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Prevalence of Sexual Disability and its Relationship with Pain Intensity, Quality of life and Psychological Distress Among Individuals with Chronic Low Back Pain in Nigeria: A Cross-Sectional Study

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Abstract
Nigeria has been reported as having the highest prevalence of low back pain (LBP) in Africa. Despite this, sexual disability among people with LBP in Nigeria is sparsely reported. To examine the prevalence of sexual disability and its relationship with pain intensity, quality of life and psychological distress among individuals with chronic low back pain (CLBP) in Nigeria. A descriptive cross-sectional study of individuals with CLBP was conducted. The Visual Analogue Scale (VAS) was used to assess pain intensity while sexual disability was assessed using the Oswestry Disability Index domain 8 (ODI-8). Quality of life was assessed using the Short-form Health Survey (SF-36) questionnaire and the 42-item Depression, Anxiety, and Stress Scale (DASS-42) was used to measure psychological distress. A total of 375 participants (mean age = 41.4 years, SD = 5.67) with CLBP participated in the study. The majority of the participants have a sexual disability (357, 95.2%), with 33.1% (124) of them reporting that their sex life was severely restricted by pain and 17.9% (67) reporting that pain prevents any sex life at all. Females have a lower quality of life and higher levels of sexual disability, pain, and psychological distress than males ($p < 0.05$). Sexual disability was strongly correlated with pain intensity, quality of life, and psychological distress ($p < 0.05$).The findings of this study indicate that there was a high prevalence of sexual disability among individuals with CLBP in Nigeria and this was strongly correlated with pain, quality of life and psychological distress.

Keywords Sexual disability · Quality of life · Psychological distress · Low back pain · Nigeria

Introduction

Low back pain (LBP) is recognized as a global disability commonly experienced by a variety of individuals across the globe [1–3]. It is estimated that 245.9 million cases of LBP occur each year globally and that between 80 and 90% of individuals will experience LBP at

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some point in their lifetime [1, 4]. In Nigeria, the annual prevalence of LBP was 32.5-73.5% [5] which is comparable to the entire African LBP annual prevalence of 51-63% [6]. LBP is the leading cause of sexual disability [7–20], functional decline and work interference [1–6], resulting in a substantial healthcare burden and economic cost to health systems, and society in general.

People with LBP are often taught how to do activities of daily living, but rarely are they advised on how to perform sexual activity [17, 18]. Sexual activity can be as important as other activities but is mostly overlooked by healthcare professionals [17–19]. In addition, major LBP trials [21–25] have also not addressed sexual activity despite it being a significant component of the biopsychosocial model of LBP care [26]. Sexual activity is strongly correlated with LBP and depression [10, 13, 27] and has been a strong predictor of people's health and quality of life [14, 27]. Thus, sexual disability can result in lowered self-esteem and hinder the personal and social well-being of people with LBP [13, 14, 20, 27].

Although sexual activity can aggravate or cause LBP, the overall prevalence is yet to be examined because the problem is not often assessed or reported [20]. However, studies found that individuals with LBP have decreased sexual activity and a lower sexual quality of life [11, 12, 15, 17]. Additionally, the main problems experienced during sexual activity by individuals with LBP were increased pain [11, 15], finding suitable sexual positions [12, 17] and difficulty with spinal movements [17]. These outcomes indicate that LBP can quickly diminish sexual arousal and willingness to have sex thereby prolonging recovery due to an increase in psychosocial distress [13, 14, 27]. Despite the high prevalence of LBP in Nigeria, sexual disability among people with LBP in that country is sparsely reported. For this reason, this study examined the prevalence of sexual disability and its relationship with pain intensity, quality of life and psychological distress among Nigerian individuals with chronic low back pain (CLBP).

Methods

Study Design and Setting

This was a descriptive cross-sectional study of individuals with CLBP presenting to the outpatient physiotherapy clinics at Federal Medical Centre (FMC), Nguru, Yobe State, Nigeria and International Hospital and Clinics (ITHC) Kano, Nigeria, between June 2018 to August 2022. FCM Nguru is a tertiary hospital with over an 800-bed capacity that is under the care of the Nigerian Federal Ministry of Health, while ITHC Kano is a tertiary hospital with over a 200-bed capacity that is under the care of non-governmental organizations.

Ethical Considerations

This study was approved by the Health Research Ethics Committees at both FMC Nguru, (FMC/N/CL.SERV/355/VOL.III/197) and ITHC Kano (ITHC/KN/IV/2018-039), Nigeria. Eligible participants with CLBP were informed about the study by their treating physiotherapists and were invited to participate by signing a written informed consent before being enrolled. Participation in the study was voluntary and participants could choose not to par-

ticipate without their treatment or relationship with the treating physiotherapists or data collection centres being affected in any way.

Sample Size

A priori sample size was determined by using the following formula for cross-sectional studies: $n = Z^2 P (1-P) / d^2$ [28], where n = Minimum sample size, $Z_{\alpha/2}$ set at 5% significant level = 1.96, $P = 32.5\%$, which is the annual prevalence of LBP in Nigeria based on estimates from a previous systematic review [5], and d = absolute error or precision (5%). Adjustment for a non-response rate (nr/r–1) of 10% was also calculated which required a sample size of 375 participants for this study. All participants were recruited conveniently until the desired sample size was met.

Eligibility Criteria

Male and female participants (age range; 19–50 years) diagnosed as having a CLBP (lasting for more than 3 months) were included in the study [29]. All participants did not have sexual dysfunction as assessed by a score of 22–25 on the 5-item International Index of Erectile Function (IIEF-5) for males and a score of 20–30 on the 6-item Female Sexual Function Index (FSFI-6) for females. The exclusion criteria were: pregnancy, uncontrolled diabetes or hypertension, history or diagnosis of spinal surgery, neoplasm, spinal fracture, spinal infection or cauda equine syndrome [29, 30].

Outcome Measures

Pain Intensity

Visual Analogue Scale (VAS) was used to assess overall pain intensity. The assessment was based on a horizontal 10 cm scale varying from 1 (least pain in the back or leg) to 10 (the worst pain ever) [31]. VAS has been shown to have a high interrater reliability coefficient ($r = 0.88$) and is very responsive to change [32].

Sexual Disability

LBP-related sexual disability was assessed using the Oswestry Disability Index domain 8 (ODI-8). The ODI-8 reflects the impact of back pain on sex life by asking 5 questions (my sex life is normal and causes no extra pain = 0, my sex life is normal but causes some extra pain = 1, my sex life is nearly normal but is very painful = 2, my sex life is severely restricted by pain = 3, my sex life is nearly absent because of pain = 4, pain prevents any sex life at all = 5) [15, 16]. The scores range from 0 to 5, with a score of 1 and above counting towards sexual disability and higher scores reflecting more sexual disability [15, 16]. The ODI-8 is a valid, and responsive instrument for measuring sexual disability in people with LBP [10, 15, 16, 33].

Quality of Life

This was assessed using the Short-form Health Survey (SF-36) questionnaire. The questionnaire consists of 36 items on physical and social functioning and has 8 domains; (1) physical functioning, (2) physical restrictions, (3) emotional restrictions, (4) social functioning, (5) somatic pain, (6) general mental health, (7) vitality, (8) general health perception [34]. The total score ranges from 0 to 100, with higher scores indicating better quality of life and lower scores indicating worse quality of life [34]. The reliability estimates for the SF-36 have been reported to have exceeded the recommended minimum value of 0.70 for internal consistency reliability, with figures typically over 0.80 for test-retest reliability [35].

Psychological Distress

The 42-item Depression, Anxiety, and Stress Scale (DASS-42) was used to measure psychological distress among the participants. The DASS is a self-administered instrument, that is valid and reliable [36]. The depression scale (14 items) assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest or involvement, anhedonia, and inertia [36]. The anxiety scale (14 items) assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious effects [36]. The stress (14 items) scale is sensitive to levels of chronic non-specific arousal and assesses difficulty relaxing, nervous arousal, being easily agitated, irritability or over-reaction and impatience [36]. The scoring and grading of the DASS range from normal (0–9 for depression, 0–7 for anxiety, and 0–14 for stress); mild (10–13 for depression, 8–9 for anxiety, and 15–18 for stress); moderate (14–20 for depression, 10–14 for anxiety, and 19–25 for stress); severe (21–27 for depression, 15–19 for anxiety, and 26–33 for stress); to extremely severe (28 + for depression, 20 + for anxiety, and 34 + for stress) [36, 37].

Female Sexual Function

The 6-item Female Sexual Function Index (FSFI-6) was used to measure female sexual function. The FSFI-6 is a 6-item, brief, and self-administered instrument derived from the original 19-item FSFI that measures female sexual function [38]. It comprises six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain during penetration. Desire and satisfaction items are rated on a 5-point Likert scale, ranging from 1 to 5, and the other items are rated on a 6-point Likert scale, ranging from 0 to 5. Total scores range from 2 to 30, with lower scores indicating worse sexual functioning. Women who scored ≤ 19 were classified as having female sexual dysfunction [38]. The FSFI-6 demonstrated sound reliability (Cronbach's alpha = 0.856) and validity and is very responsive to change [38, 39].

Erectile Dysfunction

erectile dysfunction was measured using the 5-item International Index of Erectile Function (IIEF-5) The IIEF-5 is an instrument used to determine the presence and extent of ED [40]. This Questionnaire consists of only five questions and each IIEF-5 item is scored on a five-point ordinal scale [40]. A response of 1 indicates the least sexual function, whereas a response of 5 indicates the highest sexual function [40]. The highest possible cumulative

score for the IIEF-5 is 25, while the lowest score is 1. A score above 21 was considered a normal erectile function and a score at or below this value was considered ED. Overall, according to this scale, ED was classified into four categories: severe (1–7), moderate (8–11), moderate to mild (12–16), mild (17–21), and no ED (22–25) [40]. The IIEF-5 demonstrated sound reliability (Cronbach's alpha = 0.856) and validity and is very responsive to change [41].

Statistical Analysis

Descriptive statistics of means, standard deviations, frequencies, and percentages were used to summarize the demographic and clinical information of the participants. The Shapiro-Wilk test was used to assess the normality of the data and thereafter, an independent t-test was used to determine differences in pain intensity, sexual disability, quality of life and psychological distress (depression, anxiety, and stress) between males and females with LBP. Pearson's product-moment correlation analysis was used to determine the correlation of sexual disability with pain intensity, quality of life and psychological distress among the participants. Statistical analysis was set at a 5% probability level ($P < 0.05$) and a 95% confidence interval (CI). All data were analyzed using SPSS version 23.0 software (SPSS Inc., Chicago, Illinois, USA).

Results

A total of 375 participants (mean age = 43.4 years, SD = 5.67) with CLBP participated in the study. There were no missing data or non-responders as the data continued until the target sample size was met. The demographic parameters of the participants are presented in Table 1. The results indicate that 56.5% ($n = 212$) of the enrolled participants were males, and 43.5% (163) were females. All participants were not having sexual dysfunction (M, SD: IIEF-5 = 24.08, 0.49, FSFI = 28.97, 0.64) and were mostly married (359, 95.7%). The majority of the participants were diagnosed with lumbar intervertebral disc pathologies (176, 46.9%), lumbar spondylosis (85, 22.7%) and non-specific LBP (81, 21.6%).

The clinical parameters of the participants are presented in Table 2. The results indicate that the majority of the participants have a sexual disability (357, 95.2%), with 33.1% (124) of them reporting that their sex life was severely restricted by pain and 17.9% (67) reporting that pain prevents any sex life at all. The average level of pain was moderate (6.89 ± 2.92), quality of life was moderate (45.36 ± 5.31), depression was moderate (17.01 ± 5.61), anxiety was moderate (12.57 ± 4.13), and stress was severe (28.89 ± 7.07) among the participants. The point of the prevalence of depression, anxiety and stress among the participants was 80.3%, 82.1%, and 90.9% respectively.

The differences in sexual disability, pain intensity, quality of life and psychological distress between male and female participants are presented in Table 3. The results indicate that females have a lower quality of life ($p < 0.05$) and higher levels of sexual disability ($p < 0.05$), pain intensity ($p < 0.05$), and psychological distress ($p < 0.05$) than their male counterparts. The relationship between sexual disability with pain intensity, quality of life, and psychological distress is presented in Table 4. The results indicate that sexual disability

Table 1 Demographic parameters of the participants (N = 375)

Variables	N (%)
Age (years)	M (SD) = 41.4 (5.67)
Gender:	
Male	212 (56.5)
Female	163 (43.5)
Weight (kg)	M (SD) = 62.45 (8.37)
Height (m)	M (SD) = 1.69 (0.14)
Marital Status:	
Married	359 (95.7)
Not married but with partners	16 (4.3)
Duration of pain (months)	M (SD) = 8.39 (2.56)
Type of low back disorders	
Lumbar discogenic pain	123 (32.8)
Lumbar disc herniation with radiculopathy	53 (14.1)
Lumbar spondylosis	85 (22.7)
Lumbar stenosis	9 (2.4)
Facet joint dysfunction	24 (6.4)
Non-specific low back pain	81 (21.6)
Female sexual function – FSFI-6	M (SD) = 28.97 (0.64)
Erectile dysfunction – IIEF-5	M (SD) = 24.08 (0.49)

M = Mean, SD = Standard deviation, FSFI = Female sexual function index, IIEF = International index of erectile function

was strongly correlated with pain intensity ($p < 0.05$), quality of life ($p < 0.05$), and psychological distress ($p < 0.05$) among the participants.

Discussion

This study was conducted to examine the prevalence of sexual disability and its relationship with pain, quality of life and psychological distress among individuals with chronic low back pain in Nigeria. More than half of the enrolled participants were males (212, 56.5%) and were mostly married (359, 95.7%). In addition, all enrolled participants (375, 100%) were not having sexual dysfunction with the majority of them diagnosed as having lumbar intervertebral disc pathologies (176, 46.9%), lumbar spondylosis (85, 22.7%) and non-specific LBP (81, 21.6%).

The findings of this study indicate that the majority of the participants had a sexual disability (357, 95.2%), with a significant proportion of them (124, 33.1%) reporting that their sex life was severely restricted by pain and that at least one in every six participants (67, 17.9%) reported not practising sexual intercourse due to LBP. The findings of this study are similar to those of Bahouq et al. [17] who reported that 81% (out of 100) of individuals with LBP in Morocco have a sexual disability. In another study, Berg et al. [15] also reported 84% (out of 152) of individuals with LBP as having a sexual disability in Sweden with 34% of them indicating that their sex life caused some extra pain, with another 30% reporting sex life restrictions by LBP. Contrary to our study, Berg et al. [15] conducted a randomized clinical trial with surgery as the intervention for individuals with LBP-related sexual disability, while Bahouq et al. [17] explored barriers and expectations of patients about discussing their sexual disability with their healthcare professionals which the current study did not examine.

Table 2 Clinical parameters of the participants (N = 375)

Variables	N (%)
Sexual disability – ODI-8:	
My sex life is normal and causes no extra pain	18 (4.8)
My sex life is normal but causes some extra pain	31 (8.2)
My sex life is nearly normal but is very painful	57 (15.2)
My sex life is severely restricted by pain	124 (33.1)
My sex life is nearly absent because of pain	78 (20.8)
Pain prevents any sex life at all	67 (17.9)
Mean ± Standard Deviation	3.39 (0.82)
Point prevalence	357 (95.2)
Pain – VAS (cm)	M (SD) = 6.89 (2.92)
Quality of life – SF-36	M (SD) = 45.36 (5.31)
Depression (DASS-42):	
Normal	74 (19.7)
Mild	63 (16.8)
Moderate	166 (44.3)
Severe	52 (13.9)
Extremely Severe	20 (5.3)
Mean ± Standard Deviation	17.01 ± 5.61
Point prevalence	301 (80.3)
Anxiety (DASS-42):	
Normal	67 (17.9)
Mild	76 (20.3)
Moderate	159 (42.4)
Severe	44 (11.7)
Extremely Severe	29 (7.7)
Mean ± Standard Deviation	12.57 ± 4.13
Point prevalence	308 (82.1)
Stress (DASS-42):	
Normal	34 (9.1)
Mild	47 (12.5)
Moderate	84 (22.4)
Severe	179 (47.7)
Extremely Severe	31 (8.3)
Mean ± Standard Deviation	28.89 ± 7.07
Point prevalence	341 (90.9)

M = Mean, SD = Standard deviation, ODI = Oswestry disability index, VAS = Visual analogue scale, SF-36 = Short-form 36, DASS = Depression, anxiety, stress scale, Normal (0–9 for depression, 0–7 for anxiety, and 0–14 for stress); mild (10–13 for depression, 8–9 for anxiety, and 15–18 for stress); moderate (14–20 for depression, 10–14 for anxiety, and 19–25 for stress); severe (21–27 for depression, 15–19 for anxiety, and 26–33 for stress); extremely severe (28 + for depression, 20 + for anxiety, and 34 + for stress)

The findings of this study also indicate that the prevalence of psychological distress among individuals with LBP was high and was strongly correlated with sexual disability. These findings agree with those of previous studies [10, 11, 13] which reported that sexual disability was strongly related to anxiety among Italians [10] and depression among Iranians [13] and French [11] populations with LBP. Although a study by Odele et al. [27] was conducted in Nigeria among individuals with LBP, that study largely focused on sexual dysfunction, not sexual disability. According to Odele et al. [27] "sexual dysfunction was characterized by orgasm dysfunction, libido dysfunction, coital frequency dysfunction,

Table 3 Differences in clinical parameters between male and female participants

Variables	Male (212) Mean (SD)	Female (163) Mean (SD)	Mean difference (95% CI)	*P*-value
Pain	6.81 (3.47)	7.81 (2.31)	-0.94 (-1.53, -0.35)	0.003*
Sexual disability	2.79 (0.91)	3.96 (0.62)	-1.17 (-1.33, -1.01)	<0.001*
Quality of life	43.98 (9.21)	47.10 (7.03)	-3.12 (-4.76, -1.48)	<0.001*
Depression	15.89 (4.04)	18.95 (3.21)	-3.06 (-3.79, -2.33)	<0.001*
Anxiety	11.45 (3.11)	13.77 (2.96)	-2.32 (-2.94, -1.70)	<0.001*
Stress	27.61 (5.03)	30.06 (4.88)	-2.45 (-3.46, -1.44)	<0.001*

SD=Standard deviation, CI=Confidence interval, *=Significance

Table 4 Correlation sexual disability with pain, quality of life and psychological distress (n=375)

Variables	Sexual disability	
	r	*P*-value
Pain	0.81	<0.001*
Quality of life	-0.73	<0.001*
Depression	0.85	<0.001*
Anxiety	0.74	0.001*
Stress	0.89	0.001*

*=Significance, r=Coefficient of correlation

penile erection dysfunction, sexual arousal dysfunction, sexual desire dysfunction, ejaculation dysfunction and vaginal lubrication dysfunction", while we defined sexual disability as extra pain with sex, difficulty with sex, or inability to perform sexual intercourse due to back pain intensity as indicated by the ODI-8 outcomes. Our definition of sexual disability is consistent with those of other studies [10, 15, 16, 33] that have used the ODI-8 to examine sexual disability. In addition, our current study also considered the actual annual prevalence of LBP in Nigeria (32.5-73.5%) [5], which Odele et al. [27] failed to consider and this can be indicated by our current sample size of 375 participants as against 96 participants in Odele's study. These findings indicate that our current study is robust and would add significance to the existing body of knowledge on sexual disability among individuals with LBP across the globe.

The findings of this study also indicate that sexual disability was strongly correlated with pain intensity, quality of life, and psychological distress. Although these findings indicate that both males and females had moderate pain intensity, sexual disability, quality of life, depression and anxiety, and severe stress, these outcomes were higher, except for quality of life which was lower, among females than males with LBP. The findings of our study are not surprising because fear of exacerbation of back pain is the main reason why sexual intercourse is avoided and this may increase anxiety and depression which may also reduce the quality of life [7, 8, 14]. These findings are congruent with those of previous studies [11, 42] which reported that females with LBP were found to experience disabling pain at a higher rate than males with LBP and depressive symptoms were more pronounced in females than in males [11]. Several factors including equalizing social opportunities [43], and evolutionary hypotheses [44] have been linked to the astronomical increase in depression and stress among females, however, plausible evidence suggests that biological factors, such as ovarian hormone levels and particularly decreases in estrogen, may contribute to the increased prevalence of depression and anxiety in women [45]. On the other hand, the presence of

androgen receptors in men may confer protection, for example in hippocampal neurons which become reduced with depression [46]. Additionally, since testosterone does not cycle in men as estrogen does in women, there may be more consistent protection in men [47]. However, men also have sexually dimorphic brain nuclei, particularly in the hypothalamus, so the lower prevalence of depression in men is probably more complex owing not only to hormonal differences but also to developmental differences in brain circuitry [45–48].

Limitations

This study is not without limitations, as several issues might have led to some sort of biases, particularly the cross-sectional nature of the study which made it difficult to establish cause and effect. However, a cross-sectional study has the advantage of studying a large group of people at a single point in time as we did in this current study and thus may be used to study the prevalence and predict the relationship. Additionally, the findings of this study also relied on self-reported data which could have been subjected to reporting bias. Moreover, this current study also failed to assess the predictors of sexual disability among individuals with LBP which could potentially be used to guide treatment selection and evaluate prognosis. Furthermore, the physical and mental components of the SF-36 were not teased out to determine if there would be any differences in the quality-of-life findings. Future studies may, therefore, be conducted to address this concern.

Clinical Relevance

The long-term effects of sexual disability could potentially decrease quality of life and increase psychological distress which could significantly impact social relationships and recovery of individuals with LBP. Given the consequences of sexual disability, healthcare professionals need to thoroughly examine individuals with LBP for sexual disability and provide appropriate treatment if present. Such treatment should be tailored towards the biopsychosocial model of care to enhance long-lasting recovery.

Conclusion

The findings of this study indicate that there was a high prevalence of sexual disability among individuals with CLBP in Nigeria and this was strongly correlated with pain intensity, quality of life and psychological distress. This study also found that females with LBP have a lower quality of life, higher sexual disability, higher pain intensity, and higher psychological distress than males with LBP.

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Author Contributions Musa Sani Danazumi, Abdulsalam Mohammed Yakasai: Conceptualization, Methodology, Software. Musa Sani Danazumi, Abdulsalam Mohammed Yakasai: Data curation, Formal analysis, Software, Visualization Musa Sani Danazumi, Abdulsalam Mohammed Yakasai: Project administration, Musa Sani Danazumi, Abdulsalam Mohammed Yakasai: Writing- Original draft preparation Musa Sani Danazumi, Abdulsalam Mohammed Yakasai: Writing- review & editing.

Declarations

Ethical Approval This study was approved by the Health Research Ethics Committees at both FMC Nguru, (FMC/N/CL.SERV/355/VOL.III/197) and ITHC Kano (ITHC/KN/IV/2018-039), Nigeria.

Source(s) of Support Not applicable.

Competing Interests Not applicable.

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