Original Research Article

Assessment of the associated risk factors of chronic low back pain among bankers in Port Harcourt metropolis: A cross-sectional study

ABSTRACT

Background: Working condition is a factor that does not only affect productivity but also the health of the workers. **Aim**: This study aimed to evaluate some of the associated risk factors of chronic low back pain among bank workers in Port Harcourt Metropolis of Rivers State in Nigeria. **Method**: The study employed a cross-sectional design. A questionnaire was used to obtain information on chronic back pain among the bank 313 workers. **Results**: 165(52.7%) of the respondents have previously been treated for low back pain. They resorted to using different means of treatment for the pain; 24.8% (massage), 15% (exercise), 47.3% (drugs) 4.2% (surgery) and 8.5% (bed rest). 119 (38.1%) had a history of high blood pressure whereas 193 (61.9%) have not, 66 (21.2%) had a history of diabetes mellitus whereas 246 (78.8%) had not, 26 (8.3%) had sickle cell anemia whereas 286 (91.7%) do not, 55 (17.6%) had a history of convulsion whereas 257 (82.4%) do not, 93(29.8%) have had blood transfusion whereas 219 (70.2%) have not. The frequencies of chronic back pain bank workers and the associated risk factors were; road traffic accident 42 (22.7%), work-related stress (70.7%), use of computer 155 (84.7%), heavy lifting of equipment 83 (45.8%), and lack of exercise 55 (30.1%). **Conclusion**: These findings show that some individuals having chronic back pain had some underlying conditions which could predispose them to have the pain.

Keywords: Back pain, chronic, bankers, body posture, Rivers State

1. INTRODUCTION

Pain according to the International Association for the Study of Pain (1979) is described as an uncomfortable sensory and emotional impact linked to real or potential tissue damage. This pain is prevalent in occupations that require a sedentary lifestyle of long sitting hours. Low back pain is usually experienced and located around the region the 12th rips and gluteal folds, notably at the lumbosacral region. It may occur as episodes of pain, stiffness, or discomfort experienced at the lower back. People with low back pain most often experience a high mental, physical and social breakdown. It is of high social, economic, and public health issue affecting the entire globe, and a frequent cause of functional disability with about 90 % of the general population being affected [2].

Banks are industries where employees are subjected to various physical demands and prolonged sitting or standing postures which may lead to back pain [3]. Bank employees in Pakistan have been reported to suffer burnout resulting from back pain [4]. Chronic low back pain occurs quite often in workers employed in sedentary occupations. According to Ortiz-Hernandez et al [5], computer users who spend many hours sedentarily may become vulnerable to developing musculoskeletal disorders like neck, shoulder, and back pain as they spend prolonged sitting in front of computers with awkward postures and repetitive movements while typing and using the mouse. Working with a computer poses awkward postures that are continually and forcefully maintained and this subsequent changing from normal sitting postures while using the computer has been noticed and influences the development of musculoskeletal system pain, back and neck pains being more common [6]. The consequences of back pain cannot be over-emphasized and lead to a negative economic impact as a result of increased absenteeism from work and loss of productivity [7]. It is presumed that back pain among bank workers in Port Harcourt is high. However, there is limited data on the prevalence of chronic low back pain

and associated factors among bank workers in Port Harcourt. Establishing the factors associated with back pain is critical to providing adequate intervention.

Studies conducted by Kanyenyeri et al. [3] demonstrated that 41 % and 40.3 % of respondents used computers 7 to 9 hours and 10 to 12 hours respectively. The statistic significantly revealed that bank workers that spent 10 to 12 hours per day were 3.5 times more likely to have back pain than those who used computers for 4 – 6 hours. More so, Mahmud et al in a comparative study reported that computer users in Malaysia had upper and lower back pain due to improper alignment in front of a computer for a long time with a prevalence of 38.9 % in comparison with 45.8 % prevalence in Lebanese office worker and 51 % among information technology professionals in India.

A sedentary lifestyle is one of the major risk factors for hypertension, especially in occupations such as bankers in banking halls requiring sitting in a position for long hours and less physically active over the years. This is especially so for bankers working as customer care services, cashiers, office assistance, and other staff who often spend a lot of time in seated positions based on their job demands which may be using a computer or doing other activities. Risk-related behaviors such as sedentary behavior are considered potential work health and safety issues.

It has been established that there is a high prevalence of sedentary lifestyle among bankers arising from occupational demands, which had highly contributed to chronic low back pain. In assessing bank workers' knowledge of stress, where the respondents are between the ages 20 and 49 years showed that only 3.6 % had good knowledge about stress, 42.2 had a fair level, while more than half (54.3 %). The majority (67 %) were stressed moderately, while 24.7% were highly stressed [8].

Some studies had examined how stress at work causes negative mental health and physical manifestations, which include lack of job satisfaction, anxiety, and depression, together with maladaptive behaviors such as smoking and alcohol consumption, which are regarded as risk factors associated with chronic back pain [10, 11]. Also, an investigation carried out by Kanyenyeri et al. [3], 533 respondents participated, and job security was revealed as the major source of work-related stress to the bankers, followed by work materials and organizational policies. Doing the same work repeatedly creates a burden to the mind, resulting in mental stress that leads to the painful muscular system, discomfort, increase in muscular contraction, affecting pain threshold, reducing muscular endurance, and producing additional load on the muscular system. This study aimed to evaluate some of the associated risk factors of chronic low back pain among bank workers in Port Harcourt Metropolis of Rivers State in Nigeria.

2. METHODS

2.1 Study Population

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

2.2 Study Design

This study employed a descriptive cross-sectional approach on 313 participants. Both Male and female bankers between the ages within 18 and 65 years and working in the banking industry were used in this study. Those included in the study were male and female bank workers between the ages of 18-65 years in Port Harcourt Metropolis, non-pregnant female bank workers and bank workers working within the bank. The study excluded pregnant female bank workers, bank workers above the age of 65years, marketing officers working outside the bank, bank workers with a previous history of pelvic surgeries and female bank workers having painful menstruation.

2.3 Sample Size

The sample size was calculated using the Fischer.

Sample size = $\frac{Z^2PQ}{e^2}$

Where standard deviation score =1.96^2. Proportion (p) of Chronic Low Back Pain was 73.1% [11].

Most of these banks have their branches in Port Harcourt Metropolis. Each of the twenty two (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

2.4 Study Approach

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. 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, work force, work processes and in 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 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 were given to the union leaders.

2.5 Ethical Consideration

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 were given to the research participants and union leaders.

2.6 Statistical Analyses

The data was analyzed using Statistical Package for Social Sciences (SPSS) version 21.0 and frequencies were obtained. Data presentation was done using simple tables.

3. RESULTS

Table 1: Distribution on the knowledge, attitude and practice of chronic low back pain among bank workers in Port Harcourt

Variables							
1. Have you ever heard of chronic low back pain?	Yes 188 (60.50%)	No 123 (39.50%)					
2. Have you been treated for low back pain before?	Yes 165 (52.9%)	No 147 (47.1%)					
3. If yes above, what kind of treatment did you receive?	Massage 41 (24.8%)	Exercise 25 (15.2%)	Drugs 78 (47.3%)	Surgery 7 (4.2%)	Bed rest 14 (8.5)		
4. Who offered the treatment?	Doctor 109 (53.7%)	Nurse 28 (13.8)	Physiotherapist 27 (13.3%)	Psychologist 8 (3.9%)	Dietician 4 (2.0%)	T. H. 21(10.3)	S. H. 6(3.0%)
5. What do you think causes low back pain?	Standing for long hours 26(8.4%)	Sitting for long hours 113(36.7%)	Lack of exercises 52(16.9%)	Obesity 28 (9.1%)	Stress 89(28.9%)		
6. Who do you think should be consulted for low back pain?	Doctor 197 (64.6%)	Nurses 14 (64%)	Physiotherapist 53 (17.4%)	Psychologist 7(2.3%)	Dietician 4 (1.3%)	T. H 24 (7.9)	S.H 6 (2.0)
7. How do you think low back pain can be prevented?	Exercise 129 (41.5%)	Drugs 49 (15.8%)	Change job 17 (5.5%)	Avoid Stress 76 (24.4%)	Weight loss 19 (6.1%)	Don't Know 21 (6.8%)	
8. How frequently do you have low back pain?	Daily 57 (23.1%)	Weekly 56 (22.7%)	Monthly 87 (35.2%)	Yearly 47 (19.0%)			

9. Have you ever been absent from work due to low back pain?	Yes 81 (27.2)	No 217 (72.8%)
10. Do you have breaks in-between working hours?	Yes 217 (74.3)	No 75 (25.7)

Table 1 showed the frequency and percentage distribution on the knowledge, attitude and practice of chronic low back pain among bank workers in Port Harcourt. It showed that majority 188(60.5%) have heard of chronic low back pain, 165(52.9%) have been treated for low back pain before, majority 41(24.8%) were treated by massage, Majority 109(53.7%) were treated by the doctor, majority 113(36.7%) said that sitting for a long time causes back pain, majority 129(41.5%) think that back pain can be treated by exercise, majority 87(35.2%) said they feel back pain on monthly basis, majority think that the doctor should be consulted for low back pain, minority 81(27.2%) have been absent from work due to low back pain whereas majority 217(74.3%) had break during working hours.

Table 2. Relationship between Associated Risk Factors and Chronic Low Back pain

Associated Risk Factors	Chronic Low Back pain		Total	OR (95% (CI)	*p*-value
	Yes (%)	No (%)			
Been involved in a RTA					
Yes	42 (22.70)	24 (19.20)	66 (21.29)	1.23 (0.70-2.17)	0.550
No	143 (77.30)	101 (80.80)	244 (78.71)		
Work-related Stress					
Yes	123 (70.71)	61 (55.45)	184 (68.75)	1.94 (1.19-3.16)	0.009**
No	51 (29.29)	49 (54.55)	100 (31.25)		
Not Happy about my Job					
Yes	46 (25.27)	13 (11.50)	59 (20.0)	2.60 (1.33-5.07)	0.01*
No	136 (74.73)	100 (88.50)	236 (80.0)		
Make use of computer					
Yes	155 (84.70)	79 (68.70)	234 (78.52)	2.52 (1.43-4.43)	0.002**
No	28 (15.30)	36 (31.30)	64 (21.48)		
Lift heavy equipment					
Yes	83 (45.86)	38 (31.40)	121 (40.07)	1.85 (1.14-3.0)	0.02*
No	98 (54.14)	83 (68.60)	181 (59.93)		
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)		

No statistically significant relationship exists between been involved in a road traffic accident, previous back surgery and chronic low back pain. Statistically significant relation exist between not being happy with job, jobs requiring use of computers and chronic low back pain. Those who are at odds of experiencing chronic low back pain than those who are not happy with their jobs (OR = 2.60, p =0.01, 95%, CI: 1.33 – 5.07). Also, those whose jobs requires the use of

computers were 2.52 times more at odds of experiencing chronic low back pain than those who do not use computers (OR = 2.52, p = 0.002, 95% CI: 1.43 – 4.43). 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).

Table 3. Summary of past medical history of respondents

S/N	Variables		n	Percentage (%)
1	Do you have any history of high blood pressure?	Yes	119	38.1
		No	193	61.9
2	Do you have any history of high diabetes mellitus?	Yes	66	21.2
		No	246	78.8
3	Do you have sickle cell anemia?	Yes	26	8.3
		No	286	91.7
4	Do you have any history of high convulsion?	Yes	55	17.6
		No	257	82.4
5	Have you had blood transfusion before?	Yes	93	29.8
		No	219	70.2

Table 3 showed that 119(38.1%) had a history of high blood pressure whereas 193(61.9%) have not, 66(21.2%) had a history of diabetes mellitus whereas 246(78.8) had not, 26(8.3%) have sickle cell anemia whereas 286(91.7%) do not, 55(17.6%) had history of convulsion whereas 257(82.4%) do not, 93(29.8%) have had blood transfusion whereas 219(70.2%) have not.

4. DISCUSSION

Chronic low back pain is one of the major contributors to musculoskeletal issues leading to significant health burdens to both individuals and the community. This study was conducted to determine chronic low back pain prevalence by its associated risk factors among Bankers in the Port Harcourt metropolis.

Exercise is a good predictor of chronic low back pain. This study revealed a significant difference in respondents that did not exercise was 1.75 times more at odds of developing chronic low back pain. The findings of this study confirmed the work done by James et al. that stated that exercise leads to improved function and ability to carry out work, thereby decreasing work disability and risk associated with chronic low back pain. Also, this demonstrated that of all the treatment interventions assessed such as drugs (15.5%), avoid stress (24.4%), change job (5.5%), weight loss (6.1%), exercise (41.7%), exercise was considered the most favorable treatment of all. These findings confirm with the research done by Olotu [12], who predict the statistically significant difference in low back pain among individuals who do not engage in exercise and low back pain.

Some psychosocial agents such as not being happy with a job and perceived work-related stress have been known to successfully predict chronic disability. The result from this study revealed statistical differences among respondents not being happy with their job are at 2.60 more at odds of experiencing chronic low back pain (OR = 2.60, p = 0.01, 95%, CI: 1.33 – 5.07). Results from this study supported the work done by Senecal et al. [13] but were contradicted by some research work that revealed no statistical significance. The difference may be due to the methodology used making it difficult to predict the variables and different questionnaires were used to measure job satisfaction. Work-related stress among bankers experiencing chronic low back pain recorded in this study was statistically significant (OR = 1.94, p = 0.009, 95%CI= 1.19 – 3.16). Soucy et al. [14] in a study carried out on work-related psychosocial variables showed that work with a high-stress level may predispose an injured worker to chronic disability which confirmed the finding of this study. The majority of the bankers have some social habit like alcohol consumption (53.5%) which may largely contribute to degenerative changes in the lumbosacral disk located at the back.

The job demands needing the use of computers demonstrated significant changes and respondents were 2.52 at odds of experiencing chronic low back pain (OR = 2.52, p = 0.002, 95% CI = 1.43 -4.43). This finding agreed with studies conducted by Kanyenyeri et al. [3] which demonstrated that 41 % and 40.3 % of respondents who used computers 7 to 9

hours and 10 to 12 hours respectively were 3.5 times more likely to develop low back pain than those that used computers between 4 to 6 hours a day.

The sampled population all possess some underlying problems such as high blood pressure 119 (38%), diabetes mellitus 66 (21%), sickle cell anemia 26 (8%), convulsion 55 (18%), and blood transfusion 93 (30%). Some of these conditions have been seen to increase oxidative stress which in turn increase the free radicals [15, 16] which are could contribute to pain.

5. CONCLUSION

This study showed that together with a sedentary lifestyle, other medical histories of individuals such as high blood pressure 119 (38%), diabetes mellitus 66 (21%), sickle cell anemia 26 (8%), convulsion 55 (18%), and blood transfusion of chronic low back pain.

6. RECOMMENDATIONS

The recommendations below were made based on the findings of this study;

1. Banks should organize compulsory physical fitness exercise at least once every month for its entire staff.
2. Banks should pay for the cost of treatment related to low back pain incurred by their staff.
3. Banks should employ more staff to help reduce physical and psychological stress occasioned by work overload.
4. Banks should provide adequate social support to its staff with certain medical histories to reduce hazards from psychosocial stress.

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.

REFERENCES

1. International Association for the study of Pain (Subcommittee of Taxonomy). A list with definition and notes on usage, pain; vol. 6, pp. 249-256, 1979.
2. Manusov, E.G. (2012). Evaluation and diagnosis of low back pain. Prim. Care, 39 (3): 471–9.
3. Kanyenyeri, L. Benon Asiimwe, Monica Mochama, John Nyiligira and Michael Habtu (2017). Prevalence of Back Pain and Associated Factors among Bank Staff in Selected Banks in Kigali, Rwanda: A Cross Sectional Studies.
4. Khattak, J.K., Khan, M.A. & Hag, A.U. (2011). Occupational stress and burnout in Pakistan's banking sector. Afr J. Bus Manage, 5, 810-817.
5. Oritz-Hernandez, L., Gonzalez, S., Martinez-Alcantara, S. & Mendez-Ramirez, I. (2003). Computer use increases the risk of musculoskeletal disorders among newspaper office workers. Arch Med Res, 34, 331-342.
6. Chang, C., Amick, B., Menendez, C., Katz, J. & Johnson, P. (2007). Daily computer usage correlated with undergraduate students' musculoskeletal symptoms. Am J Ind Med, 50, 481-488.
7. Van-Vuuren, B.J., Becker, P.J., Van-Herdan, H.J., Zinzen, E. & Meunisen, R. (2005). Lower back problems and occupational risk factors in a South African steel industry. Am J Ind Med, 47, 451-457.
8. Joy Olotu (2020). Prevalence of low back pain in a southern Nigeria population. International Journal of Innovation Science and Technology. www.ijisrt.com. ISSN: 2456-21655 (2).
9. van Middelkoop, M., Rubinstein, S.M., Kuijpers, T., Verhagen, A.P., Ostelo, R., Koes, B.W., & van Tulder, M.W. (2011). A systematic review on the effectiveness of physical and rehabilitation interventions for chronic non-specific low back pain. Eur Spine J, 20 (1): 19–39.

10. Meucci, R.D., Fassa, G.A., & Faria, M.N. (2015). Prevalence of Chronic low back pain: Systematic review. Rev Saude Publica Doi: 10.1590/S00348910.2015049005874.
11. Balakrishnan, R., Chellappan, Thenmozhi (2016). Prevalence of low back pain and its risk factors among secondary school teachers at Bentong, Pahang, Int J Phy Edu, Sports and Health, 3 (2), pp. 35 – 40,
12. Eyichukwu, O., Ogugua, P.C. (2014). Epidemiology of Low Back Pain in Enugu, Nigeria. African Journal of Orthopaedic and trauma, 11 (1)
13. Senecal, C., Vallerand, R.J. Guay, F. (2001). Antecedents and outcomes of work-family conflict: Toward a motivational model, Personality and Social Psychology Bulletin 27, 176– 186.
14. Soucy Isabelle, Truchon Manon, and Cote Denis (2006). Work-related factors contributing to chronic disability in low back pain. IOS Press 26 (2006) 313 -326
15. Maddu, N. (2019). Diseases Related to Types of Free Radicals, Antioxidants, Emad Shalaby, IntechOpen, and DOI: 10.5772/intechopen.82879. Available from: https://www.intechopen.com/chapters/65067. Date accessed 12th December 2021.
16. Pham-Huy, L. A., He, H., & Pham-Huy, C. (2008). Free radicals, antioxidants in disease and health. *International Journal of Biomedical Science: IJBS*, 4(2), 89–96.