Original Article

Prevalence And Risk Factors of Anxiety and Depressive Disorders in Patients with Lumbar Spondylosis in Two Tertiary Health Institutions in North-central Nigeria

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Abstract

Lumbar spondylosis is a degenerative condition of the lumbar spine that is highly prevalent in older adults and patients presenting with chronic low back pain. Lumbar spondylosis is associated with significant psychological comorbidities, particularly anxiety and depression, which can adversely impact the management and overall well-being of affected individuals. This study aims to assess the prevalence of anxiety and depressive disorders among patients with lumbar spondylosis and to identify associated socio-demographic and clinical factors.

This study was conducted at two tertiary health institutions in Ilorin, Kwara State. Using a cross-sectional hospital based design, a total of 176 patients aged 40 years and above with lumbar spondylosis were recruited. The Hospital Anxiety and Depression Scale (HADS) was used to evaluate the prevalence of anxiety and depressive disorders. EPI-INFO version 7.2.6.0 was employed for statistical analyses to determine associations between psychological comorbidities and various socio-demographic and clinical variables. Level of statistical significance was set at 0.05. The prevalence of anxiety and depressive disorders among the study population was 23.3% and 20.5%, respectively. Female gender, unemployment, higher educational attainment, and prolonged duration of back pain were significantly associated with anxiety disorder. No significant socio-demographic or clinical factors were associated with depression.

The high prevalence of anxiety and depression among patients with lumbar spondylosis underscores the need for a multidisciplinary approach to management.

Keywords: Lumbar Spondylosis; Chronic Low Back Pain; Anxiety; Depression.

Introduction

Lumbar spondylosis (LS) is a degenerative condition affecting the disc, vertebral bodies and intervertebral disc and is usually associated with clinical low back pain with or without disability.[1] It is a typical musculoskeletal condition and it has been documented that approximately 60-85% of adults have low back pain at some points in their lives among which some progress to chronic back pain.[2] The main problem in lumbar spondylosis is basically the wear and tear of the lumbar vertebrae, leading to disc degeneration, facet joint osteoarthritis, and ligamentum flavum hypertrophy.[3]

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Worldwide, lumbar spondylosis has been a major public health challenge, because of its high prevalence and associated disability which in turn has been shown to increase the risk of psychological disorders.[4] It has a high prevalence worldwide, with studies showing prevalence rates of 38 to 85%.[5, 6] In a study of 4,261 residents aged 40–79 years in rural Korea, the prevalence of radiographic lumbar spondylosis (LS) was 73%, with 36.5% of participants experiencing low back pain (LBP). Although LS was more common in males, LBP prevalence was higher among females.[7] In the United States, there have been steady and noticeable increases in the prevalence of lumbar spondylosis over the last decades in individuals older than 40 years.[8] A study has shown that the prevalence rate of lumbar spondylosis in the white population triples that of black among individuals older than 40 years in the United States.[9] The prevalence rate of LS has also been reported to be lower in Africa, with a Nigerian study reporting about 20%.[10]

Lumbar spondylosis has been shown to be associated with psychological disorders commonest

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among them are anxiety disorder and depression.[11] These psychological disorders however may hamper management of this illness which in turn leads to more anxiety and depression because of the chronicity, prolonged treatment and increased disability.[12]

There is a need for health professionals to have a high index of suspicion for the presence of psychological disorders among patients as their early diagnosis and effective treatment will aid early recovery of these patients from their primary conditions, reduce care-giver burden and improve their quality of life. There is dearth of studies on psychological morbidity and their associated factors among patients with LS in our environment.

Materials and Methods

Study Location

The study was carried out at the Orthopaedic outpatient clinic of the two tertiary health institutions in Kwara State North-Central Nigeria: the University of Ilorin Teaching Hospital, Ilorin (UITH) and Kwara State University Teaching Hospital, Ilorin.

The University of Ilorin Teaching Hospital is a referral center that served the people of Kwara and neighbouring states. The orthopaedic unit is under the department of surgery with four consultant orthopaedic surgeons and six resident doctors as of the time of the study. The clinic is being run on twice per week. The doctors attend to an average of three new cases of lumbar spondylosis per week in addition to about ten old cases. Kwara State University Teaching Hospital is also a referral center about 40 km from the UITH. It is similarly structured by having orthopaedic unit domiciled in the surgery department. It had two consultant orthopaedic surgeons and five resident doctors as of the time of the study. The orthopaedic clinic is once per week on every Wednesday. The patient load was heavier than UITH probably due to proximity to Ilorin metropolis. They attend to an average of five new lumbar spondylosis cases per week, in addition to about fifteen old cases.

Study Design

It was a descriptive cross-sectional hospital based study. It employed the use questionnaires to obtain the needed data and information among the study population.

Study Population

All patients attending Orthopedic Clinics in the two teaching hospitals with a clinical diagnosis of Lumbar Spondylosis constituted the study population. Research assistants helped in the administration of the questionnaire to the patients attending the weekly Orthopedic Clinics who had clinical diagnosis of lumbar spondylosis and met the inclusion criteria. The study took place over a period of six months. A total of one hundred and seventy-six (176) respondents were recruited into the study which consisted of 108 respondents from the Kwara State University Teaching Hospital and 68 respondents recruited from the University of Ilorin Teaching Hospital, Ilorin.

Sample Size

The study used a convenience sampling technique where all patients with clinical and radiological diagnosis of lumbar spondylosis seen at the orthopaedic clinics of both hospitals over a 6-month period and gave informed consent were recruited into the study. At the end of the study period, 176 respondents were recruited. This method is used when the study population is low or the disorder is not very common within the population.

Instruments

Pro forma questionnaire. This questionnaire was designed by the authors to assess the socio-demographic variables and relevant clinical parameters of the respondents.

The Hospital Anxiety and Depression Scale (HADS) was used to assess the prevalent rates of anxiety and depressive disorders in the study population. HADS was devised by Zigmond and Snaith to measure anxiety and depression in a general medical population of patients.[13]. HADS consists of 14 items divided into two subscales: 7 for anxiety and 7 for depression. Each item is scored on a scale from 0 to 3, based on symptom frequency, with higher scores indicating greater symptom severity. Those that score 0 – 7 are considered normal, 8 – 10 are borderline while those that score 11 – 21 have disorder. The scores for anxiety and depression are calculated separately. This instrument has been used and validated in Nigeria by many scholars including Abiodun.[14] It is a self-administered questionnaire takes between 2 to 5 minutes to complete. HADS questionnaire has high reliability and validity values. In this study the instrument was self-administered by the educated respondents while research assistants helped the non-educated respondents.

Inclusion Criteria

Individuals aged 40 years and above with clinical and radiological diagnosis of lumbar spondylosis, which is described as chronic low back pain of more than 3 months, at the clinic were included in the study.

Data Analysis

Data were analyzed using EPI-INFO version 7.2.6.0. A frequency table was generated for socio-demographic variables such as age, sex, religion, occupation. Chi-square was used to compare statistical significance between those that have anxiety disorder as well as those that have depression with those that did

not have. The statistical significance level was set 5% confidence limit for the two-tailed test.

Ethical Issue

Health Research Ethics Committee (HREC) of the University of Ilorin Teaching Hospital gave the ethical approval and clearance for the study (ERCPAN/2021/09/0195).

Informed consent of each respondent was also sought, and only those who gave their consent, after the procedure had been adequately explained to them, were recruited into this study.

Result

One hundred and seventy-six (176) eligible patients met the inclusion criteria at the two tertiary health institutions in Ilorin, the capital city of Kwara State, and the result of the analysis of the data are shown below.

Socio-demographic and Clinical Characteristics of the LS Patients

Among the study population, those in the age group of 41–50 years were the most represented at 95 (53.9%), while those in the age group of 51–60 years were the least represented at 16 (20.5%). The respondents' ages ranged between 40 and 90 years, with a mean age and SD of 51 ± 7.88 years.

There were more females 96 (54.5%) than males 80 (45.5%) and most of the participants 121 (68.8%) were married. Over 65% of the participants were Muslims (115), while 34.7% proclaimed Christian faith. The majority were employed, 132 (75%). Their occupation varied and included jobs such as civil service, trading, petty businesses, and artisan. The study also revealed that the majority of them were educated, and 46.6% of them were educated up to tertiary level. (Table 1)

When the duration of back pain was considered, 41% of the respondents reported that their back pain was less than 12 months, and almost 25% had back pain greater than 36 months.

Table 1: Socio-demographic characteristics of the participants

Variables	Frequency (%)
Age (Years)	
41 – 50	95 (53.9)
51 – 60	36 (20.5)
> 60	45 (25.6)
Mean ± SD	51 ± 7.88
Range (Years)	40 – 90
Gender	
Male	80 (45.5)
Female	96 (54.5)
Marital Status	
Single	25 (14.2)
Married	121 (68.8)
Widowed/Separated/Divorced	30 (17.0)
Religion	
Christianity	61 (34.7)
Islam	115 (65.3)
Employment status	
Employed	132 (75.0)
Unemployed	44 (25.0)
Level of education	
None	19 (10.8)
Primary	27 (15.3)
Secondary	48 (27.3)
Tertiary	82 (46.6)

Prevalence of Anxiety and Depression among LS Patients

The Hospital Anxiety and Depression Scale results showed that 36 of the respondents scored 11 and above on the HADS thus meeting the diagnosis for depressive disorder, given the prevalence of 20.5%. Also, the scale showed that 41 respondents scored 11 and above on the anxiety sub-scale of HADS therefore meeting the diagnosis for anxiety disorders, which translated to a prevalence of 23.3% of anxiety disorders among the sampled population (Figure 1).

Socio-demographic/Clinical Characteristics and Prevalence of Anxiety and Depression among LS Patients

The mean age for the normal group was 49 ± 15.49 years and for the abnormal group 55 ± 11.57 years (χ^2 = 3.051, p = 0.549). Male participants were more frequently in the normal group (61.3%) compared to females (45.8%), but this did not reach a statistically significant level (χ^2 = 4.223, p = 0.121). Married individuals were more likely to be classified as normal (50.4%) compared to other marital statuses, the

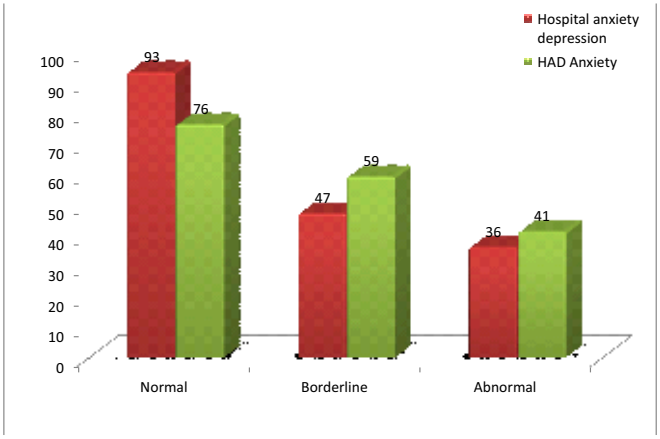

Figure 1: Hospital anxiety and depression scale

Table 2: Association between HAD and socio-demographic variables

Variables	Depression			χ^2	p-value
	Normal (%)	Borderline (%)	Abnormal (%)		
Age				3.051	0.549
41 – 50	54 (56.9)	25 (26.3)	16 (16.8)		
51 – 60	15 (41.7)	11 (30.6)	10 (27.8)		
> 60	24 (53.3)	11 (24.5)	10 (22.2)		
Mean ± SD	49 ± 15.49	52 ± 11.58	55 ± 11.57	1.991	0.140
Gender				4.223	0.121
Male	49 (61.3)	17 (21.3)	14 (17.5)		
Female	44 (45.8)	30 (31.3)	22 (22.9)		
Marital Status				9.073	0.058
Single	19 (76.0)	1 (4.0)	5 (20.0)		
Married	61 (50.4)	36 (29.8)	24 (19.8)		
Widowed/Separated/Divorced	13 (43.3)	10 (33.3)	7 (23.3)		
Employment status				4.803	0.090
Employed	74 (56.1)	36 (27.3)	22 (16.7)		
Unemployed	19 (43.2)	11 (25.00	14 (31.8)		
Level of education				7.886	0.249
None	12 (63.2)	2 (10.5)	5 (26.3)		
Primary	17 (63.0)	4 (14.8)	6 (22.2)		
Secondary	20 (41.7)	16 (33.3)	12 (25.0)		
Tertiary	44 (55.0)	23 (28.7)	13 (16.3)		
Duration of back pain (months)				12.241	0.056
≤ 12	49 (67.1)	13 (17.8)	11 (15.1)		
13 – 24	17 (48.6)	11 (31.4)	7 (20.0)		
25 – 36	10 (40.0)	7 (28.0)	8 (32.0)		
> 36	17 (39.5)	16 (37.2)	10 (23.3)		

association did not reach statistical significance (χ^2 = 9.073, p = 0.058). Employed participants showed a higher frequency of been normal (56.1%) compared to unemployed participants (43.2%). However, this relationship was not statistically significant (χ^2 = 4.803, p = 0.090). There was no significant association between education level and depression too (χ^2 = 7.886, p = 0.249). Duration of back pain was strongly associated with severity of depressive symptoms, with those experiencing back pain for ≤ 12 months more likely to be categorized as normal (67.1%) compared to those with longer pain durations. Although this findings suggest a trend toward increasing depression with prolonged pain duration, it did not reach a statistical significance (χ^2 = 12.241, p = 0.056). (Table 2).

However, the analysis of the variables in those with anxiety disorder when compared with those without anxiety disorder revealed that marital status (χ^2 = 22.234, p = 0.001), employment status (χ^2 = 8.381, p = 0.015), level of education (χ^2 = 21.968, p = 0.001), and duration of back pain (χ^2 = 14.741, p = 0.002) were associated with the presence of anxiety disorder. Widowed/separated/divorced individuals had the higher proportion in the anxiety category when compared with the married patients. The unemployed group was significantly associated with the development of anxiety disorder. Another factor that showed an association with the presence of anxiety disorder was a higher level of education as compared with those with little or no formal education. Participants with a pain duration of ≤12 months are more represented among those with no or little anxiety symptoms (58.9%), whereas those experiencing pain from 25 months and above were more likely to be in the severe anxiety symptoms category. (Table 3).

Table 3: Association between Anxiety and socio -demographic variables

Variables	Anxiety			χ^2	p-value
	Normal (%)	Borderline (%)	Abnormal (%)		
Age				9.269	0.054
41 – 50	42 (44.2)	38 (40.0)	15 (15.8)		
51 – 60	13 (36.1)	12 (33.3)	11 (30.6)		
> 60	21 (46.7)	9 (20.0)	15 (33.3)		
Mean ± SD	51 ± 14.42	49 ± 11.80	54 ± 15.45	1.272	0.283
Gender				5.658	0.059
Male	38 (47.5)	30 (37.5)	12 (15.0)		
Female	38 (39.6)	29 (30.2)	29 (30.2)		
Marital Status				22.234	**0.001**
Single	14 (56.0)	7 (28.0)	4 (16.0)		
Married	51 (42.1)	49 (40.5)	21 (17.4)		
Widowed/Separated/Divorced	11 (36.7)	3 (10.0)	16 (53.3)		
Employment status				8.381	**0.015**
Employed	65 (49.2)	41 (31.1)	26 (19.7)		
Unemployed	11 (25.0)	18 (40.9)	15 (34.1)		
Level of education				21.968	**0.001**
None	10 (52.6)	5 (26.3)	4 (21.1)		
Primary	17 (63.0)	3 (11.1)	7 (25.9)		
Secondary	9 (18.8)	26 (54.2)	13 (27.1)		
Tertiary	40 (50.0)	23 (28.7)	17 (21.3)		
Duration of back pain (months)				14.741	**0.002**
≤ 12	43 (58.9)	20 (27.4)	10 (13.7)		
13 – 24	11 (31.4)	15 (42.9)	9 (25.7)		

Discussion

The age range of participants of this study was 40–90 years, and those in their 40s were most represented. This may be as a result of lifestyles of those just entering midlife from young adulthood. Many of them are still engaged in strenuous activities and occupations such as lifting heavy objects, repetitive movements, and prolonged sitting, which all contribute to degenerative changes in the spine, not realizing that their body system is ageing and there are physiological changes going on in the body as a result of advancing age.

This study found the mean age of participants to be 51 years, which is lower than that of the study done by Lee et al[15] among rural Korean residents, which had a mean age of 61 years. It is, however, important to note that the Korean study was a community study, whereas, our study is a hospital based study. Ours will be a pool of individuals with severe form of the condition that occurred earlier.

Females were more common than male among the patients with lumbar spondylosis. Bento et al[16] similarly reported that female constituted more than 60% of lumbar spondylosis cases in their study. This difference between genders is ascribed to significant physical changes in women, such as weight gain, posture shifts, and looser ligaments that could occur due to pregnancy. These changes can strain the lumbar spine and contribute to the development or worsening of lumbar spondylosis. It has also been noticed that health-seeking behaviour is more prevalent among women than among men.[17]

There were more married people in this study. This might be due to the fact that majority of people in this age group are more likely to be married than single. Married individuals may also face the challenge of having to satisfy marital obligation where certain roles are expected from both wives and husbands. Performing these roles may put pressure physically on the couples. This is different from what Bento et al[16] reported in their study, where more widowed and divorced people were more represented in the circles. There are also more employed individuals than unemployed individuals. Nature of work may affect the development of lumbar spondylosis. For instance, lifting or carrying objects, sitting for a long period of time, and having to maintain abnormally awkward

posture while performing duties. The employed also have higher income and thus have greater opportunity to access healthcare. The study also found that the proportion of those who were educated to the tertiary level was more represented among individuals with lumbar spondylosis attending clinics. Those who have attained higher levels of education may be more likely to work in sedentary occupations that involve prolonged sitting, such as office jobs, which could potentially contribute to the development or exacerbation of lumbar spondylosis. High level of education will also influence the level of awareness about treatment options available for conditions like lumbar spondylosis, hence, making them more likely to patronize healthcare services.

Prevalence of Anxiety disorder and Depression

The prevalence rate of anxiety disorders and depression among patients with lumbar spondylosis attending outpatients' clinics in Ilorin were 23.5% and 20.4%, respectively. These were consistent with existing literature on the psychological comorbidities associated with chronic low back pain conditions. These studies found that patients with lumbar spondylosis were more likely to come down with mental health conditions like anxiety and depression. Hu and colleagues in China reported a comparable anxiety prevalence of 23.89% among patients with chronic low back pain.[18] Some researchers, like McWilliams and Kakpovi, found prevalence of anxiety disorders to be 35% and 39% in their studies.[19, 20] McWilliams et al[19]., in a national survey, observed that contrary to common belief, the prevalence of anxiety disorders is typically higher than that of depression among individuals with chronic pain conditions.

Ajiboye and Oboirien[21] in a study conducted in Nigeria, reported that 32% of patients with chronic low back pain experienced depression. Similarly, Kakpovi et al. [20] identified a 51.3% prevalence of depression among such patients in Togo, while Polatin et al. [22] found that 55% of patients in the United States with chronic low back pain were affected by depression.

The presence of depression in patients with lumbar spondylosis may be attributed to the chronic pain and functional limitations associated with lumbar spondylosis, which can significantly impact a persons' wellbeing.[23, 24] Despite that many studies have shown strong relationships between chronic pain and depression, the precise nature of their relationship remains a matter of debate, which the empirical research is yet to fully clarify.[25] An evaluation of relevant literature provides support for the association between the two syndromes and suggests that coexisting pain and depression may be a final common presentation reached by a number of potential pathways.[26]

Factors that are associated with Anxiety disorder in patients with Lumbar Spondylosis

Unmarried individuals were more represented among those with anxiety disorder than married patients. The dissolution of marriage or death of a spouse were found to be more significantly associated with risk of anxiety in patients with lumbar spondylosis.[27] Marriage can be a protective factor against anxiety disorder in patients suffering from lumbar spondylosis. This is because the spouse will provide emotional support, companionship help with medication adherence and health seeking behaviour. Hu et al[18] noted that people with better family functioning had lower risk of anxiety disorder.

Unemployment was found to be associated with increased risk of anxiety disorder in patients with lumbar spondylosis. Unemployment comes with financial insecurity and as such, patients will be worried about so many things, including cost of medical care, which may be enormous considering the chronic nature of lumbar spondylosis and the pain that comes with it.[28] Level of education is another important factor that may be associated with risk of having anxiety disorder. Participants with secondary school and tertiary education were found to have a greater association with anxiety disorder than those with no formal education. Awareness about an illness and knowing its prognosis may paradoxically increase the level of anxiety. Hence, this might explain why higher educational qualification may predispose to greater anxiety disorder. However, contrary to the finding in this study, Elbinoune et al[29] reported heightened level of anxiety among those with low level of education.

Though Gerrits et al[30] did not find a positive correlation between duration of pain and anxiety disorder, our present study found the contrary. The result showed that the longer the duration of the pain, the more likely the patient is to develop an anxiety disorder. The respondents with a duration of pain of 36 months and above had more anxiety than those with a shorter duration of pain. A prolonged duration of pain often leads to disrupted sleep, increased frustration, and a sense of isolation. These factors can limit a patient's independence and contribute to the development of anxiety.[16]

Limitations

The limitations of this study include its cross-sectional design, which does not allow for causal conclusions, and a relatively small sample size. To address these issues, future research should involve larger and more diverse participant groups and utilize longitudinal designs to better understand the temporal relationships between lumbar spondylosis and the development of anxiety and depression.

The findings from this study underscore the need for comprehensive management of lumbar spondylosis. The management should be a multidisciplinary approach that look out for other symptoms aside the physical complaints, such as anxiety and depressive symptoms, which are usually associated with chronic diseases and the team should ensure that these mental health disorders are properly managed alongside the lumbar spondylosis.

Conclusion

This study highlights the complex interplay between lumbar spondylosis, associated mental health challenges, and various demographic factors. Our findings revealed high prevalence of anxiety and depression among patients with lumbar spondylosis. Marital status, employment, education level, and duration of pain were found to significantly influence the risk of anxiety. These findings underscore the need for multidisciplinary approaches to treatment that address both physical and psychological aspects of lumbar spondylosis.

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