



Prevalence and Risk Factors of Low Back Pain among Workers in a Health Facility in South–South Nigeria

Ofonime E. Johnson^{1*} and Emmanuel Edward¹

¹Department of Community Health, University of Uyo Teaching Hospital, Uyo, Nigeria.

Authors' contributions

This work was carried out in collaboration between both authors. Author OEJ designed the study, analyzed the data and wrote the protocol and the first draft of the manuscript. While author EE supervised the data collection, contributed to the first draft of the manuscript. Both authors read and approved the final manuscript.

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ABSTRACT

Background: Low back pain (LBP) has been documented to be a common occupational health problem among health care workers. A cross sectional study was carried out in a health facility in South – South Nigeria to determine the prevalence and risk factors of low back pain among the workers.

Materials and Methods: Data was collected using a self designed, interviewer assisted, semi-structured questionnaire. Information obtained included socio-demographic characteristics, work history of respondents, prevalence and factors predisposing to low back pain. The tool was administered during the different shifts of the health workers. Frequencies were calculated and Fishers exact test was used to test the significance of association between different variables. Level of significance was set at 0.05.

Results: A total of 50 out of 53 workers participated in the study. The mean age of the respondents was 36.59±8.6 years with a male to female ratio of 2:3. The overall prevalence of LBP

*Corresponding author: Email: drjohnsonoe@yahoo.com;

over the preceding 12 months was 28%, while the prevalence among males was 35% and females, 23.3%, respectively. The proportion of those with LBP among the doctors, pharmacists and nurses was 33.3% each. No history of back pain was recorded among the administrative staff. Prolonged standing/sitting (25.0%), age above 35 years (38.9%), being overweight or obese (50.0%), lifting of heavy objects (35.7%) and frequent stooping (33.3%) were common risk factors associated with LBP. The associations were however not statistically significant ($p>0.05$). Up to 42.8% of those with LBP had sleep disturbance and 21.4% needed to obtain sick leave as a result of the pain.

Conclusion: LBP was a common problem among staff in the health facility. Also, prolonged standing/ sitting, being overweight or obese, and lifting of heavy objects were among risk factors reported by those with LBP. Use of ergonomically designed chairs and equipments in the workplace, better lifting techniques and encouragement of mobility among the workers may help reduce the risk of LBP and thus improve workers' productivity and wellbeing.

Keywords: Low back pain; prevalence; risk factors; occupational health problem; workers.

1. INTRODUCTION

Low back pain (LBP) is one of the most common musculoskeletal disorders especially among the working population [1]. It is the commonest cause of job related disability and a leading contributor to lost hours and missed work days. The acute or chronic pain experienced in the lumbar region can vary in intensity from a dull constant ache to a sudden sharp sensation and may leave the affected person incapacitated [2]. The condition is costly, with total costs estimated to be between \$100 and \$200 billion annually, two thirds of which are due to decreased wages and productivity [3,4]. The 2010 global burden of disease study estimated that low back pain was among the top 10 diseases and injuries that accounted for the highest number of disability-adjusted life years (DALYs) worldwide [5]. Globally, there is a lifetime incidence of 40% [6], affecting as much as 80% of people in the developed countries [7]. This common health complaint usually begins at age 20-40 years but is mostly noticed in individuals aged 40-80 years [8]. The distribution among men and women is not clear [5,6].

Low back pain was reported to be the most prevalent musculoskeletal disorder in an Iranian study, occurring in 65.3% of the study participants compared to pain in the knee, (56.2%) and neck, (49.8%) [1]. Several risk factors are associated with low back pain. These include obesity, smoking, weight lifting, stooping, prolonged sitting, poor fitness level, especially among those with sedentary lifestyle and awkward posture at work. The non modifiable risk factors include increasing age, increasing number of children and major spinal deformities [9;10]. Several studies have reported these risk factors in different regions of the world [1,10-12].

A higher prevalence of low back pain has often been shown among medical personnel, particularly compared with other hospital and industrial workers [13]. The prevalence of low back pain reported in different studies among different occupational groups in the hospital range from 20-70.8% [14-16].

The staff composition in a hospital allows the assessment of low back pain in different occupational groups. A study in a rural hospital in south western Nigeria reported the highest prevalence of back pain (69%) among nursing staff, followed by secretaries/administrative staff (55%) and cleaners/aides (47%) [15]. Many studies have recorded high prevalence of LBP among nurses. In a study conducted to determine the prevalence and risk factors for LBP among nurses in a Specialist Hospital in Nigeria and Ethiopia involving 508 nurses, the 12 month prevalence of low back pain (LBP) was 360 (70.87%) [16]. Administrative workers are also commonly involved in prolonged sitting and several studies have reported LBP in this group. In a study carried out among 840 office workers in the civil service in Ibadan, Nigeria, the 12 month prevalence of low back pain was 38% [14]. Another study carried out to assess the prevalence of LBP among 648 Greek public office workers reported that among all responders, 37.8% presented with one-year prevalence. Sleep disturbances due to pain were reported in 37% of the office clerks with chronic low back pain. Multiple logistic regression models revealed that significant determinants for predicting LBP occurrence were age, gender, body mass index, adjustable back support, clerk body position while sitting, sitting time of greater than 6 hours, job satisfaction, repetitive work, and anger within 30 days prior to the study [17].

Although LBP did not feature as a major cause of sickness absence in the workplace, the pain and sleep loss reported in some studies could influence productivity at work.

This study set out to determine the prevalence and risk factors of low back pain among workers in a general hospital in south- south Nigeria.

2. MATERIALS AND METHODS

2.1 Study Area

The study was conducted in Ukpom, a community in Abak local government of Akwa Ibom State, southern Nigeria, with a population of 12,620.

2.2 Study Design/Population

This was a cross sectional descriptive study carried out among workers in Ukpom general hospital in southern Nigeria.

2.3 Sampling and Sampling Size

Total sampling was used. There were 53 workers in the hospital. Fifty workers accepted to participate in the study.

2.4 Data Collection

A semi-structured interviewer assisted questionnaire was designed by the researchers after a review of literature of similar studies [1,8-16]. The questionnaire was used to obtain information on the socio-demographic characteristics of the respondents, job history, frequency of low back pain and factors predisposing to low back pain. The weight and height of consenting respondents were measured and the information was used to calculate the body mass index. Two community health officers in training were recruited into the study as research assistants. They went through a one day training session on how to administer the questionnaire. The research assistants and the second author administered the data collection tool during the respective shifts of the hospital workers. Data collection lasted for 4 days.

2.5 Data Management

The data collected were edited manually, entered into computer and analyzed using the Statistical

Package for the Social Sciences (SPSS) version 20. Data analysis was done using descriptive statistics (Frequency, proportions, means and standard deviation to summarize variables). Fishers exact test was used to test the significance of association between variables. This was because the expected values were less than 5. Level of significance was set at 5%.

2.6 Ethical Considerations

Ethical clearance for this study was obtained from the Akwa Ibom State Health Research Committee (Approval number: MH/PRS/99/VOL VI/353) and permission to conduct the research was obtained from the superintendent in charge of the hospital. Each respondent's consent was obtained after the objective of the study and the rights of the respondent were clearly spelt out. In order to ensure confidentiality and anonymity, serial numbers and not names were used. Data collected were kept secure and made accessible to only members of the research team.

3. RESULTS AND DISCUSSION

3.1 Results

A total of 50 out of 53 health workers participated in the study giving a response rate of 94.3%, with a mean age of 36.59 ± 8.6 years and a male to female ratio of 2:3. A greater proportion, 37 (74%) were married and 16 (32%) had 1-2 children. Nurses formed the highest proportion of respondents, 21 (42%). A total of 12 (48%) out of 25 respondents who consented for their BMI to be calculated were either over weight, 6 (24%) or obese, 6 (24%) (Table 1).

Up to 18 (36%) of the respondents had worked for more than 10 years. Majority, 35 (70%) worked for 8 hours daily. The work nature of 36 (72%) of the health workers involved standing or sitting and for 15 (41.7%) of them, this lasted for more than 6 hours during their 8-hour shift. Also, 14 (28%) carried heavy objects while on duty (Table 2). Nine (18%) reported having no job satisfaction.

One respondent (2%) reported history of smoking, one (2%) diabetes and 1 (2%) osteo arthritis. Also 5 (10%) reported alcohol intake and 4 (8%) had history of trauma.

Fourteen (28%) of the respondents admitted having experienced LBP in the preceding 12 months. Only 3 (21.4%) however needed to

obtain sick leave as a result of the pain. Up to 6 (42.8%) of those who reported LBP had sleep disturbance as a result of the pain (Table 3).

Table 1. Socio-demographic characteristics

Variable	Frequency N =50	Proportion (%)
Age		
25-35	28	56
36-45	6	12
46-55	12	24
No response	4	8
Mean=36.59±8.6		
Sex		
Male	20	40
Female	30	60
Marital status		
Single	12	24
Married	37	74
Widow	1	2
No of children		
None	14	28
1-2	16	32
3-4	13	26
>4	7	14
Occupation		
Doctor	3	6
Nurses	21	42
Pharmacist	6	12
Admin staff	5	10
*Others	15	30
BMI	N=25	
18.5-24.9	13	52
25-29.9	6	24
≥30	6	24

*cleaners, community health workers, security personnel

Seven (35%) of the males and 7 (23.3%) of the females had LBP. Also, seven (38.9%) of those above 35 years had LBP compared to 7(25%) below that age. The proportion of those with LBP among the different professional groups was 33.3% each. Up to 5 (35.7%) of those whose job involved lifting and 25% of those involved in prolonged standing/sitting reported having back pain. Half of those who were overweight / obese, 6 (50.0%) had LBP. All statistical differences were however not significant (Table 4).

Possible causes/precipitating factors of LBP as opined by the respondents included lifting heavy objects, 4 (8%), prolonged bending ,2 (4%), age, 2 (4%), low operating table, 1 (2%), childbirth, 1(2%). Suggestions made by them on ways to relieve pain included provision of comfortable chairs, 8 (16%), stress reduction, 6 (12%),

exercise 4 (8%) and avoiding prolonged standing or sitting,2 (4%).

Table 2. Work characteristics of respondents

Variable	Frequency N=50	Proportion (%)
Period in employment (years)		
<5	22	44
5-10	10	20
>10	18	36
Length of duty (hrs)		
<8	8	16
8	35	70
>8	7	14
History of standing /sitting		
Yes	36	72
No	14	28
If yes, duration (hrs)	N=36	
<6	21	58.3
>6	15	41.7
Hx of lifting heavy objects		
Yes	14	28
No	36	72
Hx of frequent stooping		
Yes	12	24
No	38	76

Table 3. Prevalence of low back pain among respondents

Variable	Frequency N=50	Proportion (%)
History of low back pain in past 12 months		
Yes	14	28
No	36	72
History of low back pain in past years		
Yes	13	26
No	37	74
Obtaining sick leave due to LBP	N=14	
Yes	3	21.4
No	11	78.6
Sleep disturbance from LBP	N=14	
Yes	6	42.8
No	8	57.2
History of absenteeism due to LBP	N=14	
Yes	1	7.1
No	13	92.9

Table 4. Association between LBP and selected variables

Variable	LBP		Total N=50 n (%)	P-value
	Yes N=14 n (%)	No N=36 n (%)		
Sex				
Male	7 (35.0)	13 (65.0)	20 (100)	Fisher exact=0.52
Female	7 (23.3)	23 (76.7)	30 (100)	
Age (years)		N=32	N=46	
25-35	7 (25.0)	21 (75.0)	28 (100)	Fisher exact=0.15
36-45	4 (66.7)	2 (33.3)	6 (100)	
46-55	3 (22.0)	9 (75.0)	12 (100)	
Occupation				
Doctor	1 (33.3)	2 (66.7)	3 (100)	Fisher exact= 0.68
Nurses	7 (33.3)	14 (66.7)	21 (100)	
Pharmacist	2 (33.3)	4 (66.7)	6 (100)	
Admin staff	0 (0)	5 (100)	5 (100)	
Others	4 (26.7)	11 (73.3)	15 (100)	
Hx of lifting heavy objects				
Yes	5 (35.7)	9 (64.3)	14 (100)	Fisher exact=0.49
No	9 (25.0)	27 (75.0)	36 (100)	
Hx of prolonged standing /sitting				
Yes	9 (25.0)	27 (75.0)	36 (100)	Fisher exact= 0.49
No	5 (35.7)	9 (64.3)	14 (100)	
Hx of frequent stooping				
Yes	4 (33.3)	8 (66.7)	12 (100)	Fisher exact=0.72
No	10 (26.3)	28 (73.7)	38 (100)	
BMI	N=12	N=13	N=25	
18.5-24.9	6 (46.2)	7 (53.8)	13 (100)	Fisher exact= 0.06
25-29.9	5 (83.3)	1 (16.7)	6 (100)	
≥30	1 (16.7)	5 (83.3)	6 (100)	

3.2 Discussion

Low back pain is one of the most common symptoms of musculo skeletal disorders in the work place. This cross sectional study investigated the prevalence and possible risk factors associated with LBP among workers in the health facility of study. Over a quarter of the health workers reported having LBP within the preceding 12 month period. The proportion affected was substantial enough to possibly affect productivity at the workplace. This prevalence was however lower than the 46% reported by Omokhodion et al. [15] among health care workers in a rural hospital and 47.8% by Sanya et al. [18] in a similar study. Low back pain in the health setting is therefore a common problem as reported in many studies.

Several risk factors of LBP have been documented in different studies irrespective of occupation. In a retrospective study carried out among 300 Southern Indians with back pain in an orthopaedic clinic between January 2011 and

July 2014, there were 54 cases of obesity (18%), 122 cases of heavy physical work (41%), 57 cases of prolonged sitting/standing (19%), 50 cases of definite history of fall/trauma (17%) and 35 cases of bad posture (12%) [9].

In the present study, prolonged standing/sitting, age above 35 years, increased body weight, lifting of heavy objects and frequent stooping were common risk factors reported among those with LBP. A Saudi Arabian study among health workers also reported LBP to be aggravated by occupational hazards like sitting, standing and lifting [19]. Also a study among hospital staff in western Nigeria reported heavy physical work (45%), poor posture (20%) and prolonged standing or sitting (20%) as the most frequent activities reported to be associated with low back pain. Similarly, a study among workers in hospital management board in Ibadan, Nigeria reported that the job tasks which significantly predisposed them to LBP were lifting, bending and staying in the same position for more than 3 hours. Many of these risk factors are modifiable

and can be addressed to a large extent by simple practical steps. Health education on posture, exercise and correct lifting techniques can be introduced to reduce the burden of low back pain among these workers [15]. Also, provision of ergonomically sound chairs with back support is needful at workplace. Moreover, the workers can interrupt prolonged sitting or standing and walk around periodically while at work. Although smoking has been reported as a risk factor in some studies, the habit was negligible in the present study as only one person had such history. This was probably due to the fact that the study was carried out in a health care setting among those who knew the harmful effects of smoking. In a study among LBP patients attending a clinic, out of 138 males, 50 were smokers (36%) [9]. Similarly, a study carried out among South African students reported an increased prevalence of LBP among those who smoked for more than 7 years, (36.7%), compared to non smokers, (25.5%). The prevalence also increased as the number of cigarettes smoked increased (36.7% in <5 per day versus 50% in 30 per day) [11]. Generally, those smoking currently are more likely to have low back pain than those who have stopped smoking or have never smoked [12]. One theory is that smoking causes a reduction in blood flow to the discs and vertebral bodies, ultimately leading to disc degeneration [20]. Smoking is also said to affect the body's ability to deliver nutrient to the tissues [10].

The incidence of LBP has been reported to be highest in the third decade with the overall prevalence increasing with age until the 60-65 year age group and then gradually declining [21]. In the present study, over a third of those above 35 years had LBP. The occurrence of LBP in the older age group could be as a result of physiological changes and cumulative occupational risk factors at workplace over the years. However, the observed decline after 65 years may be due to the fact that these groups of workers are not likely to be exposed to the risk factors at workplace any longer as they may have retired.

Low back pain has been reported to affect more women than men in some studies [16,17]. The female preponderance has been suggested to be probably due to structural, anatomical and physiologic differences between males and females [19]. In the National Institute of Neurological Disorder (NIND) 2014 fact sheet, men and women were reported to be equally

affected by LBP. In the present study, however, the prevalence of LBP was higher in males than females. Similar findings were reported in a review in 2012 where the prevalence among males and females were 9.6% and 8.7% respectively [5].

Several studies have reported high prevalence of LBP among nurses. A 12 month prevalence of LBP as high as 73.5% was reported among nurses in a Nigerian hospital and in Switzerland [22,23]. One of the activities a nurse may be involved in is the manual lifting of patients which makes nursing one of the occupations often affected by LBP. Nurses are required to lift and transport patients or equipments, sometimes in difficult environments particularly in developing countries, as those in Africa, where lifting aids are not always available or practicable [22]. In the present study however, the prevalence of LBP was the same among doctors, nurses and pharmacists. This could be because, while nurses often engage in manual lifting of patients, doctors and pharmacists engage in activities involving prolonged sitting or standing which are also risk factors of LBP. There was no history of LBP among the administrative staff in the present study. This may have been due to the fact that they were only 5 in number. A larger number may have portrayed a different picture. Also, an administrative staff is not exposed to risk factors like excessive standing or lifting of heavy objects which would further increase the risk of LBP. Administrative workers are however known to sit for long hours which could make them prone to waist pain especially if the chairs are not ergonomically sound. A study in a rural hospital in south western Nigeria reported the highest prevalence of back pain (69%) among nursing staff, followed by secretaries/administrative staff (55%) and cleaners/aides (47%) [15].

Low back pain is a common reason for lost work days in many studies [24,25]. In the present study, about a fifth of those with LBP obtained excuse duty as a result of the pain. This possibly suggests that the pain was serious enough to interfere with work schedule and warrant taking time off for treatment. The pain was also pronounced enough in many cases to affect sleep as over 40% of those with LBP had sleep disturbance. This probably reduced productivity at work the following day.

The respondents in the present study were able to identify some of the known risk factors of LBP such as lifting heavy objects, prolonged bending,

age and low operating table. The suggestions they made on ways to relieve pain included provision of comfortable chairs, stress reduction, exercise and avoiding prolonged standing or sitting. The health workers can therefore contribute meaningfully to devising ways of reducing LBP in the workplace.

4. LIMITATION

Many of the health workers were not willing to spare too much time to be interviewed as they were on duty. This may have led to the withholding of certain information in order to save time. Also, the issue of self reporting was considered a limitation as the findings of the study were entirely based on the information given by the respondents.

5. CONCLUSION

Low back pain was found to be a common workplace problem among staff in the health facility of study as it was experienced by more than a quarter of the workers within 12 months preceding the study. Also, prolonged standing/sitting, being overweight or obese, and lifting of heavy objects were common risk factors reported among those with LBP. Use of ergonomically designed chairs and equipment in the workplace, better lifting techniques, encouragement of mobility among the workers and exercise may help reduce the risk of LBP and thus improve workers' productivity and wellbeing.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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