained to the study participants, and oral and written informed consent was obtained. The patients were referred to the psychiatric outpatient clinic after physical assessments of the musculoskeletal system and recording of socio-demographic characteristics. Psychiatric interviews were carried out by a psychiatrist with at least 5 years' experience with psychiatric disorders and diagnostic instruments. The psychiatrist was blinded to the patient musculoskeletal system evaluation results.

Statistical analysis

Data analyses were performed using SPSS ver. 16.0 for Windows (SPSS, Inc., Chicago, IL). All variables were tested with the Kolmogorov–Smirnov test to determine normality of the data distributions; all data were normally distributed. Categorical variables were compared using the chi-square or Fisher's exact test. Continuous variables with non-normal distributions were analysed using the Mann–Whitney *U*-test. Spearman's rank correlation analysis was used to evaluate associations between non-normally distributed parametric variables. Two-sided *p* values < 0.05 were considered significant.

Results

The mean age of the study subjects ($n = 209$) was 45.96 ± 11.45 years. Most of the participants were married ($n = 187$, 89.5%), unemployed ($n = 155$, 74.2%) and primary school graduates ($n = 178$, 85.2%). No significant differences were observed in the socio-demographic characteristics between the patient and control groups (Table 1). Seventy-six (51%) patients had lumbar disc herniation, and 73 (49%) had cervical disc herniation. A total of 135 (90.6%) patients had radicular pain. Only seven (3.3%) patients showed a neurological deficit due to disc herniation. MRI indicated the presence of multiple herniations in 32 (15.3%) patients with disc herniation. The most common type of herniation was a bulging disc ($n = 97$, 46.9%). No sequestration-type herniation was detected.

Table 2 shows the prevalence rates of psychiatric disorders in patients with disc herniation. According to the SCID-I, 70 (46.6%) patients with disc herniation met the criteria for at least one mood or anxiety disorder. The prevalence rates of any mood or anxiety disorder were

Table 1. Sociodemographic and clinical features of participants.

	Patient group	Control group	<i>p</i> Value
Age, mean \pm SD, years	46.12 \pm 12.12	45.43 \pm 9.17	0.662 ^a
Gender, <i>n</i> (%)			
Female	76 (51%)	30 (50%)	0.895 ^b
Marital status, <i>n</i> (%)			
Married	135 (90.6%)	52 (86.7%)	0.401 ^b
Educational status, <i>n</i> (%)			
Primary school	128 (85.9%)	50 (83.3%)	0.075 ^b
Lyceum	13 (8.7%)	8 (13.3%)	
University	8 (5.4%)	2 (3.4%)	
Employment status, <i>n</i> (%)			
Unemployment	115 (77.2%)	40 (66.7%)	0.116 ^b
HAM-A, mean \pm SD	12.66 \pm 9.5	5.88 \pm 5.90	0.000 ^a
HAM-D, mean \pm SD	4.25 \pm 3.72	2.75 \pm 2.07	0.034 ^a

Notes: HAM-A, Hamilton Anxiety Scale; HAM-D, Hamilton Depression Scale.

^aMann–Whitney's *U*-test.

^bChi-square test.

Table 2. Prevalence of psychiatric disorders in patients with disc herniation.

Psychiatric disorder, <i>n</i> (%)	Patient group	Control group	OR (95% CI)	<i>p</i> Value ^a
Any mood disorder	25 (16.9)	4 (6.7)	0.35 (0.17–1.05)	0.075
Major depression	25 (16.9)	4 (6.7)	0.35 (0.17–1.05)	0.075
Dysthymia	0	0	–	–
Bipolar disorder	0	0	–	–
Any anxiety disorder	53 (35.8)	4 (6.7)	0.12 (0.04–0.37)	0.000
Generalised anxiety disorder	19 (12.8)	2 (3.3)	0.23 (0.05–1.03)	0.039
Panic disorder	0	0	–	1.000
Obsessive–compulsive disorder	10 (6.8)	2 (3.3)	0.47 (0.10–2.23)	0.337
Specific phobia	7 (4.7)	2 (3.3)	0.69 (0.14–3.43)	0.654
Social anxiety disorder	1 (0.7)	2 (3.3)	5.60 (0.45–56.98)	0.200
Anxiety disorder not otherwise specified	24 (16.2)	1(1.7)	0.08 (0.01–0.66)	0.001
Post-traumatic stress disorder	0	0	–	–
Any mood or anxiety disorder	69 (46.6)	8 (13.3)	0.17 (0.07–0.39)	0.000

^aChi-square test. The bold values indicate statistical significance.

16.6% and 35.8%, respectively. Anxiety disorders were more prevalent than mood disorders among the patients. The prevalence rate of patient with a diagnosis of two or more psychiatric disorders were 6.8% ($n = 10$). None of the patients with disc herniation had a diagnosis of dysthymic disorder, bipolar disorder or panic disorder. The most common specific diagnoses were major depression ($n = 25$, 16.9%), generalised anxiety disorder (GAD) ($n = 19$, 12.8%), and anxiety disorder not otherwise specified (NOS) ($n = 24$, 16.2%). Anxiety disorders, including GAD (OR = 0.230) and anxiety disorder NOS (OR = 0.08), were more prevalent in the patient than in the control group. We found no significant differences between the groups with respect to the prevalence of major depression, obsessive–compulsive disorder, specific phobias or social phobia.

Patients with disc herniation with and without any mood or anxiety disorder were similar in age ($Z = -0.503$, $p = 0.615$), employment ($\chi^2 = 2.037$, $p = 0.154$), type and location of disc herniation ($p > 0.05$), multiple disc herniation ($\chi^2 = 0.979$, $p = 0.957$), radicular pain ($\chi^2 = 2.175$, $P = 0.140$) and VAS score ($Z = -1.151$, $p = 0.250$). Mood and anxiety disorders in patients with disc herniation were more prevalent in females ($\chi^2 = 0.489$, $p = 0.032$), those with low educational level ($\chi^2 = 6.079$, $p = 0.048$) and those with neurologic deficits ($\chi^2 = 6.650$, $p = 0.010$).

A multivariate logistic regression analysis indicated that sex [Wald χ^2 , 3.90; standard error (SE), 0.342; OR 1.966; $p = 0.048$], neurological deficit [Wald χ^2 , 4.25; S.E., 1.081; odds ratio (OR), 2.198; $p = 0.039$], but not age (Wald χ^2 , 1.03; SE, 0.015; OR, 0.985; $p = 0.310$), VAS score (Wald χ^2 , 1.57; SE, 0.342; OR, 1.279; $p = 0.209$) or spondylolisthesis (Wald χ^2 , 2.03; SE, 1.141; OR, 0.196; $p = 0.153$) were independent predictors of mood and anxiety disorders.

Discussion

The prevalence of any mood or anxiety disorder was 47.3% in patients with chronic pain caused by disc herniation, whereas it was only 13.3% in control subjects. The prevalence rate established in the patients with chronic pain was higher than that in control subjects and higher than the estimated prevalence of Axis 1 psychiatric disorders in the general population (Bijl et al. 1998; Andrews et al. 2001; Vicente et al. 2004). Several studies have shown that a significant percentage of patients with chronic low back and neck pain have some kind of psychiatric disorder (Ay and Evcik 2008). However, no study has examined the relationships between back and neck disc herniation and psychiatric disorders. Studies that have examined the relationships between psychiatric disorders and disc herniation were generally conducted on patients with chronic nonspecific low back and neck pain (Bacon et al. 1994; Dündar et al. 2009; Heitz et al. 2009; Ramond et al. 2011; Guclu et al. 2012; Altug et al. 2015).

Major depression was detected in 16.9% of the patients with disc herniation in our study. Although the prevalence of depression was approximately 2.5 times higher in patients with disc herniation than that in control subjects, no significant difference was detected between the groups. Very few published studies are available to compare with our data. One report indicated that the prevalence of depression in patients with chronic pain was 22–78% (Haythornthwaite et al. 1991), and another reported that depressive symptoms occurred in 87% of patients admitted to a pain centre (Dilbaz et al. 1997). These reported rates are higher than ours, which may have been due to several factors. First, previous studies did not establish a pain source. Second, the lower prevalence of mood and anxiety disorders in our study may have been due to our use of the SCID in place of self-report scales for diagnosing psychiatric disorders. Similar results to ours have been reported in studies that used similar methodology. Those studies reported that depression in patients with chronic pain was three times greater than that in patients without chronic pain (Dworkin and Gitlin 1991; Magni et al. 1993; Taloyan and Lofvander 2014). These data are similar to our study, which was also conducted using the semi-structured interview method. The prevalence of depression was 8–50% in a study that used a structured interview, which is more precise for diagnosing depression than other methods are Aslan and Nazlıel (2002) and Annagur et al. (2014). Although the methodology used in our study was similar to that used by Annagur et al. (2014), the low incidence of depression observed in our study could have resulted from excluding patients

with substance abuse or drug dependency. Another reason for the failure of achieving statistically significant difference of major depression may be associated with relatively small sample size of the current study.

Some type of anxiety disorder was detected in 31.8% of our patients with disc herniation. The prevalence of any anxiety disorder was significantly higher in patients with disc herniation than that in control subjects. GAD and anxiety disorder NOS were more common in the patient group than those in the control group. No study has explored the association between anxiety disorders and pain in patients with disc herniation. Studies of patients with chronic pain have reported a comparable incidence of anxiety disorders (Tütüncü and Günay 2011). McWilliams et al. (2003) found that anxiety disorders were present in 35% of a nationally representative sample of patients with chronic pain. Another study showed that GAD was the most common psychiatric disorder among patients with chronic pain admitted for primary healthcare (Wittchen et al. 2002). These findings are consistent with our data.

Psychiatric disorders may cause the emergence of chronic non-specific pain or may exacerbate existing pain (Von Korff and Simon 1996; Altındağ et al. 2006), and a bidirectional relationship between pain and psychiatric disorders has been reported (Yazıcı et al. 2003). Psychiatric disorders, particularly anxiety disorders, can increase sensitivity and reduce tolerance to pain (Sternbach 1978; Bouckoms et al. 1985). In our study, the prevalence of any type of mood or anxiety disorder was higher in patients with chronic low back and neck pain than it was in control subjects, indicating a relationship between mood or anxiety disorders and chronic pain associated with disc herniation. However, no relationship was detected between radicular pain (caused by compression of the nerve root by a herniated disc) and mood or anxiety disorders. We believe that nociceptive pain rather than radicular pain may play a more important role in the development of psychiatric disorders.

One of the most important findings from our study was the role of neurological deficits caused by disc herniation in the development of psychiatric disorders. In our study, any type of mood or anxiety disorder was more commonly seen in patients with a neurological deficit. The multivariate regression analysis indicated that the presence of a neurological deficit was an independent predictor of a psychiatric disorder. Previous studies have suggested that neurological deficits may play a role in the development of psychiatric disorders in patients with chronic conditions (Herrmann et al. 1998; Oğuzhanoğlu 2001). Depression is more common in patients with a neurological deficit and in those with a

long-term chronic disease (Oğuzhanoğlu 2001). Depression is diagnosed in one-third of patients with a neurological deficit caused by a cerebrovascular disease, and the development of depression is independent of brain lesion size and location in patients with a cerebrovascular disease (Herrmann et al. 1998). Moreover, the functional deterioration associated with symptoms has been proposed to be associated with depression (Herrmann et al. 1998). All of these findings are consistent with our results.

Some limitations of this study should be mentioned. First, the study group was not homogenous in terms of type or location of the disc herniation. Second, the control group was relatively smaller than the patient group.

Conclusion

Mood and anxiety disorders were more common among patients with lumbar or cervical disc herniation. Although a relationship between chronic pain and psychiatric disorders was identified, no relationship was detected between pain severity and mood or anxiety disorders. However, mood and anxiety disorders were associated with neurological deficits.

Key points

- Mood and anxiety disorders were common in patients with chronic pain caused by disc herniation.
- The present study showed that neurological deficit may play more effective role in development of mood and anxiety disorders rather than pain severity.
- The current study showed that there is no relationship between psychiatric disorders and either level or type of disc herniation.

Statement of interest

The authors report no conflicts of interest.

References

- Akdemir A, Turkcapar MH, Orsel SD, Demirergi N, Dag I, Ozbay MH. 2001. Reliability and validity of the Turkish version of the Hamilton Depression Rating Scale. *Compr Psychiatry* 42:161–165.
- Altındağ Ö, Altındağ A, Soran N. 2006. Kronik ağrılı hastalarda depresyon düzeyinin ağrı şiddeti ve süresi ile ilişkisinin araştırılması. *New/Yeni Symp J* 44:178–181.
- Altug F, Kavlak E, Kurtca MP, Unal A, Cavlak U. 2015. Comparison of pain intensity, emotional status and disability level in patients with chronic neck and low back pain. *J Back Musculoskelet Rehabil* 28:505–508.

- Andrews G, Henderson S, Hall W. 2001. Prevalence, comorbidity, disability and service utilisation. Overview of the Australian National Mental Health Survey. *Br J Psychiatry* 178:145–153.
- Annagur BB, Uguz F, Apiliogullari S, Kara I, Gunduz S. 2014. Psychiatric disorders and association with quality of sleep and quality of life in patients with chronic pain: a SCID-based study. *Pain Med* 15:772–781.
- Aslan S, Nazlıel B. 2002. Gerilim tipi baş ağrısında anksiyete, depresyon düzeyleri ve tanısal değerlendirme. *Yeni Symp* 40:10–14.
- Ay S, Evcik D. 2008. Kronik Bel Ağrılı Hastalarda Depresyon ve Yaşam Kalitesi. *Yeni Tıp dergisi* 25:228–231.
- Bacon NM, Bacon SF, Atkinson JH, Slater MA, Patterson TL, Grant I, Garfin SR. 1994. Somatization symptoms in chronic low back pain patients. *Psychosom Med* 56:118–127.
- Bair MJ, Robinson RL, Katon W, Kroenke K. 2003. Depression and pain comorbidity: a literature review. *Arch Intern Med* 163:2433–2445.
- Bijl RV, Ravelli A, van Zessen G. 1998. Prevalence of psychiatric disorder in the general population: results of The Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Soc Psychiatry Psychiatr Epidemiol* 33:587–595.
- Blier P, Abbott FV. 2001. Putative mechanisms of action of antidepressant drugs in affective and anxiety disorders and pain. *J Psychiatry Neurosci* 26:37–43.
- Blyth FM, March LM, Brnabic AJ, Jorm LR, Williamson M, Cousins MJ. 2001. Chronic pain in Australia: a prevalence study. *Pain* 89:127–134.
- Bouckoms AJ, Litman RE, Baer L. 1985. Denial in the depressive and pain-prone disorders of chronic pain. *Clin J Pain* 1:165–170.
- Currie SR, Wang J. 2004. Chronic back pain and major depression in the general Canadian population. *Pain* 107:54–60.
- Dilbaz N, Özen A, Ozan G, Güz H. 1997. Ağrı yakınması olan hastalarda psikiyatrik morbidite. IV. Ulusal Konsültasyon-Liyeron Psikiyatrisi Kongresi Bildiri Kitapçığı 1:226–235.
- Dündar Ü, Solak Ö, Demirdal ÜS, Toktaş H, Kavuncu V. 2009. Kronik bel ağrılı hastalarda ağrı, yeti yitimi ve depresyonun yaşam kalitesi ile ilişkisi. *Genel Tıp Derg* 19:99–104.
- Dworkin RH, Gitlin MJ. 1991. Clinical aspects of depression in chronic pain patients. *Clin J Pain* 7:79–94.
- Finneson BE, Schmidek H. 2000. Lumbar disk excision. Operative neurosurgical techniques. 4th ed. Philadelphia (PA): Saunders. p. 2219–2231.
- First MB, Spitzer RL, Gibbon M, Williams JBW. 1997. Structured clinical interview for DSM-IV clinical version (SCID-I/CV). Washington (DC): American Psychiatric Press. p. 3–83.
- Gallagher RM, Verma S. 1999. Managing pain and comorbid depression: a public health challenge. *Semin Clin Neuropsychiatry* 4:203–220.
- Guclu DG, Guclu O, Ozaner A, Senormanci O, Konkan R. 2012. The relationship between disability, quality of life and fear-avoidance beliefs in patients with chronic low back pain. *Turk Neurosurg* 22:724–731.
- Haythornthwaite JA, Sieber WJ, Kerns RD. 1991. Depression and the chronic pain experience. *Pain* 46:177–184.
- Heitz CA, Hilfiker R, Bachmann LM, Joronen H, Lorenz T, Uebelhart D, Klipstein A, Brunner F. 2009. Comparison of risk factors predicting return to work between patients with subacute and chronic non-specific low back pain: systematic review. *Eur Spine J* 18:1829–1835.
- Herrmann N, Black SE, Lawrence J, Szekely C, Szalai JP. 1998. The Sunnybrook Stroke Study: a prospective study of depressive symptoms and functional outcome. *Stroke* 29:618–624.
- Kelsey JL, Hardy RJ. 1975. Driving of motor vehicles as a risk factor for acute herniated lumbar intervertebral disc. *Am J Epidemiol* 102:63–73.
- Magni G, Marchetti M, Moreschi C, Merskey H, Luchini SR. 1993. Chronic musculoskeletal pain and depressive symptoms in the National Health and Nutrition Examination. I. Epidemiologic follow-up study. *Pain* 53:163–168.
- McWilliams LA, Cox BJ, Enns MW. 2003. Mood and anxiety disorders associated with chronic pain: an examination in a nationally representative sample. *Pain* 106:127–133.
- Oğuzhanoğlu NK. 2001. Tıbbi durumlar ve depresyon. *Duygudurum Dizisi* 3:116–125.
- Ramond A, Bouton C, Richard I, Roquelaure Y, Baufreton C, Legrand E, Huez JF. 2011. Psychosocial risk factors for chronic low back pain in primary care – a systematic review. *Fam Pract* 28:12–21.
- Schappert SM, Nelson C. 1999. National Ambulatory Medical Care Survey: 1995–96 summary. *Vital Health Stat* 13:i–vi, 1–122.
- Sternbach RA. 1978. Psychological dimensions and perceptual analyses, including pathologies of pain. New York: Academic Press Inc.
- Taloyan M, Lofvander M. 2014. Depression and gender differences among younger immigrant patients on sick leave due to chronic back pain: a primary care study. *Prim Health Care Res Dev* 15:5–14.
- Tütüncü R, Günay H. 2011. Chronic pain, psychological factors and depression. *Dicle Med J* 38:257–262.
- Vicente B, Kohn R, Rioseco P, Saldivia S, Baker C, Torres S. 2004. Population prevalence of psychiatric disorders in Chile: 6-month and 1-month rates. *Br J Psychiatry* 184:299–305.
- Von Korff M, Simon G. 1996. The relationship between pain and depression. *Br J Psychiatry (Suppl)*:101–8.
- Weber H. 1994. The natural history of disc herniation and the influence of intervention. *Spine (Phila Pa 1976)* 19:2234–2238; (discussion 2233).
- Wewers ME, Lowe NK. 1990. A critical review of visual analogue scales in the measurement of clinical phenomena. *Res Nurs Health* 13:227–236.
- Wittchen HU, Kessler RC, Beesdo K, Krause P, Hofler M, Hoyer J. 2002. Generalized anxiety and depression in primary care: prevalence, recognition, and management. *J Clin Psychiatry* 63(Suppl. 8):24–34.
- Yazıcı MK, Demir B, Tanrıverdi N, Karaağaoğlu E, Yolaç P. 1998. Hamilton Anksiyete Değerlendirme Ölçeği, değerlendiriciler arası güvenilirlik ve geçerlilik çalışması. *Turk psikiyatri derg* 9:1147.
- Yazıcı K, Yazıcı A, Biçer A, Tot Ş, Şahin G, Buturak V. 2003. Kronik ağrı hastalarında anksiyete ve depresyonun yaşam kalitesine etkisi. *Klin Psikofarmakol Bül* 13:72–77.