Original Article

http://jbrcp.org

2018 Journal Impact Factor: 1.10
Print ISSN: 2636-7378 | Online ISSN: 2651-5865

Assessment of Factors Influencing Low Back Pain Among Adult Patients Attending the General Outpatient Clinic of A Tertiary Hospital in Makurdi, North Central Nigeria.

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Article information
Date Submitted: 14/12/2023
Date Accepted: 16/12/2023
Date Published: 22/12/2023

ABSTRACT

Low back pain is a highly prevalent health problem globally. It is one of the most common musculoskeletal problems affecting the human race and a leading cause of disability worldwide. Several factors have been implicated in the development and maintenance of low back pain. Understanding the roles these factors play in low back pain will help prevent its development and complications. This study aimed to assess the factors that influence low back pain among adult patients attending the General Out-Patient Clinic of the Benue State University Teaching Hospital (BSUTH), Makurdi. This was a hospital-based cross-sectional analytical study conducted between December 2018 and April 2019 involving 392 patients aged 18 years and above. Informed consent was obtained. Data was collected by a pretested interviewer administered questionnaire, and analysed with the Statistical Package for Social Sciences (SPSS) version 17 software. There were 229 females (58.4%) and 163 males (41.6 %). The mean age of the patients was 41.46 ± 1.33 years. The proportion of those with low back pain was 62%. The respondents' age, marital status, level of education, occupation, previous back injury, obesity and posture mostly adopted during daily activities were the independent predictors of low back pain. More efforts should be directed at counselling patients on the modifiable risk factors for low back pain.

Keywords: Adults, Factors, Low back pain, Makurdi, Nigeria.

INTRODUCTION

Low back pain (LBP) is any pain between the 12th ribs and the buttock crease.[1,2] It is a worldwide problem of significant public health concern.[3] According to the Global Burden of Disease 2010 study, low back pain ranked first as the cause of global disability and sixth in terms of the overall disease burden.[4] Approximately 80% of adults experience at least one episode of back pain in their lifetime.[5] The prevalence of back pain in the general population is as high as 50% or more in both developed and developing countries.[4] In Nigeria, the 2016 national point prevalence of low back pain ranged from 14.7% to 59.7% , while the 12-month prevalence was 32.5% to 73.53%.[6] For North-Central Nigeria, the prevalence was found to be 72.1% in 2019.[7]

How to cite this article

Izeji RI*, Igbudu TJ, Omokhua OE, Egwuda L, Ervihi-Uva L, Mue A, Akwaras AN, Rimamnunra GN, Atokolo G. Assessment of Factors Influencing Low Back Pain Among Adult Patients Attending the General Outpatient Clinic of A Tertiary Hospital in Makurdi, North Central Nigeria.. J Biomed Res Clin Pract: 2023;6(3&4):1-8.
DOI: https://doi.org/10.5281/zenodo.10442193

Access to the article
Website: http://www.jbrcp.org
: DOI:10.5281/zenodo.10442193

Despite the enormity of the problem, the structural origin of most episodes of low back pain is largely unknown.[5,8] Furthermore, although the aetiology of low back pain may be multi-factorial, its attendant consequences such as disability, depression and absenteeism from work/school appear to be similar with huge impact on the quality of life of individuals and high economic burden on the health care systems.[4,9-12] Thus, understanding the factors influencing low back pain, especially the modifiable factors, could help prevent its occurrence and limit or prevent its associated complications. This will invariably lead to improved well being of patients and the society at large.

To the best of the author's knowledge, the factors influencing low back pain in adult patients have not been examined in Makurdi, Benue state, Nigeria, where this study was conducted. This formed one of the bases for this research. This study was set out to determine the prevalence of low back pain as well as assess the factors influencing low back pain in adult patients attending the General Outpatient Clinic of BSUTH, Makurdi..

MATERIALS AND METHODS

This was a cross-sectional analytical study conducted between December 2018 and April 2019 involving 392 patients aged 18 years and above who attended the General Outpatient Clinic of the Benue State University Teaching Hospital, Makurdi, for any reason. They were selected by systematic random sampling technique.

The minimum sample size (n) of 383 for the study was calculated using the Leslie and Kish formula for single proportion.[13]

$n = \frac{Z^2 pq}{d^2}$ with 46.8% estimated proportion of low back pain based on another study in Ibadan, Nigeria.[9]

However, since the entire population (of 5,000) was less than 10,000, the required sample size was corrected to 356 using the formula below.[13]

$n = \frac{n}{1+\frac{n}{N}}$ which was rounded off to the final sample size of 392 considering a 10% non-response rate.

All patients who presented were given health education on prevention of low back pain. Adult patients aged 18 years and above who gave consent to participate were recruited, while those who were too ill to participate, pregnant women, patients with ascites or oedema and those with spine deformity were excluded from the study. Relevant histories of low back pain (any pain between the lowest [12th] rib and the buttock crease) were obtained from the participants via face to face interview. Standard weighing scale "ZT-120 *health scale* was used for weight measurement in kilogramme (kg), a stadiometer mounted on the "ZT 120 *health scale* was used for height measurement in centimetre (cm), while a stretch-resistant tape measure was used to measure waist and hip circumferences in centimetre (cm). Ethical clearance was obtained from the Ethical and Research Committee of BSUTH (BSUTH/MKD/HREC/2013B/2018/0012). Data was collected using pretested interviewer administered questionnaires, and analysed with the Statistical Package for Social Sciences (SPSS) version17 software. Associations between categorical variables (e.g obesity versus LBP) were tested using the Chi-square or Fisher's exact test.

Significant relationship between LBP and its risk factors were explored using logistic regression analysis. All analysis was done at a 5% level of significance, while the

RESULTS

Table 1: **Socio-demographic characteristics of the respondents (n=392)**

Socio-demographic characteristics	Frequency	Percent
Age (in years)		
18-30	97	24.7
31-40	105	26.8
41-50	91	23.2
51-60	64	16.3
61-70	26	6.6
71-80	8	2.1
>80	1	0.3
Mean (SD) = 41.6 (1.33)		
Gender		
Male	163	41.6
Female	229	58.4
Marital status		
Single	96	24.5
Married	265	67.6
Separated	4	1.0
Divorced	3	0.8
Widowed	24	6.1
Highest Educational Level		
No formal education	14	3.6
Primary	28	7.1
Secondary	82	20.9
Tertiary	268	68.4
Occupation		
Professional	5	1.3
Civil servant	149	38.0
Retired	27	6.9
Farmer	53	13.5
Unemployed	27	6.9
Business executive	22	5.6
Student	59	15.0
Others×	50	12.8
Ethnicity		
Tiv	286	73.0
Idoma	46	11.7
Igede	16	4.1
Igbo	16	4.1
Hausa	2	0.5
Yoruba	7	1.8
Others××	19	4.8
Religion		
Christianity	386	98.5
Islam	6	1.5

Others includes artisans **Others include Igala, Etulo etc.

The mean age of the respondents was 41.6±1.33years. There was higher number of females (n= 229, 58.4%). More than 60% of the respondents were married (n = 265, 67.6%). The highest proportion were the civil servants (n = 149, 38.0%).

Table 2. Relevant low back pain history of the respondents

Variables	Frequency	Percent
History of low back pain		
Yes	243	62.0
No	149	38.0
Previous back injury (n = 392)		
Yes	7	1.8
No	385	98.2

More than half of the respondents had a history of low back pain (n = 243, 62.0%).

Table 3. Lifestyle habits of respondents.

Variables	Frequency	Percent
Posture mostly adopted during daily activities		
Standing	149	38.0
Sitting	229	58.4
Stooping	11	2.8
Squatting	3	0.8
Cigarette smoking		
Yes	12	3.1
No	380	96.9
Alcohol intake		
Yes	104	26.5
No	288	73.5
Physical activity		
Sufficient	66	16.8
Insufficient	326	83.2

About sixty percent of the participants had sitting as the most adopted daily posture. (n = 229, 58.4%). Very few of the participants (3.1%) smoked cigarette

Table 4. Body mass index and Waist/hip ratio of the respondents

Variables	Frequency	Percent
Body mass index (BMI)		
Underweight (<18.5)	0	0
Normal (18.5-24.9)	151	38.5
Overweight (25-29.9)	142	36.2
Obese (≥30)	99	25.3
Mean (SD) = 27.29 **(0.79)**		
Waist/hip ratio (WHR)		
Normal	141	36.0
Obese	251	64.0
Mean (SD) =0.91 (0.48)		

There was no participant that was underweight (BMI<18.5). In terms of Body Mass Index, about a quarter of the respondents (25.3%) were obese.

Table 5. Logistic regression model of independent variables predicting low back pain

Variables	Adjusted odds ratio (aOR)	95% Confidence Interval (C.I.)	p Value
Age (in years)			
18 -30	1		
31 -40	2.708	1.527 – 4.804	<0.001
41 -50	6.005	3.184 – 11.327	<0.001
51 -60	10.969	4.946 – 24.326	<0.001
61 -70	11.172	3.550 – 35.154	<0.001
71 -80	6.094	1.164 – 31.900	0.032
>80	403458991.3	403458991.3 – 403458991.3	<0.001
Gender			
Male	1		
Female	1.048	0.693 – 1.5984	0.826
Marital status			
Single	1		
Married	6.240	3.717 – 10.474	<0.001
Separated	7.667	0.764 – 76.967	0.083
Divorced	5211966231.5	5211966231.5 – 5211966231.5	<0.001
Widowed	28.111	6.183 – 127.808	<0.001
Highest Educational Level			
No formal education	5.090	1.118 – 23.181	0.035
Primary	5.090	1.719 – 15.069	0.003
Secondary	2.630	1.505 – 4.596	0.001
Tertiary	1		
Occupation			
Professional	0.375	0.057 – 2.458	0.307
Civil servant	1.221	0.623 – 2.393	0.561
Retired	1.969	0.672 – 5.771	0.217
Farmer	5.400	1.821 – 16.015	0.002
Unemployed	0.522	0.202 – 1.351	0.180
Business executive	0.813	0.291 – 2.270	0.692
Student	0.144	0.061 – 0.339	<0.001
Others	1		
Ethnicity			
Tiv	1		
Idoma	1.104	0.575 – 2.120	0.766
Igede	0.589	0.215 – 1.615	0.304
Igbo	0.757	0.274 – 2.092	0.592
Hausa	102557088.3	102557088.3 – 102557088.3	<0.001
Yoruba	0.785	0.172 – 3.576	0.755
Others	0.654	0.258 – 1.662	0.372
Religion			
Christianity	0.322	0.037 – 2.780	0.303
Islam	1		
Physical activity			
Sufficient	1		
Insufficient	1.241	0.454 – 1.358	0.387
Previous back injury			
Yes	9627654.871	9627654.871 - 9627654.871	<0.001
No	1		
Posture mostly adopted during daily activity			
Standing	3.762	2.037 – 6.945	<0.001
Sitting	4.010	2.466 – 6.521	<0.001
Stooping	3.596	0.919 – 14.075	0.066
Squatting	1		
Cigarette smoking			
Yes	7.017	0.897 – 54.918	0.063
No	1		
Alcohol intake			
Yes	1.292	0.807 – 2.067	0.286
No	1		
Body mass index (BMI)			
Normal (18.5 -24.9)	1		
Overweight (25 -29.9)	1.525	0.958 – 2.429	0.076
Obese (≥30)	3.276	1.850 – 5.800	<0.001
Waist/hip ratio (WHR)			
Normal	1		
Obese	2.472	1.614 – 3.785	<0.001

Those aged 31years and above were more likely to have low back pain. Being married had a higher likelihood of having low back pain. Respondents without tertiary education had a higher likelihood of having low back pain. Farmers were five times likely to have low back pain than those in other occupation (aOR = 5.400, CI = 1.821-16.015, p = 0.002). Respondents with previous back injury had a very high likelihood of having low back pain. Those who adopted sitting mostly during daily activity had the highest likelihood of developing low back pain. The odds of developing low back pain increased as the BMI of the respondents increased.

DISCUSSION

The mean age of the respondents was 41.46±1.33 years. This could be attributed to the study location which is a state capital inhabited mostly by civil servants who fall within this mean age. The mean age was a bit lower when compared to the result from a retrospective study by Omoke et al in Abakaliki, Nigeria where the mean age was 45.8 ± 1.67years.[14] The difference could have resulted from the different study designs. In this study, the male to female ratio was 1:1.40. This conforms to findings in Enugu, Nigeria with more females than males in a ratio of 1.5:1.[15] The female preponderance could be due to their better health-seeking behaviour compared to males.

The prevalence of low back pain among the respondents in this study was 62.0% which was within the global prevalence of 30% - 80% reported by Morris and colleague.[16] It also aligns with the national prevalence of 14.7% to 59.7% documented by Bello et al in Nigeria.[6] It is however lower than the prevalence of 67.10% found in Rivers state, Imo state (69.6%), Plateau (70.1%) and Abuja (72.1%).[1,7,17,18] This observation may be probably due to the fact that these other studies were done among orthopaedic patients and nurses. Compared to this study, other local and international studies have reported lower rates.[9,14,19-22] The much lower rates in these other studies could have reflected different socio-cultural practices.

There was a statistically significant association between age and low back pain in the present study. Respondents who were aged above 30 years were more likely to have low back pain. This is in agreement with findings in other states and countries such as Iran.[14,23,24] The possible reason for this could be because increase in age is associated with degenerative changes in the cushioning discs of the back eventually leading to LBP.

There was a significant association between marital status and low back pain. Being married increased the likelihood of having low back pain. This is consistent with findings in some states in Nigeria and in Ethiopia.[14,25,26] It is however at variance with that obtained in Oyo state, Nigeria where a higher prevalence of low back pain was seen in respondents that were single.[9] The reason is unclear and may require further studies.

Level of education showed a statistically significant association with low back pain with a trend of decreasing prevalence of low back pain with increasing level of education. The odds of having low back pain were five times more among those with no formal or primary education. This is in tandem with findings in South-West Nigeria and Iran.[9,24] This may be as a result of the tendency of those with no formal education or lower level of education to engage in menial jobs that predispose them to LBP.

Type of occupation increased the likelihood of having low back pain. The odds of having low back pain were nearly five and a half times higher among farmers, and it was statistically significant. This agrees with results from other local studies.[7,9,12,14,27] This could be attributed to frequent use of manual labour by farmers in this part of the world.

All respondents who had previous back injury, had low back pain (100%), and the odds of respondents who had suffered previous back injury having LBP were very high compared to those that never had previous back injury. This was statistically significant. This concurs with other studies in Nigeria as well as Ethiopia.[9,14,26] The reason could be because injury to the low back may alter its structural integrity leading to pain.

Posture mostly adopted during daily activity increased the likelihood of low back pain in the present study, and concurs with findings in Pakistan.[28] But it is not congruent with a local study in Nigeria.[9] The odds of having low back pain was highest among respondents

that reported sitting as posture mostly adopted during daily activities, and this was statistically significant. The reason for this finding may be due to the pressure exerted on the vertebrae column when adopting this posture.

Obesity had a statistically significant association with low back pain in this study. Obese respondents had the highest prevalence of low back pain, and were more likely to have low back pain than those with normal BMI/WHR. This is in consonance with several local and international studies.[29-36] This finding could be because increase in body weight leads to increased wear and tear on discs and joints, leading to pain. However, this differs with results from Tunisia and Kosovo which reported no such association.[2,3] Different study designs could have accounted for this observation.

CONCLUSION

This study found the prevalence of low back pain among the respondents to be 62%. This highlights the high burden of the disease in the population. The independent predictors of low back pain in this study included age, marital status, previous back injury, level of education, occupation (farming), body mass index, waist-hip-ratio and posture mostly adopted during daily activities. Further studies (longitudinal) are necessary to ascertain any temporal relationship between these factors and low back pain

Recommendation: Primary care physicians and indeed all clinicians should increase effort at creating awareness of the general population on the identified index ratio risk factors for low back pain, especially the modifiable factors

Limitations: This was a hospital-based study, thus the findings might not be a complete representation of what may be obtainable in the general population. Also, like other cross-sectional studies where exposures and outcomes are measured at the same time, this study has inherent weakness or difficulty in ascertaining temporal relationship. Furthermore, the subjective rather than objective assessment of low back pain in this study is another limitation.

Acknowledgement: Appreciation to the management of Benue State University Teaching Hospital Makurdi and the Department of Family Medicine BSUTH for allowing this study.

Conflict of Interests: None

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