



PREVALENCE OF ANXIETY, DEPRESSION AND ITS RELATIONSHIP TO FUNCTIONAL DISABILITY IN LUMBAR DISC HERNIATION

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ABSTRACT

Introduction: Considering that mental disorders may follow or even cause back pain, the need for more serious attention and better therapy becomes obvious. The present study aimed at investigating the relationship between anxiety and depression and functional disability in patients with lumbar disc herniation. **Material and Methods:** this is a cross-sectional descriptive-analytical study. Fifty patients (all above 20 years old) with lumbar disc herniation responded to four questionnaires. The first questionnaire acquired demographic information on age, gender, marital status and education. The second, third, and fourth questionnaires were the Zung Self-Rating Anxiety Scale, the Beck Depression Inventory, and Roland-Morris's Disability Questionnaire, all marked during interviews. **Results:** Results indicated significant, positive, linear relationships between depression and functional disability ($r = .69$, $p = .0001$), anxiety and functional disability ($r = .83$, $p = .0001$) and anxiety and depression ($r = .637$, $p = .0001$). **Conclusions:** The present study found a significant positive correlation between depression and anxiety and functional disability. In other words, depression increases the risk of anxiety and vice versa. The two can also raise the risk of functional disability in patients with disc herniation.

KEYWORDS: Anxiety, Depression, Functional Disability, Lumbar Disc Herniation.

INTRODUCTION

There have been numerous reports on mental disorders occurring along physical diseases, each of which might precede the other. Despite the cultural differences regarding diseases and patient-care, many studies in different countries have found strong relationships between physical symptoms and mental illnesses. Physical disorders (mid-strong) accompany mental disorders and a linear relationship exists between the number of medically unexplained symptoms (symptoms that do not have sufficient pathologic causes) and mental disorders.^[1]

Lumbar is one of the intermediary action points between the body and the psyche. Back pain and its resulting disabilities are globally recognized as an epidemic, especially in industrialized countries.^[2] The spread of back pain has been reported to be about 70 – 85%.^[3] A fifth of all patients that refer to physicians complain about back pains which they wish to ease.^[4] It is the most common pain among patients who go to orthopedic centers. After car accidents, back pain is the most important reason for 33% of all early retirement cases and limited functionality.^[9,5] Mechanical causes account for 97% of all back pains leaving 1% for non-mechanical

and 2% for visceral causes. Spinal disc herniation is one of the main causes of mechanical back pain. In most cases, Lumbar disc herniation occurs between the L4-L5 and L5-S1 vertebrae.^[10]

An individual's mental state can put them at risk of chronic disabilities caused by back pain, making them non-responsive to therapy.^[11,13] Studies have shown relationships between depression and anxiety and limited functionality, walking speed, social isolation and post-surgery pain in patients of vertebral herniation.^[14,24] Congenital and anxiety-related disorders seem to be the most common psychiatric disorders associated with musculoskeletal diseases, resulting in disabilities and reduced life quality and social functionality of the patient.^[21] Acute musculoskeletal diseases might even become chronic because of mental issues that negatively affect rehabilitation.^[25] Thus, obtaining information about anxiety and depression can strongly help treat such diseases.

Deciding on a method to treat back pain depends on the reason causing it. Inaccurate diagnosis compels patients to pay frequent visits to several doctors and spend lots of time and money. Mental disorders are also common

causes of inadequate patient cooperation, resulting in inappropriate use of medical services. Furthermore, psychological issues may be related to certain behaviors or lifestyles which create or intensify physical diseases.^[6] Considering that mental disorders may follow or even cause back pain, the need for more serious attention and better therapy becomes obvious.

The present study aimed at investigating the relationship between anxiety and depression and functional disability in patients with lumbar disc herniation.

PATIENTS AND METHODS

The present study followed a cross-sectional descriptive-analytical design. Fifty patients (all above 20 years old) with lumbar disc herniation responded to four questionnaires. Their diagnosis was based on neurosurgery and MRI results. They all willfully agreed to participate after considering the exclusion criteria, namely, taking anti-anxiety or anti-depression drugs, narcotics, anxiety-disorder history, depression and other mental illnesses. The first questionnaire acquired demographic information on age, gender, marital status, and education. The second, third and fourth questionnaires were the Zung Self-Rating Anxiety Scale, the Beck Depression Inventory and Roland-Morris's Disability Questionnaire, all marked during interviews.

The Zung Self-Rating Anxiety Scale: This scale was introduced by William Zung in 1970 and soon became one of the most common developmental questionnaires evaluating anxiety. It includes 20 items that measure the symptoms and intensity of anxiety. Each question could be answered on a Likert-type scale from 1 to 4 (1= no symptom or very small severity, 4= symptoms always present). Thus, it gives a min-max score range of 20-80 for each person. Investigations have shown that the Zung Self-Rating Anxiety Scale highly correlates with the Hamilton Anxiety Scale (Gilani, 1991). The α value for this scale has been reported to be .84 ($r = .75$), showing high internal consistency.

Combining the results of several studies, Zung has provided an index for interpreting the results of this test as follows: 20-44 (normal range); 45-59 (mild to moderate anxiety levels); 60-74 (marked to severe anxiety levels); and 75-80 which indicates extreme anxiety levels.^[26]

The Beck Depression Inventory: This inventory includes 21 multiple-choice items with 4 choices for each item, and can be filled out in a few minutes. Participants were asked to read each question carefully and chose the answer according to their current status. The answer to each question can range from 0-3. Thus, the final score could range from 0-63. The severity of depression is determined as 0-9 for minimal depression, 10-16 for mild depression, 17-29 for moderate depression and 30-63 for severe depression.^[27] The psychometric values obtained for this inventory in Iran (94 participants) were reported to be Cronbach's $\alpha=.91$; split-half correlation=.89; and reliability=.94 (Fata, Birshak, Atef, Vahid, & Dapson, 2003). Mohammad Khani and Dapson (2007) also investigated the Beck Depression Inventory-II (BDI-II) psychometrically with 354 participants and found the internal consistency to be .91.

Functional disability was measured using the Roland-Morris Disability Questionnaire translated into Persian by Musavi et al. (2006). It includes 24 items by which patients can describe their back pain. The participants read all the items carefully and selected the sentences best describing their current status.^[28]

Absolute and relative frequency measures were calculated for descriptive purposes. To study the relationship between depression-severity and anxiety, as well as their relationship with demographic variables, t-tests, Chi-squares and correlation coefficients were calculated at the significance level of .05. All analyses were run using SPSS (v. 20).

RESULTS

Out of the 50 participants, 58% were male and 70% were married. Patient age ranged from 20-62 ($M=43.66$, $SD=9.93$). Table 1 shows the demographic information of the patients. The mean scores obtained for the questionnaires were: 15.3 ± 9.59 for the Beck Depression Inventory; 50.38 ± 12.51 for the Zung Self-Rating Anxiety Scale; and 14.18 ± 4.24 for the Roland-Morris Disability Questionnaire. As shown in tables 2, patient anxiety was mostly mild to moderate (56%). Depression severity was also mostly mild (30%). In the present study, 62% of the patients showed degrees of depression and 84% indicated degrees of anxiety.

Table 1. Demographic information of the patients.

Characteristic		Number (%)
Gender		
o	Female	21 (42%)
o	Male	29 (58%)
Marital Status		
o	Single	8 (16%)
o	Divorced	7 (14%)
o	Married	35 (70%)
Educational Degree		
o	Primary	14 (28%)
o	Elementary Cycle	8 (16%)
o	Diploma	14 (28%)
o	Academic	14 (28%)

Table 2. Distribution of The prevalence of Depression and Anxiety in patients with Lumbar Disc Herniation.

	Severity Of Depression (%)	Severity Of Anxiety (%)
Normal	19(38)	8 (16)
Mild	15(30)	28(56)
Moderate	12(24)	12(24)
Severe	4(8)	2(4)

To study the relationship between age, depression, anxiety and functional disability, Pearson correlations were run. The results showed no significant linear correlation between age and functional disability ($r = .066$, $p = .65$), age and depression ($r = .062$, $p = .67$) and age and anxiety ($r = .014$, $p = .92$).

Pearson correlations were also run to study the relationship between depression and anxiety with functional disability and between depression and anxiety. Results also indicated significant, positive, linear relationships between depression and functional disability ($r = .69$, $p = .0001$), anxiety and functional disability ($r = .83$, $p = .0001$) and anxiety and depression ($r = .637$, $p = .0001$). Chi-squares were run to study the relationship between education, depression and anxiety. The results indicated no significant relationship (depression: $p = .413$ and anxiety: $p = .649$).

ANOVA was run to investigate the relationship between education and functional disability. According to the analysis, no significant relationship ($F = .3$, $p = .82$) was found. Pearson correlation coefficient was used to investigate the relationship between marital status and anxiety ($r = .17$, $p = .239$), depression ($r = .249$, $p = .081$) and functional disability ($r = .151$, $p = .296$) which indicated no significant relationship. Independent-samples t-tests were run to investigate the relationship between gender and depression, anxiety and functional disability which indicated significant results (Table 3).

Table 3. The relationship between gender and depression, anxiety, and functional disability in patients with Lumbar Disc Herniation.

	Gender	N	Mean	Std. Deviation	P-Value
Roland and Morris Disability					
Questionnaire (RDQ)	Female	21	17.57	3.218	
	Male	29	11.72	3.034	0.0001
Beck Depression Inventory					
	Female	21	21.29	11.735	
	Male	29	10.97	4.049	0.0001
Zung Questionnaire					
	Female	21	59.33	8.656	
	Male	29	43.90	10.821	0.0001

DISCUSSION

There is very limited information on the prevalence of anxiety and depression disorders in patients of Lumbar disc herniation. Different studies have found it to be between 21.5% to 49.3%, which might have been due to different measurement methods.^[9,22] Patients who undergo disc surgery suffer more depression and anxiety as compared to the general population. This has a strong effect on surgery outcome, returning to work after surgery, inappropriate use of painkillers and reducing the quality of their life.^[19, 24, 25]

Psychological evaluations during therapy and rehabilitation should be considered since psychosomatic consultation and consultation-liaison services can largely help these patients. The present study investigated the relationship between depression and anxiety and functional disability in patients with Lumbar disc herniation. Thirty percent of the patients showed mild depression, 24% showed moderate depression and 8% showed severe depression. Regarding anxiety, 56% were in the mild to moderate range, 24% were in the severe

range and 4% were in the extreme range. The difference in calculations can be due to cultural, economic and social differences between the samples, sampling method (sampling from general hospitals or specialist clinics), measurement instruments (structured interviews, the Beck or Hamilton questionnaires) and sampling season (depression is usually more common in autumn and winter).^[25, 29]

The present study found a significant positive correlation between depression and anxiety and functional disability which agrees with previous findings.^[14,23] In other words, depression increases the risk of anxiety and vice versa. The two can also raise the risk of functional disability in patients with disc herniation.

The present study indicated no significant relationship between age and depression, anxiety and functional disability. This might be due to the limited age-range of the participants as disc herniation is mostly seen in older people. A significant relationship was found between gender and depression, anxiety and functional disability.

Females showed stronger correlations, which might be due to their higher rate of depression and anxiety.

Patients who undergo disc surgery suffer more depression and anxiety as compared to the general population. This can strongly influence surgery results, returning to work after surgery, inappropriate use of painkillers and reducing the quality of their life. Applying adequate therapy for depression and anxiety could result in a more serious follow up and a more successful therapy, hence psychological evaluations during therapy and rehabilitation should be considered. Including psychosomatic consultation and consultation-liaison services as part of their process, could help these patients to a large extent.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

REFERENCES

- Henningsen P, Zimmermann T, Sattel H. Medically unexplained physical symptoms, anxiety, and depression: a meta-analytic review. *Psychosomatic medicine*. 2003; 65(4): 528-33.
- Thorbjornsson CO, Alfredsson L, Fredriksson K, Koster M, Michelsen H, Vingard E, et al. Psychosocial and physical risk factors associated with low back pain: a 24 year follow up among women and men in a broad range of occupations. *Occupational and environmental medicine*. 1998; 55(2): 84-90.
- Vranceanu AM, Barsky A, Ring D. Psychosocial aspects of disabling musculoskeletal pain. *The Journal of bone and joint surgery American volume*. 2009; 91(8): 2014-8.
- Moore JE. Chronic low back pain and psychosocial issues. *Physical medicine and rehabilitation clinics of North America*. 2010; 21(4): 801-15.
- Shelerud RA. Epidemiology of occupational low back pain. *Clinics in occupational and environmental medicine*. 2006; 5(3): 501-28, v.
- Richards BL, Whittle SL, van der Heijde DM, Buchbinder R. The efficacy and safety of antidepressants in inflammatory arthritis: a Cochrane systematic review. *The Journal of rheumatology Supplement*. 2012; 90: 21-7.
- Kuijpers T, van Middelkoop M, Rubinstein SM, Ostelo R, Verhagen A, Koes BW, et al. A systematic review on the effectiveness of pharmacological interventions for chronic non-specific low-back pain. *European spine journal: official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society*. 2011; 20(1): 40-50.
- Goodman DM, Burke AE, Livingston EH. JAMA patient page. Low back pain. *Jama*. 2013; 309(16): 1738.
- Kim TS, Pae CU, Hong CK, Kim JJ, Lee CU, Lee SJ, et al. Interrelationships among pain, disability and psychological factors in young Korean conscripts with lumbar disc herniation. *Military medicine*. 2006; 171(11): 1113-6.
- KHANZADEH R, HASHEMI JAA, OMIDI KF, ZANDI M, KHODABAKHSHI M. The Effect of Combined Therapeutic Protocol (Therapeutic Exercises and Massage) on the Pain and Physical Performance in Men with Chronic Low Back Pain Due to Lumbar Disc Herniation. 2012.
- Chou R, Atlas SJ, Stanos SP, Rosenquist RW. Nonsurgical interventional therapies for low back pain: a review of the evidence for an American Pain Society clinical practice guideline. *Spine*. 2009; 34(10): 1078-93.
- Ramond A, Bouton C, Richard I, Roquelaure Y, Baufreton C, Legrand E, et al. Psychosocial risk factors for chronic low back pain in primary care--a systematic review. *Family practice*. 2011; 28(1): 12-21.
- Howe CQ, Robinson JP, Sullivan MD. Psychiatric and psychological perspectives on chronic pain. *Physical medicine and rehabilitation clinics of North America*. 2015; 26(2): 283-300.
- Weber K, Sartori M, Cedraschi C, Genevay S, Canuto A, Rentsch D. [Interdisciplinary treatment of chronic low back pain: psychological aspects and personality traits]. *Revue medicale suisse*. 2012; 8(328): 368-70.
- Scholich SL, Hallner D, Wittenberg RH, Hasenbring MI, Rusu AC. The relationship between pain, disability, quality of life and cognitive-behavioural factors in chronic back pain. *Disability and rehabilitation*. 2012; 34(23): 1993-2000.
- Polatin PB, Dersh J. Psychotropic medication in chronic spinal disorders. *The spine journal: official journal of the North American Spine Society*. 2004; 4(4): 436-50.
- Trampas A, Mpeneka A, Malliou V, Godolias G, Vlachakis P. Immediate Effects of Core Stability Exercises and Clinical Massage on Dynamic Balance Performance of Patients With Chronic Specific Low Back Pain. *Journal of sport rehabilitation*. 2014.
- Tsao JC. Effectiveness of massage therapy for chronic, non-malignant pain: a review. *Evidence-based complementary and alternative medicine: eCAM*. 2007; 4(2): 165-79.
- Silverplats K, Lind B, Zoega B, Halldin K, Rutberg L, Gellerstedt M, et al. Clinical factors of importance for outcome after lumbar disc herniation surgery: long-term follow-up. *European spine journal: official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society*. 2010; 19(9): 1459-67.
- Stevellink SA, Malcolm EM, Mason C, Jenkins S, Sundin J, Fear NT. The prevalence of mental health disorders in (ex-)military personnel with a physical impairment: a systematic review. *Occupational and environmental medicine*. 2015; 72(4): 243-51.

21. Zieger M, Schwarz R, Konig HH, Harter M, Riedel-Heller SG. Depression and anxiety in patients undergoing herniated disc surgery: relevant but underresearched - a systematic review. *Central European neurosurgery*. 2010; 71(1): 26-34.
22. D'Angelo C, Mirijello A, Ferrulli A, Leggio L, Berardi A, Icolaro N, et al. Role of trait anxiety in persistent radicular pain after surgery for lumbar disc herniation: a 1-year longitudinal study. *Neurosurgery*. 2010; 67(2): 265-71.
23. Kim TW, Oh CH, Shim YS, Yoon SH, Park HC, Park CO. Psychopathological influence of lumbar disc herniation in male adolescent. *Yonsei medical journal*. 2013; 54(4): 813-8.
24. Lobner M, Luppia M, Matschinger H, Konnopka A, Meisel HJ, Gunther L, et al. The course of depression and anxiety in patients undergoing disc surgery: a longitudinal observational study. *Journal of psychosomatic research*. 2012; 72(3): 185-94.
25. Havakeshian S, Mannion AF. Negative beliefs and psychological disturbance in spine surgery patients: a cause or consequence of a poor treatment outcome? *European spine journal: official publication of the European Spine Society, the European Spinal Deformity Society and the European Section of the Cervical Spine Research Society*. 2013; 22(12): 2827-35.
26. Hemmati Sabet A, Khalatbari J, Abbas Ghorbani M, Haghghi M, Ahmadpanah M. Group Training of Stress Management vs. Group Cognitive-Behavioral Therapy in Reducing Depression, Anxiety and Perceived Stress Among HIV-Positive Men. *Iranian journal of psychiatry and behavioral sciences*. 2013; 7(1): 4-8.
27. Tajfard M, Ghayour Mobarhan M, Rahimi HR, Mouhebati M, Esmaeily H, Ferns GA, et al. Anxiety, depression, coronary artery disease and diabetes mellitus; an association study in ghaem hospital, iran. *Iranian Red Crescent medical journal*. 2014; 16(9): e14589.
28. Mousavi SJ, Parnianpour M, Mehdian H, Montazeri A, Mobini B. The Oswestry Disability Index, the Roland-Morris Disability Questionnaire and the Quebec Back Pain Disability Scale: translation and validation studies of the Iranian versions. *Spine*. 2006; 31(14): E454-9.
29. Valasek T, Varga PP, Szoverfi Z, Bozsodi A, Klemencsics I, Fekete L, et al. Validation of the Hungarian version of the Roland-Morris disability questionnaire. *Disability and rehabilitation*. 2015; 37(1): 86-90.