



Chronic Low Back Pain Manifestation among Bank Workers in Southern Nigeria: A Current Disorder Exacerbated by Long Hours on Uncomfortable Chairs

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI:10.9734/JAMMR/2021/v33i1931078

Editor(s):

(1) Dr. Ashish Anand, GV Montgomery Veteran Affairs Medical Center, University of Mississippi Medical Center, William Carey School of Osteopathic Medicine, USA.

Reviewers:

(1) Yoji Ogura, Keio University, Japan.

(2) Sreeja Kamala Sasidharan, All India Institute of Medical Sciences, India.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/71621>

Original Research Article

Received 01 June 2021
Accepted 09 August 2021
Published 07 September 2021

ABSTRACT

Banks play key roles in the economies of the world. The bank industry determines the growth of economies in all countries, as a result, workers in this industry are subjected to conditions geared towards getting the highest degree of performance from them consistently. Most of their time is spent sitting down, using computers, assuming bent postures, doing repetitive work, and sometimes without enough breaks in-between hours can predispose them to occupational hazards. This study aims to determine the prevalence of chronic low back pain among bank workers in Port Harcourt Metropolis through its associated risk factors. The study design was descriptive cross-sectional. The sample (N=332) consisted of 332 employees from twelve banks. A self-administered, closed-ended, structured questionnaire was used to collect data, and a Chi-square test ($p=0.05$) and odds ratio with a corresponding 95 % confidence interval was obtained. Results: Showed significant relationship between age and chronic low back pain [OR=2.87; 95 % CI=1.75 – 4.72; $p=0.001$], length of time in seated position had significant relationship between workers that sat for six hours and above and chronic LBP (OR=1.89; $p=0.01$; 95 % CI: 1.16-3.06). Also,

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respondents who do not sit in a comfortable seat at the office were 2.60 times more at odds of experiencing chronic low back pain compared to respondents whose seats are comfortable (OR=2.60; p=0.001; 95% CI: 1.51-4.45). Conclusion: This study shows that the risk factors of a long hour of sitting, uncomfortable chair, bent posture leads to chronic low back pain over time. Therefore, it is recommended that proper break time be observed, right ergonomics to prevent twisting the back.

Keywords: Chronic;back pain; banks; port harcourt; age

1. INTRODUCTION

Back pain is an important public health issue both in developed and developing countries. It is a worldwide disabling occupational hazard [1]. It was also reported that low back pain (LBP) is not only considered to be the most common reason for functional disability globally but is also estimated to have affected 90 % of the universal population [2]. Until recently, it was largely thought of as a problem confined to western countries, but research conducted during the last decade clearly showed that it is a major problem in low and middle-income countries.

Low back pain is one of the common work-related health issues frequently encountered by most people at some point in their lives. This pain (LBP), is located between the lower region of the 12th rib and the gluteal area [3]. It is characterized by fatigue, aches, stiffness, or discomfort within the lower back region. Classification of low back pain includes; acute (pain lasting less than 6 weeks), sub-chronic (6-12 weeks), or chronic (more than 12 weeks) [4]. The condition may be further classified by the underlying cause as either mechanical, non-mechanical, or referred pain [5]. The incidence of low back pain globally has been estimated to be about 24 to 80 %, with yearly recurrent episodes from 0.8 to 82.5 %. Many environmental and personal factors influence the onset and course of LBP. Studies have shown that the incidence of LBP is highest in the third decade, and overall prevalence increases with age until the 60-65year age group and then gradually declines [6].

Risk factors associated with chronic back pain fall into the following category; Sociodemographic (sex, age, level of education, marital status), medical (physician diagnosis, clinical test results, medical history), ergonomic and work-related psychosocial (e.g. task's physical demands, subjective appraisal of the task's difficulty, job's satisfaction, stress experienced) [7,8].

1.1 Sociodemographic Factors

Studies had shown that females are liable to develop chronic LBP than males irrespective of age [9], with an estimate of two times that of males. Low back pain is the most common health problem among older people, especially the working – age [10] that leads to pain and functional disability. Studies done by Podichetty [11] and Prince[12] revealed that LBP increases continuously from adolescent working-age to adults of 60 years and then declines, which was attributed to occupational involvement among working-age adults, or age-related changes in pain perception. However, some research carried out by Simsk [13] observed that the prevalence and incidence of chronic low back pain increase with older adults, this was demonstrated by the prevalence of functional disabling LPB for one month, and found to have increased from 3.8 % (adult of 77 to 79 years) to 9.7 % (90 to 100 years).

1.2 Ergonomic and Work-Related Psychosocial Factors

Work exposures to whole-body vibrations, bending, lifting, sitting long hours have been found as potential risk factors for LBP in working-age, other reported studies have it that prior occupational exposure to physically strenuous work contributes to the risks of LBP in retired workers. Plouvier et al. [14] reported in the study carried out consisting of 1500 individuals that former work exposures to bending/twisting or driving for a minimum period of 10 years increased the odds of having LBP in adults aged 58 to 67 years.

Studies have revealed that fear-avoidance beliefs (FAB) was related to chronic LBP in adults. Increased FAB were related to higher self-reported LBP-related disability, higher risk of falls in older people [15]. Another report found that FAB was related to chronic LBP disability in obese older adults [16]. Studies showed that vigorous physical activity for 20 minutes on three

or more days per week and moderate intensity activity for 30 minutes on five or more days per week significantly increased the LBP among women aged 60 and above while walking for 30 mins on five or more days per week and strength exercises lowered the risk of LBP among men aged 60 and above [17].

The increase in chronic LBP prevalence among individuals aged 30 to 60 may be possibly due to occupational and domestic exposures that overloads the lower back together with articular process degeneration after the age of 30 years. Some researchers showed that older adults of seventh grade are more resilient to pain due to exhibition of decreased pain perception and cognitive impairment, thus reducing chronic LBP [18].

1.3 Social Factors

The social environment can induce social stressors which might increase the risk exposure, influence psychology, emotion and affect the onset and progression of LBP disability. A social habit like smoking has been shown to trigger LBP, as studies revealed that smokers are more vulnerable to LBP compared to non-smokers [19]. This was attributed to some degenerative changes in spinal structures that were triggered by smoking, leading to compression of neural structures and cause neuropathic LBP [20].

The frequent use of computers at work and other technological gadgets have increased sedentariness- a risk factor for obesity and chronic LBP. Overweight or obese individuals have increased loads on the lumbar spine, therefore promoting chronic LBP.

1.4 Gender

The mechanism by which females have consistently higher CLBP prevalence might be related to women exposure to musculoskeletal loads due to pregnancy, double workday (domestic and paid work), child care [21].

2. MATERIALS AND METHODS

2.1 Scope of Study

The study was limited to bankers working within Port Harcourt city and parts of Obio/Akpor Local Government Areas only.

2.2 Study Population

Male and female bankers between the ages of 18 and 65 years working inside the banks between 7.30 am to 6.00 pm daily. Whose job requires sitting and standing for long hours, use of computers for long hours, lifting of heavy equipment, assuming abnormal postures for long hours, and involved repetitive works.

2.3 Study Design

The study design was descriptive cross-sectional.

2.4 Inclusion and Exclusion Criteria

2.4.1 Inclusion Criteria

The criteria for selecting the subjects were: male and female bank workers between the ages of 18-65 years in Port Harcourt Metropolis, Non-pregnant female bank workers, and other workers working within the bank.

2.4.2 Exclusion Criteria

The criteria for excluding the subjects were: Pregnant female bank workers, Bank workers above the age of 65 years, Marketing officers working outside the bank, menstruating women, and bank workers with a previous history of pelvic surgeries.

2.5 Sample Size

The sample size was calculated using the Fischer (Arage, 2005).

$$\text{Sample size} = \frac{z^2 p q}{e^2}$$

Where standard deviation score = 1.96².

Proportion (p) of Chronic Low Back Pain was 73.1%.

2.6 Sampling Method

Most of these banks have their branches in Port Harcourt Metropolis. Each of the 22 banks serves as a cluster in the first sampling stage. Simple random sampling was done to select one bank from each cluster in the second stage. Bearing in mind that all banks do not have equal staff strength in each branch, a stratified

(proportionate) sampling was used and simple random sampling was done to recruit research participants in the third and final stages.

2.7 Study Instrument

2.7.1 Questionnaires

To ascertain the validity/reliability of the instrument, a pilot study was carried out in a similar sample to determine the clarity and respondents' friendliness of the questionnaire. Thereafter, several corrections were made in the questionnaires based on the findings of the pilot study.

A self-administered, closed-ended, structured questionnaire was used to collect data. The questionnaires were designed in such a way that the questions were in simple English and unambiguous.

2.7.2 Walk-Through Survey

A walk-through survey is an impromptu, on-the-spot assessment of the banking halls. It helped in the identification of hazards and risks associated with working in the banking halls. It includes the description of the site that is, the location, size, workforce, work processes, and classification of the hazards. It also includes "Action Plans" aimed at controlling identified hazards.

An in-depth assessment of the identified hazards was done which was followed by a conclusion. The conclusion is done pertaining to the significance of observations and recorded measurements, thereafter a meeting was organized with the bank workers and their union leaders where an explanation and the health significance of the findings were made. A written report containing the findings and suggested solutions was given to the union leaders.

2.8 Data Management

2.8.1 Data collection

Data collection was done using self-administered questionnaires. Distribution and retrieval of questionnaires were done with the help of adequately trained research assistants. They did so with respect, caution, and utmost friendliness. This was done between 1.00 pm and 2.00 pm daily when research participants were on lunch break so that it does not interfere with their work.

Prior to the distribution of the questionnaires, participants were sorted based on the inclusion and exclusion criteria. And all those who were eligible and voluntarily signed the consent form were given the questionnaires.

2.8.2 Data entry

The collected data were entered into an excel worksheet for analysis.

2.8.3 Data analyses

The data were analyzed using Statistical Package for Social Sciences (SPSS) version 21.0 and frequencies were obtained.

2.8.4 Data presentation

Data presentation was done using simple tables.

2.10 Study Limitation

There was apprehension on the part of the research participants. They were afraid that their personal information might be used for other purposes outside the study. Some of them also expressed fear that their employers might find out some of the responses to the questions they have answered. Their fears and anxiety were adequately allayed. They were reassured that the information they provided was strictly for the sole purpose of this study and were kept strictly confidential.

2.11 Purpose of Study

The present study was undertaken to determine the prevalence of Chronic Low Back Pain among bank workers in Port Harcourt Metropolis.

2.11 Objectives of Study

1. To find out the prevalence of Lower back pain among bank workers in Port Harcourt
2. To identify associated risk factors of chronic low back pain among bank workers in Port Harcourt
3. To evaluate the knowledge, attitude and practice of back pain among bank workers in Port Harcourt Metropolis

2.11 Hypothesis

1. There is no significant difference between age and chronic low back pain

- 2. There is no significant difference between gender and chronic low back pain
- 3. There is no relationship between sitting for long hours and the development of chronic low back pain

3. RESULTS

Out of a total of 332 questionnaires distributed, 312 (approximately 94%) were retrieved and analyzed.

3.1 Presentation of Data

No statistical significant relationship exists between the sex of the respondents and Chronic Low Back pain. A statistically significant relationship exists between age of respondents and Chronic Low Back pain, as respondents that are older than 35 years were 2.87 times more at odds of experiencing Chronic Low Back pain compared to respondents that were younger (OR= 2.87; p = 0.001; 95%CI: 1.75- 4.72).

Table 2 showed the frequency and percentage distributions on the prevalence of chronic low back pain among bank workers in Port Harcourt Metropolis. It showed that majority 185(59.3 %) had back pain in the past whereas 127(40.7 %) did not. It also showed that majority 92(49.7 %) experienced back pain for 3 months and was

followed by those who experienced back pain for between 3-6 months. The least were those who had back pain for above 6 months 41(22.2 %).

A statistically significant relationship exists between respondents length of seating in the office, if his/her chair is comfortable and if he/she does exercise. The logistic regression analysis showed that respondents who seat longer than 6 hrs in the office a day were 1.89 times more at odds of experiencing Chronic Low Back pain compared to respondents who seat less than 6 hrs per day (OR=1.89; p=0.01; 95 % CI: 1.16-3.06). Also, respondents who do not seat in a comfortable seat at the office were 2.60 times more at odds of experiencing Chronic Low Back pain compared to respondents who's seats are comfortable (OR=2.60; p=0.001; 95 % CI: 1.51-4.45). And finally, respondents who do not exercise were 1.75 times more at odds of experiencing Chronic Low Back pain compared to respondents who exercise (OR=1.75; p=0.05; 95 % CI: 1.01-3.03).

4. DISCUSSION

This present research was done to investigate the risk factors resulting from chronic low back pain to determine its prevalence among Bank working staff in Port Harcourt of Southern Nigeria.

Table 1. Demographics on chronic low back pain using gender and age range

Socio-Demographic	Chronic Low Back pain		Total	OR(95% (CI)	p-value
	YesFreq (%)	NoFreq (%)			
Sex					
Male	91 (49.19)	63 (49.61)	154 (49.36)	0.98	0.596
Female	94 (50.81)	64 (50.39)	158 (50.64)	(0.63-1.55)	
Age					
> 35 years	89 (48.11)	31 (24.41)	120 (38.46)	2.87	0.001*
≤35 years	96 (51.89)	96 (75.59)	192 (61.54)	(1.75-4.72)	

*Statistically Significant (p<0.05), CI – Confidence Interval, OR – Odds Ratio, Freq – Frequency

Table 2. Distribution on the prevalence of low back pain among bank workers in Port Harcourt Metropolis

S/N	Variable		n	Percentage %
1	Have you had low back pain in the past?	Yes	185	59.3
		No	127	40.7
2	For how long did you experience low back pain?	<6weeks	92	49.7
		6-12weeks	52	28.1
		> 12weeks	41	22.2

Table 3. Relationship between Associated Risk Factors and Chronic Low Back pain

Duration seated in the office	Chronic Low Back Pain		Total	OR(95% (CI)	p-value
	Yes Freq (%)	No Freq (%)			
6 hrs and above	124 (68.13)				0.01*
≤5 hrs	58 (31.87)	53 (46.90)	111 (37.63)		
Uncomfortable Chairs					
Yes	74 (40.66)	24 (20.87)	98 (33.0)	2.60 (1.51-4.45)	0.001*
No	108 (59.27)	91 (79.13)	199 (67.0)		
Do not exercise					
Yes	55 (30.05)	24 (19.67)	79 (25.90)	1.75(1.01-3.03)	0.05*
No	128 (69.95)	98 (80.33)	226 (74.10)		

*Statistically Significant ($p < 0.05$), CI – Confidence Interval, OR – Odds Ratio, Freq - Frequency

Age has been proven to be a good predictor of chronic low back pain. The result of this study revealed that aged workers above 35 years (48.1%) had significantly increased tendency to be affected by chronic low back pain. This supports the study done by Docking *et al.* [10] who also reported working-class older people had increased low back pain and functional disability. A lot of researches in this line of study revealed that LBP rises from adolescent working age to 60 years and afterward decline, occupational engagement have largely been implicated in working-age adult, while the decline may have resulted from age-related changes in pain perception [11, 12].

Although gender has been shown to play a role in chronic LBP, with the female gender been prone to Chronic LBP due to their musculoskeletal loads, this study disagreed with that as there was no significant gender difference as male (49.36 %) and female (50.64 %), p -value=0.596. The major difference may be due to the instrument used in the previous study with a high rate of the non-respondent with females having a lower respondent rate than males. This study recruited 332 participants however, only 312 (approximately 94 %) questionnaires were retrieved, and analyzed: 49.4 % (154) were males and 50.6 % (158) were females. This aligns with a similar study conducted in India by Ganesa *et al.* [8] but is at variance with a study conducted where most of the respondents were males (55.6 %) and females (44.4 %) [21]. The study also showed that a statistically significant relationship between respondents' length of time in sitting in the office, and on uncomfortable chairs. The impact of sitting long hours from six (6) hours and above is a risk factor that predicts chronic disability, the logistic regression analysis

showed that respondents who seat longer than 6 hrs in the office a day were 1.89 times more at odds of experiencing chronic low back pain compared to respondents who seat less than 6 hrs. per day (OR=1.89; $p=0.01$; 95 %CI: 1.16-3.06), especially in the older workers that have been employed five (5) years and above, coupled with little or no exercise as those that exercise is 25.90 % compared to 74.10 % that do not exercise. Also, respondents who do not seat in a comfortable seat at the office were 2.60 times more at odds of experiencing chronic low back pain compared to respondents whose seats are comfortable (OR=2.60; $p=0.001$; 95%CI: 1.51-4.45). And finally, respondents who do not exercise were 1.75 times more at odds of experiencing Chronic Low Back pain compared to respondents who exercise (OR=1.75; $p < 0.05$; 95%CI: 1.01-3.03). These findings corroborate a study that demonstrated that those who sit on fixed chairs often are three times more likely to develop chronic low back pain [22].

5. CONCLUSION

Low back pain affects both sexes and most ages. It results in considerable direct and indirect costs. Banks are industries where employees are subjected to various physical and psychological demands and prolonged sitting, standing and use of computers for long hours all of which are important risk factors for low back pain. This study shows that the risk factors of long hours of sitting, uncomfortable chair, bent posture leads to chronic low back pain over time.

6. RECOMMENDATIONS

Based on the finding of this study, it is recommended as follows:

1. That government should as a matter of urgency ensure that no bank worker should be made to work more than eight (8) hours per day.
2. Banks should procure mobile and adjustable chairs for their workers to make sitting more comfortable and reduce occupational hazards.
3. Bank workers should be made to go on break at least for 15 minutes every 3 hours to reduce the risk of developing low back pain from prolonged sitting.
4. Banks should employ more staff to help reduce physical and psychological stress occasioned by work overload.
5. Banks should organize compulsory physical fitness exercise at least once every month (preferably on Saturdays) for all their staff.
6. Banks should pay for the cost of treatment related to low back pain incurred by their staff.
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CONSENT AND ETHICAL APPROVAL

Approval for this study was sought and obtained from the Ethics Committee of the University of Port Harcourt. Approval was sought from the bankers' union and the Bank managers of selected banks. Written and signed informed consent was obtained from research participants after giving detailed explanation about the study to research participants. All information retrieved from participants were kept strictly confidential and for the sole purpose of this study. Health education on associated factors of chronic low back pain was given to the research participants and union leaders.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:

The peer review history for this paper can be accessed here:
<https://www.sdiarticle4.com/review-history/71621>