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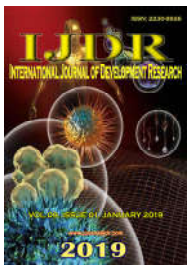

ORIGINAL RESEARCH ARTICLE OPEN ACCESS

CHRONIC LOW BACK PAIN & PSYCHOLOGICAL COMORBIDITY

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ABSTRACT

Aim: Low back pain is a common disease, and it is observed at least once in 70-85% of the population during their lifetime.Chronic low back pain (CLBP)interferes with the physical ability and mobility of high number of people. This study will determine if there is a relationship between mental disorders including depression, hypochondriasis and anxiety, and the functional status of patients suffering from chronic low back pain.**Subjects and methods:** The study was performed on a sample of 200 agreed to participate in this cross-sectional study. The patients were divided equally into two separate groups: first group consisted patients with chronic low back pain with clear organic lesion and validated radiologically.The second group consisted of patients with chronic low back pain in which no clinical and radiological confirmation for an organic lesion, or called functional group. Every patient has undergone to the following procedures: A) Medical evaluation including (Neurological evaluation, systemic examination mainly gynecological examination in all female patients and radiological examination mainly Plain x-ray of lumbosacral spine and Magnetic Resonence Imaging(MRI) lumbosacral spine. B) The psychological evaluation used to measure anxiety, depression and hypochondriasis by adopting the MMPI Questionnaire **Results:** This study sample has included 53% males and 47% females in organic group while 30% males and 70% females in functional group. In Organic group, age and LBPwere found to be significantly associated. Radiation was absent in 9% of patients in organic group and in 60% of patients in functional group. Parathesia present in 85% of organic group, while functional group 20%. 70% of those in organic group and 25% of those in functional group reported severe pain.Depressionwas observed in 15% oforganic group participants and in 35% of patients of functional group in LBP patients. Depression scores reported in the functional group are strikingly higher than that inthe group with organic lesion.Anxiety were (14%) in organic group, 20% in functional group, hysteria scores in the second group are decidedly higher than that in the group with organic lesions. Hypochondriasis disorders reported in 9.5%of organic pain patients and in 15% of functional pain group.Hypochondriasis scorewas found to be definitely higher in the functional groupthan in the organic group.**Conclusion:** Depression, anxiety, and hypochondriasis are highly prevalent among people with chronic low back pain. So in order to manage the pain, it is useful to treat patient's mental dysfunctions that will probably improve their functional status. This way, patients can avoid addictive management and treatment regimens prescribed by their physician to treat their functional disabilities.

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INTRODUCTION

Low back pain is a common disease, and it is observed at least once in 70-85% of the population during their lifetime.

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Chronic low back pain (LBP) can significantly interferes with the physical ability and mobility of high number of people (Kim, 2005). Pain's severity can range from a minor interfere with work and daily activities to complete inhibitionof daily actions (Bratton, 1999). LBP is ranked as the first cause of work disability where it is expected to have some adults suffering from it at one point during their lifetime (Bener,

2004). It is also estimated to affect eight in every ten adults at some point in their lifetime. LBP is a complex condition produced by multiple factors. It is evident that LBP is associated with physicaland psychological factors (Bener, 2013). Despite the fact that excessive complaining from pain is associated with psychological difficulties, there is no clear relationship between pain behavior and the psychological factors. It was reported that patients with LBP commonly experience psychological distress because pain can negative impact the quality of their life (Bener, 2006). It is hypothesized that depression is more likely to be found in subjects exhibiting excessive pain than in those who do not exhibit excessive pain levels. Numerous psychiatric disorders commonly go in parallel with chronic low back pain (Banks, 1996 and Sullivan, 1992). In clinic samples, rates of current major depression can range from 30 to 54% significantly highcompared to that of 5–8% found in the general population (Kessler, 2003). International data from the World Health Organization (WHO) collaborative study on psychological problems in primary care by *Sartorious et al* and *Von Korff M et al* showed that 32% of patients with somatoform pain disorder also met criteria for a depressive disorder (Sartorious, 1996 and Von Korff, 1996). Patients with LBP receive treatment for two major goals; to manage their pain and to improve their functional status/capabilities. The research has majorly focused on the part of managing the pain, where it is anticipated that reducing pain level will improve their functional status. However, acting upon eliminating subjective feelings of disability has shown to yield in a successful LBP treatment (Hildebrandt, 1997). What is theassociation between depression and anxiety and functional status ofLBP patients? This study will determine if there is a relationship between mental disorders including depression, anxiety and hypochodriasisand the functional status of patients with chronic low back.

MATERIALS AND METHODS

This isstudy, including patients aged 15–60 years who attendedoutpatient Neurology, Internal Medicine and Physicalmedicine clinics. Data collection took place from patients withchronic low back pain for more than six monthsand response to adequate and supervised conservative treatment was not reported. The patients were divided equally into 2 separategroups: first group consisted patients with chronic low back pain with clear organic lesion and validated radiologically. The second group consisted of patients with chronic low back pain in which no clinical and radiological confirmation for an organic lesion, or called functional group. Every patient underwent the following procedures: A) Medical evaluation including (Neurological evaluation, systemic examination mainly gynecological examination in all female patients and radiological examination mainly plain x-ray of lumbosacral spine and magnetic resonanceimaging (MRI) lumbosacral spine.B) Psychological evaluation: The original MMPI test was studied and analyzed. It is consisted of a questionnaire that has 550 items, and answered by "true", "cannot say" or "false". This study adopted the clinical scales in the assessment test (MMPI) that consists of 3 parts. Scale 1: Hypochondriasis (Hs): when patients have abnormal concerns regarding bodily health. This scale consisted of 20 itemsto obtain complaints about vague and non-specifically bodily function. Pessimistic, cynical and defeatist personalities get higher scores.

The second scale 2; Depression (D) and consisted of 20 items, to measure how deep the symptomatic depression is and to measure morale and morale hope in future. The third scale: 3 is Hysteria (Hy). It is also composed of 20 items, concerning with the specific somatic complaints and emotional difficulties' denial.

Procedure: It started with complete clinical and radiological testing in order to provide patients with the idea of MMPI administration. The test was administered quietly in a separate room. Patients were asked to answer the questionnaire freely and honestly by "true", "can't say", or "false". Confidentiality was preserved and guaranteed to all participating patients. The answers were analyzedas per the original MMPI scale (Bener, 2013).

Statistics: SS is the sum of squares of the differences from the mean.

$SS = \Sigma (x - m(x))^2$

Degrees of freedom/DF is the number of freely variable values in the final statistic calculation of a statistic. That is the value you should be mostly concerned with to know if there is significant differences or not.

M-estimators are estimators obtained from the minima functions' summation of the data.

$$\sum_{i=1}^{n} \rho(x_i, \theta),$$

F-test in one way ANOVA assessesif the expected values of tested variable within several groups differ from each other or not.

$$F = \frac{\text{explained variance}}{\text{unexplained variance}},$$

or

$$F = \frac{\text{between-group variability}}{\text{within-group variability}}.$$

The "explained variance", or "between

$$\sum_i n_i (\bar{Y}_{i\cdot} - \bar{Y})^2 / (K-1)$$

RESULTS

Table 1. The number and percentage of demographic data in the studied groups as regard sex

		Functional	Organic	Total
Male	N	30	53	83
	%	30	53	41.5
Female	N	70	47	117
	%	70	47	58.5
Total	N	100	100	200
	%	100	100	100

Table 2. The mean values of demographic data in the studied groups as regard age

Age	Functional	Organic	Total
20-40	**70**	**35**	**105**
40-60	**30**	**65**	**95**

There is a significant correlation between age and chronic LBP type, where most of the patients suffering from functional type were between 20 to 40 years old.

Table 3. The correlation between the work pattern and back pain

	Functional		Organic	
	Male	Female	Male	Female
Sedentary	10	40	20	20
Moderate	5	10	3	7
Severe	15	20	30	20

There is high number of sedentary females with functional LBP. It was significant.

Table 4. Presence of radiating pain

	Functional	Organic
Both LL	11	26
Only Rt or Lt	20	40
Absence	60	9
Occasional	9	25

Table 5. Presence of parathesias in lower limbs

	Functional	Organic
Present	20	84
Absent	80	16

Table 6. Pain scale scores

		Functional	Organic
Mild (Grade I,II)	N	75	30
	%	75	30
Severe (Grade III,IV)	N	25	70
	%	25	70

Grade I: pain requires no medication.
GradeII: Pain requires medication and gets relieved.
Grade III: Pain requires medication but not relieved.
Grade IV: Pain which is severe.
Grade I and II were classified as mild pain. Grade III and IV were classified as severe pain

Table 7. Analysis of MMPI scores

AVG Score	Functional		Organic	
	Male	Female	Male	Female
HS	7.94	9.55	4.48	4,82
HY	8.72	7.87	4.65	5.13
D	10.61	11.42	5.32	5.92

Patients with functional pain has a significantly higher score on hysteria and depression for the functional group than patients with organic pain (irrespective of the sex) (Hy= Hysteria, Hs= Hypochodriasis, D= Deprssion)

Table 8. Analysis of variance of hysteria

	SS	DF	M	F
A	0.0604	1	0.0623	0.036
B	72.085	1	72.086	5.42
AXB	1.399	1	1.562	0.13
Within Cell		95/98	12.67	

A = the main effect sex– B= the main effect Organic VS functional

The score of females and males is the same. However, B; the main effectfor organic VS functional indicates that the functional group has significantly higher hysteria score than that of organic group.

Table 9. Analysis of variance of hypochodriasis

	SS	DF	M	F
A	5.243	1	4.695	0.529
B	93.52	1	95.53	13.42
AXB	1.825	1	1.824	0.13
Within Cell		95/98	68.64	

The hypochondriasis scale is the same in males and females. However, B; the main effect in organic VS functional, shows that the hypochondriasis scores is statistically higher in the functional group thanthe organic group.

Table 10. Table (8)Analysis of variance of depression

	SS	DF	M	F
A	214	1	215	0231
B	82.65	1	83.21	6.488
AXB	0.032	1	0.032	2.594
Within Cell		95/98	10.67	

The score is the same for males and females. However, depression score is higher in the functional group than in the organic group as indicated by the main effect between organic VS functional; B. The analysis of the 3 components of low back pain MMPI scale i.e., hysteria, hypochondriasis and depression, has resulted in a conclusion that patients with functional pain have significantly higher scores in the 3 components, mainly depression. It also indicated that there is no significant difference in the 3 scores between males and females.Lastly, the intersection between the pain type (function VS organic) and patients' sex was not significant in the 3 components of MMPI scale.

DISCUSSION

Lower back Pain is widely considered as a bio-psycho-social issue (Waddell, 2004). It is known that LBP risk increases with the presence of physical and psychological stressors.[13]This study displays that the occurrence of LBP increased between 20 to 40 years and more in female in functional group, which matches the result of*Kostova* and *Koleva* study.[14]It has shown that women (53.9%) experience LBP symptoms more than men (46.1%). This result is consistent with other studies findings, which reported that LBP is more likely to be reported by females than males (Dempsey, 1997), the high LBP incidence in women could be explained in the fact that women are always under more stress related to their work and their high responsibilities towards their families. In the present study, LBP and psychological distress are significantly associated.The depression represent 15% in organic group, 35% in Functional group, and anxiety disorders 14% in organic group , 20% in Functional group. These results were higher compared to their healthy people. On the other hand, the level of anxiety and depression is the same in patients with excessive and without excessive pain behavior, especially in females, as stated by *Dickens et al.* (2002). Moreover, studies has shown that LBP and physiological distress are significantly associated (Bener, 2012; Schneider, 2005; Manchikanti, 2003). Researchers have extensively studied the association between depression and pain unexplained medically, and it was positive between depression and somatoform disorders (Al-Shammari, 1994; Delisa, 2005; Palmer, 2000 and Cassidy, 1998). To illustrate the mechanism of how depression can cause unexplained pain, several hypotheses have been arisen (Al-Shammari, 1994 and Palmer, 2000).

Our study has also found that generalized anxiety disorder is a significant comorbidity among cases (14% in organic, 20% in functional group). 40 % cases and 15% controls had generalized anxiety disorder in a study conducted by *Manchikanti et al.* (Manchikanti, 2002). Whereas, other studies reported 15% and 20% of chronic pain patients had thesimilar psychiatric disorder (Waddell, 2004 and Kostova, 2001). Our study results are consistent with another study that presented the comorbidity of anxiety disorder and musculoskeletal pain in 18% of patients (Dempsey, 1997). The analysis of other studies indicated that depression has significantly and highly reported/scored in patients with LBP compared to people with no pain (Bener, 2004 and Bener, 2006). Somatization was more prevalent in patients with LBP, followed by depression and then anxiety, regarding thetypes of psychological distress (Kostova, 2001). However the ranking is not consistent, where anxiety was highly prevalent, followed by somatization (second rank) and then depression in another study (Manchikanti, 2002). The study findings describe the association between psychological factors and LBP. In Iran, the coexistence of psychological disorder with LBP among patients has been an increased (Mirzamani-Bafghi, 2003). Another study in Australia also showed that depression and LBP are highly associated (Henschke, 2008). In general, psychological factors aggravate LBP (Burton, 2004). In contrast, a study that evaluated the impact of anxiety or somatization on the Lower back pain occurrence, found no association; however, it found that somatization can predict disability (Burton, 2004). The more predominant somatic symptom was headache and almost half of the patients with lower back pain were anxious and nervous. Psychological factors remain a challenge for LBP patients and or the health care providers. Depression and somatization are concurrent with LBP. The present study delivers epidemiological evidence about psychiatric illness in LBP patients who have anxiety, higher depression prevalence and highly severe depression, compared to patients with no LBP. This evidence urges health care providers to start considering and identifying the psychologicalchallengesin order to understand the mechanism of interference, to design effective preventive measures and to involve them in the treatment and recovery of LBP.

Conclusion

LBP is a common problem in the general population. The study provides data that proves the significant association between psychological distress and the prevalence of LBP. The study also proves that depression was more prevalent among the psychological disorders in LBP, followed by anxiety then hypochondriasis. So it must be considered when attempting to manage pain. Therefore,in order to manage lower back pain, it is useful to treat patient's mental dysfunctions that will probably improve their functional status. This way, patients can avoid addictive management and treatment regimens prescribed by their physician to treat their functional disabilities.

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