MUSCULOSKELETAL SYMPTOMS AMONG COMPUTER USERS: A COMPARISON BETWEEN BANKERS AND ADMINISTRATIVE CIVIL SERVANTS IN PORT HARCOURT, NIGERIA

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ABSTRACT

Background:

Musculoskeletal disorders are common among various occupational groups. They could cause pain or discomfort and may result in reduced productivity, absenteeism due to ill health, and considerable economic and social impact. This study was to determine and compare the prevalence of musculoskeletal symptoms, awareness, health care- seeking behaviour and identify risk factors among bank tellers and civil servants in Port Harcourt, Nigeria.

Methods:

This was a comparative cross-sectional study. A total of 668 computer workers were studied (equal number of bankers and civil servants). A pre-tested semi-structured, interviewer administered questionnaire which included the standardized Nordic Musculoskeletal Questionnaire was used.

Results:

The age range of participants was 20-59 years. The mean age of bankers and civil servants were 31.3 ±4.5 years and 38.3 ± 7.3 years respectively. Most of the bankers (82.9%) and civil servants (89.8%) reported at least one musculoskeletal symptom in the past twelve months. The most common reported symptom in both work groups was neck pain (62.9% and 56.0%

respectively). Among the bankers, this was followed by upper back pain (57.2%) while for the civil servants it was low back pain (45.8%).

Conclusion:

This study found a higher prevalence of musculoskeletal symptoms among civil servants compared to bankers. Ergonomic interventions, avoidance of prolonged sitting, observance of regular rest breaks and adoption of good work practices would help in the reduction of risks for work-related musculoskeletal disorders. Early presentation and proper treatment should be encouraged.

Key words- musculoskeletal symptoms, computer users, bankers, civil servants, Port Harcourt

INTRODUCTION

Employees remain invaluable assets of both service and manufacturing industries (public or private) irrespective of the degree of automation evolving in such industries. Hence, ensuring the safety and health of the workforce becomes crucial for the continued existence and productivity of the industry. Injury at work or ill health of an employee could result in loss of man hours or business opportunity amongst others and may affect corporate image depending on the magnitude of the injury or ill health. A safe and healthy workplace can therefore boost employees' morale and improve productivity[1]. Also, a nation's economic and social growth is bolstered by a healthy workforce.

Work-related musculoskeletal disorders constitute a large percentage of occupational diseases in western countries. They are said to be the single largest category of work-related illness which represent a third or more of all registered occupational diseases in the United States, the Nordic countries (Denmark, Finland, Sweden, Norway and Iceland) and Japan.[2,3] According to the Bureau of Labour Statistics, 387,820 musculoskeletal disorders cases accounted for 33% of all worker injury and illness cases in 2011 in the United States.[4] A large fraction of sickness absence, loss of man hours, claims for compensation benefits have been attributed to these disorders. In addition, they can cause a lot of pain (sometimes chronic) and suffering in those affected leading to a reduction in the quality of their lives.[5]

A survey in France, showed that upper limb musculoskeletal disorders were common in the working population occurring in more than 50% of the workers in the preceding 12 months and about 30% in the preceding week.[5] Another study carried out among female bank tellers in Korea showed a higher prevalence rate. In the 'more than severe' category of musculoskeletal symptoms, the Korean study reported a prevalence of 51.4% for the shoulder, 38.3% for the lower back, 38.0% for the neck, 31.2% for the upper back, 21.7% for the wrist, and 13.6% for the fingers.[6] A study carried out in Sri Lanka, a developing nation in South Asia also had prevalence figures that corresponded with those obtained in developed countries but with neck and shoulder as the highest complaints - 36.1% and 34.3% respectively.[20] Studies of Computer/ VDU users have reported a prevalence of 10-62% of musculoskeletal symptoms in the neck and shoulder region.[7-10]

A study carried out among bankers in Lagos, Nigeria gave a prevalence of upper limb musculoskeletal problems as 79% and symptoms were mostly in the neck.[11] In a study among computer users across six university campuses in Nigeria, Adedoyin et al reported that low back pain and neck pain were the highest complaints with a prevalence of 74% and 73% respectively.[12] Knee and foot pain were the least reported symptoms with a prevalence of 26% and 25% respectively. Another study conducted in South West Nigeria which compared musculoskeletal symptoms in computer users with non-computer users highlighted that in the preceding 12 months, the neck was the site most reported for both groups at prevalence of 64.0% and 33.9% respectively.[13] The study population comprised computer users from the teaching hospital, public offices and private businesses. Also, Omokhodion et al reported the prevalence of low back pain among Civil Servants in Oyo State, Nigeria as 38% for 12-month prevalence and 20% for point prevalence.[12]

There is consistent evidence of a positive relationship across numerous prospective and cross-sectional studies with increased risk of disorders most pronounced beyond 20 hours/week of computer use or with increasing years of computer work.[13]

The banking industry in Nigeria is a major contributor to the engine of the economy and has twenty one consolidated commercial banks among others in operation presently.[15,16] A typical commercial bank

has a head office which houses the legal, general services, administrative, credit, corporate services and risk management units/ departments. The branch offices comprise the Sales and the Operations arms. Bank workers are broadly categorized into Permanent and Contract staff. Besides these are the Direct Sales Agents who are responsible for account opening and are usually paid commissions based on the accounts they bring in within set targets. The Branch Manager, Head of Operations and Cash Officer constitute the permanent staff while the tellers and customer service officers are mostly contract staff. The customer service officers, tellers and cash officer all report to the Head of Operations who in turn reports to the Branch Manager (the line manager to all Operations staff) as well as the Regional Operations Manager. The marketing staff report directly to the Branch Manager. Ancillary workers include the Security and Housekeeping personnel and these services are usually out- sourced (Personal communication). The banking profession entails detailed and sensitive work with largely inflexible deadlines within which to meet given high targets. Bankers in the course of their work, interact daily with a large number of clients attending to their varied financial concerns.

Thus, they spend long hours at work in a bid to deliver on their jobs.

Due to the demands of the banking profession, bankers are exposed to various occupational hazards ranging from physical, mechanical and psychosocial. Their work environment draws on their physical and mental stores with substantial musculoskeletal and psychosocial demands. Job insecurity, long working hours and burnout are some psychosocial factors that cut across all categories of bank workers as highlighted by a study carried out in South-East Nigeria. The study noted that bankers work in a stress-prone environment making them at high risk of burnout.[16] Pinheiro et al noted that bankers especially the cashiers (tellers) are a high risk group for musculoskeletal problems.[17]

The Civil Service is the machinery through which the government articulates and implements its policies and programs. It plays a pivotal role and functions under the executive arm of the state government through its various ministries, departments and agencies with the overall head being the Head of Service. Each ministry is headed by a Permanent Secretary who is responsible for the operations of the ministry. The Civil Service has been undergoing reforms over

the years with a view to increasing efficiency, effectiveness and improved service delivery. However, its pace has not matched the organized private sector. Civil servants are public sector workers engaged in various jobs spanning health, education, finance, agriculture, environment, information etc. Depending on their job type, they may carry out administrative functions or engage in varying degrees of field/ technical work. The office workers carrying out administrative functions have largely sedentary jobs and could be exposed to occupational hazards such as physical, mechanical and psychosocial. Unlike bankers, they generally do not spend long hours at work. Their job usually does not require them to stay at work for more than the average work day of 8 hours. Typically, they do not have inflexible deadlines/ targets as seen in the banking industry and their work tends to be less demanding. Hence, there is less likelihood of work overload.

This study was to determine and compare the prevalence and level of awareness, and identify risk factors of musculoskeletal symptoms among bank tellers and administrative civil servants in Port Harcourt.

METHODOLOGY

Study Area: The study was conducted in Port Harcourt, Rivers State, one of the 36 States of Nigeria. It is an oil-rich State in the Niger Delta region of the South-South geopolitical zone of the country. Rivers State has a population of 5,198,716.[107] The capital city, Port Harcourt (spanning Port Harcourt and Obio Akpor Local Government Areas) is a thriving commercial town. It has experienced a huge influx of people in recent years owing to the increase in crude oil exploration by multinational companies. As such, it is home to numerous banks and various businesses. These banks have several branches in the city in a bid to promote easier neighbourhood banking. There are 21 commercial banks in Port Harcourt, with several branches.[108] The Rivers State Civil Service, State Secretariat is home to 25 ministries with the key ministries being health, education, information, environment, finance, works, housing etc.

Study Design/Population: This study employed a comparative cross-sectional study design. Bank workers tend to run a very busy work schedule, multitasking and engaging in mentally and physically demanding tasks. The civil servants engage

in administrative or field activities depending on their specific duties aimed at serving the public. Their work schedule is usually not as busy as the bankers'. Unlike bankers, their job usually does not require them to stay at work for more than the average work day of 8 hours. The participants in both groups had a dedicated computer for their use.

Inclusion criteria: Respondents on both responding groups must be Identity-card-carrying full-time staff (bank tellers or civil service administration staff) at least 20 years of age who have been working in the establishment for at least two years, had been in the current position for at least one year.

Sample Size / Technique: The sample size was determined using the formula for calculating sample size for the comparison of two proportions[109]This was calculated to 668 with provision for non-response. Therefore, there were 334 respondents per study group. Multi- stage sampling was employed in the selection of bank tellers and civil servants

First, the bank tellers *Stage 1: Selection of banks:* Using proportionate stratified sampling method, the commercial banks were stratified by generations into old and new generations- based on the period they were established. Old generation banks are considered as those established before 1986 while new generation banks refer to those established since the deregulation of the banking sector in 1986. From each of the two strata (old and new generations), participating banks were selected proportionately by simple random sampling. The list of commercial banks in each stratum was used as the respective sampling frames.[108] Of the twenty- one consolidated commercial banks in Port Harcourt, there are four old generation banks and seventeen new generation banks. Hence, using a sampling ratio of 1:4, two old and eight new generation banks were selected by simple random sampling. In all, ten banks were selected. This was based on the average number of eligible bankers per bank. *Stage 2: Selection of bank branches*: Simple random sampling technique was used to select branches out of the selected banks. This was done with the aid of a table of random numbers. The list of all branches of each selected bank was used as the sampling frame. Three branches were randomly

selected out of each selected branch giving a total of 30 branches. This was based on the average number of eligible bankers per branch. *Stage 3: Selection of participants:* Simple random sampling technique was used to recruit the study participants in each selected branch. The nominal roll of the bank tellers served as the sampling frame from which participants were randomly selected- using a table of random numbers. To achieve the required sample size, thirty branches were selected based on the average number of eligible bankers in each branch.

Then, the Civil Servants: *Stage 1: Selection of ministries:* Simple random sampling was used in selecting the ministries. The list of all 25 ministries was used as the sampling frame. Based on the average number of eligible civil servants per ministry, ten ministries were randomly selected (with the aid of a table of random numbers). *Stage 2: Selection of participants:* From each selected ministry, participants were drawn using simple random sampling. The nominal roll was used as a sampling frame in the selection of administrative personnel. In order to achieve the required sample size, 34 eligible administrative personnel from each selected ministry were recruited into the study.

Study Instrument: A study questionnaire was designed by the researcher that included a section adapted from the Standardized Nordic Musculoskeletal Questionnaire[110] for assessing musculoskeletal symptoms in nine anatomical sites. The questionnaire consists of socio-demographic, occupational and medical history, workplace characteristics as well as sections eliciting information on awareness and health care-seeking behaviour for musculoskeletal disorders.

The Standardized Nordic Questionnaire has previously been validated for use in Nigeria.[25,27] The study questionnaire was pre-tested in a similar socio-cultural environment among office workers and cashiers in a large departmental store in Port Harcourt and necessary modifications were made including simplifying/ rephrasing ambiguous questions.

Data Collection: The interviewer administered the questionnaire at the respondent's workstation. For both study groups, data collection was done from Mondays to Fridays during break periods such that there was minimal interference with the workers' daily tasks. Civil servants tend to have a flexible break period. As such, data was collected from participants between 12noon and 3pm on each weekday.

Data were collected from bankers mostly between the hours of 12noon and 4pm depending on their work flow and sometimes after 4pm on very busy days. Data collection for both groups was done over four weeks.

Data Management: Data generated from the study were collated, cleaned and analyzed using Statistical Package for Social Sciences (SPSS) version 20. Frequencies were generated and presented in tables and charts. Qualitative variables were presented as proportions while quantitative variables were summarized using means and standard deviation. Chi square test and Fisher's Exact were used to compare proportions between the two work groups as appropriate. Student's t statistic was used to test the mean difference. To compare potential risk factors across both groups, Mantel-Haenszel Chi square was used in the bivariate analysis.

Ethical Considerations: Clearance/ approval for this study was obtained from the Ethics and Research Review Committee of the University of Port Harcourt Teaching Hospital. Permission to carry out this study among Civil Servants was obtained from the Department of Research and Statistics, Ministry of Health and among the bankers, from the bank management. Signed informed consent was obtained from eligible voluntary participants. Workers requiring medical attention were counseled and guided accordingly to obtain appropriate medical care. Health education was given to the workers on the prevention and control of musculoskeletal disorders.

Limitations: There could have been recall bias and issues bordering on self-report. To address this, clear explanations were given to aid recall. The recall periods were also clearly stated. The questionnaire was simplified for ease of response. Due to the study design- cross sectional, emporality cannot be ascertained but associations can be tested.

RESULTS

Table1: Socio-demographic characteristics of respondents

Variable	Bankers (N=334) n (%)	C/servants (N=334) n (%)	χ^2 (p-value)
Age (years)			
20- 29	117 (35.0)	29 (8.7)	157.969(<0.001)
30- 39	207(62.0)	176 (52.7)	
40- 49	10 (3.0)	107 (32.0)	
50- 59	0 (0.0)	22 (6.60	
Mean years (±SD)	*31.3 ± 4.5*	*38.2 ± 7.3*	*14.745*(<0.001)*
Sex			
Male	134 (40.1)	158 (47.3)	3.505 (0.061)
Female	200 (59.9)	176 (52.7)	
Marital Status			
Single	151(45.2)	78(23.4)	37.335(<0.001)
Married	181(54.2)	248(74.3)	
Separated, Divorced, Widowed	2(0.6)	8 (2.4)	
Religion			
Christianity	325(97.3)	328(98.2)	0.657(0.728**)
Islam	4(1.2)	3(0.9)	
Others[a]	5(1.5)	3(0.9)	
Educational status			
Secondary	0 (0)	25(7.5)	-
Tertiary	334(100)	309(92.5)	

*Student's 't' statistic; **Fischer's exact; [a]Others include - Eckankar, Grail message*
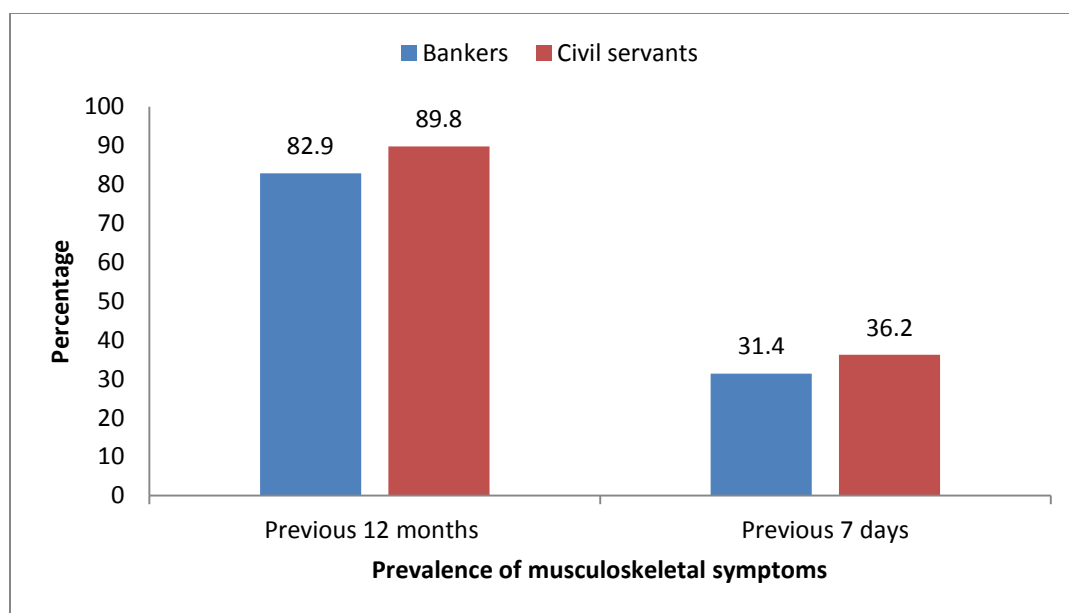
(Previous 12 months: χ^2, p-value- 6.730, 0.009. Previous 7days: χ^2, p-value- 1.712, 0.191)

Figure 1: Overall prevalence of musculoskeletal symptoms among respondents

Table 2: Twelve-month prevalence of musculoskeletal symptoms by body region

Body region	Bankers (N=334) n (%)	Civil Servants (N=334) n (%)	Test statistic χ^2	p- value
Neck	210 (62.9)	187 (56.0)	3.285	0.070
Shoulder	173 (51.8)	153 (45.8)	2.397	0.122
Elbow	75 (22.5)	62 (18.6)	1.552	0.213
Wrist/ Hand	106 (31.7)	128 (38.3)	3.184	0.074
Upper back	191 (57.2)	151 (45.5)	9.114	0.003*
Lower back	171 (51.2)	161 (48.2)	0.599	0.439
Hip/ Thigh	93 (27.8)	88 (26.3)	0.189	0.663
Knees	89 (26.6)	109 (32.6)	2.871	0.090
Ankle/Feet	73 (21.9)	73 (21.9)	0.000	1.000

*Statistically significant

Table 3: Absenteeism due to musculoskeletal symptoms in the past 12 months

Variable	Bankers n(%)	C/servants n(%)	χ^2	p-value
Absenteeism due to MSS				
Yes	52(15.6)	55 (16.5)	0.100	0.752
No	282(84.4)	279(83.5)		
Number of days absent	**n = 52**	**n = 55**		
< 3	14(26.9)	38 (69.1)	22.318	< 0.001**
3 – 5	30(57.7)	9 (16.4)		
> 5	8(15.4)	8 (14.5)		
Mean days absent	1.9 ± 0.6	1.5 ± 0.7	7.929*	<0.001**
Modal days absent	2	1		

*Student 't' statistic **Statistically significant

Table 4: Occupational characteristics of respondents

Variable	Bankers (N=334) n (%)	C/servants (N=334) n (%)	χ^2 (p-value)
How long on the job (year)			
1 – 5	182 (54.5)	115 (34.4)	57.842(<0.001)*
6 – 10	131 (39.2)	159 (47.6)	
11 – 15	21 (6.3)	20 (6.0)	
> 15	0 (0.0)	40 (12.0)	
Mean years (±SD)	5.3 ± 3.2	8.9 ± 7.4	8.140[a] (< 0.001)
Duration of daily work (hour)			
≤ 8	39 (13.0)	260 (87.0)	295.708 (<0.000)
> 8	295 (79.9)	74 (20.1)	
Mean hours (±SD)	10.7 ± 1.8	8.2 ± 1.4	20.300 [a] (< 0.001)

Number of days work/week

≤ 5	7 (2.1)	2 (0.6)	
> 5	53 (15.9)	34 (10.2)	
Mean days (±SD)	*5.2 ± 0.5*	*5.1 ± 0.5*	*0.231 [a] (0.817)*

Number of hours work/week

≤ 40	13 (3.9)	44 (13.2)	
> 40	56 (16.8)	9 (2.7)	
Mean hours (±SD)	*55.1 ± 11.1*	*42.3 ± 8.5*	*16.845 [a] (<0.001)*

Hours of sitting at a stretch

1 – 3	128 (38.3)	170 (50.9)	12.948(0.002)*
4 – 6	169 (50.6)	124 (37.1)	
7 – 9	37 (11.1)	40 (12.0)	
Mean hours (±SD)	*4.1 ± 1.9*	*3.9 ± 1.9*	*1.084 [a] (0.279)*

Observe rest breaks at work

Yes	194 (58.1)	264 (79.0)	34.032 (<0.001)*
No	140 (41.9)	70 (21.0)	

*[a] Student's t statistic *Statistically significant*

Table 5: Bivariate analysis between socio- demographic/ lifestyle factors and presence of musculoskeletal symptoms

Variable	Bankers MSS		Civil Servants MSS		MH χ^2 (p-value)
	Present (N=277) n (%)	**Absent (N=57)** n (%)	**Present n=300** n (%)	**Absent n=34** n (%)	
Age					
≥40years	8 (80.0)	2 (20.0)	117 (90.7)	12 (9.3)	0.081(0.77)
<40years	269 (83.0)	55 (17.0)	183 (89.3)	22 (10.7)	
Chi-square (p-	*0.063*		*0.177 (0.674)*		

value)	(0.802)				
Sex					
Female	178 (89.0)	22 (11.0)	158 (89.8)	18 (10.2)	7.629(0.005)
Male	99 (73.9)	35 (26.1)	142 (89.9)	16 (10.1)	
Chi-square (p-value)	*12.96 (<0.0001)*		*0.001(0.976)*		
Education					
Secondary	0 (0)	0 (0)	25 (100.0)	0 (0)	-
Tertiary	273 (84.5)	50 (15.5)	275 (89.0)	34 (11.0)	
Chi-square (p-value)	*-*		*3.063 (0.08)*		
Smoking status					
Ever	45 (80.4)	11(19.6)	42(82.4)	9(17.6)	2.607(0.106)
Never	232 (83.5)	46(16.5)	258(91.2)	25(8.8)	
Chi-square (p-value)	*0.316 (0.574)*		*3.671(0.055)*		
Exercise					
No	150(82.9)	31(17.1)	104(86.7)	16(13.3)	0.806(0.369)
Yes	127(83.0)	26(17.0)	196(91.6)	18(8.4)	
Chi-square (p-value)	*0.001 (0.974)*		*2.037(0.153)*		

Table 6: Level of awareness among respondents

Variable	Bankers (N = 334)	C/servants (N = 334)	χ^2	p-value
	n(%)	n(%)		
Working with computers may be related to health problems				
Yes	250(74.9)	278 (83.2)	7.085	0.008
No	84(25.1)	56 (16.8)		
Musculoskeletal disorders could result from computer use				
Yes	171(51.2)	233(69.3)	33.838	< 0.001
No	111(33.2)	88 (26.3)		
Don't know	50 (15.0)	13 (3.9)		
Musculoskeletal symptoms may cause health problems later in life				
Yes	229 (68.8)	279 (83.5)	73.645	< 0.001
No	39 (11.7)	55 (16.5)		
Don't know	66 (19.8)	0 (0)		
Awareness score (%)				
< 50	114 (34.1)	53 (15.9)	29.709	< 0.001
≥ 50	220 (65.9)	281(84.1)		
Mean score	64.9 ± 36.2	78.8 ± 29.9		

Level of awareness : ≥ 50% is good while < 50% is poor

DISCUSSION

This comparative cross sectional study sought to determine and compare the prevalence, identify risk factors, determine awareness and health care seeking behaviour regarding musculoskeletal symptoms among computer users- bank tellers and administrative civil servants- in Port Harcourt. Bank tellers belong to the private sector while administrative civil servants are in the public sector. Both groups of workers use a computer daily as their main working tool. Musculoskeletal symptom were seen more among the female than their male counterparts and this finding was statistically significant (<0.001).

A higher prevalence musculoskeletal symptoms were seen among the civil servants (89.8%) compared to the bankers (82.9%). This prevalence is comparable to that obtained in similar studies carried out in South- West Nigeria- Lagos (among bankers), Ghana (among bankers), Kuwait (among bankers), New Zealand (among office workers) and Iran (among office workers).[11] A lower prevalence was reported among bankers in North- East Nigeria, office workers in Thailand and Estonia.[21-23] With the high prevalence musculoskeletal symptoms observed in this study and others,

attention is drawn to the magnitude of musculoskeletal disorders among workers in the sub-region. These disorders sometimes tend to run a chronic course and so preventive measures need to be instituted in the workplace to prevent departures from health and also minimize economic consequences. Considerable attention is being given to infectious diseases and the up surging non- communicable diseases. As reiterated by a study done in Sierra Leone, musculoskeletal health also needs to be given due attention owing to the considerable burden it poses.[24]

This study assessed musculoskeletal symptoms using the validated standardized Nordic Musculoskeletal Questionnaire (NMQ) as was used in several studies including those done in Nigeria, Ghana and globally[7,25,26,27] This tool (NMQ) assesses musculoskeletal symptoms in nine body regions- the neck, shoulders, upper back, elbows, wrists/hands, lower back, hips/ thighs, knees and ankles/ feet over the past 12 months and in the past 7 days. The predetermined time frames reflect past and recent experience of these symptoms.

This study showed that across all nine body regions, in the past 12 months, the neck was the commonest site where both bankers and

civil servants experienced musculoskeletal symptoms with a prevalence of 62.9% and 56% respectively. This finding was similar to studies conducted in South West Nigeria, China and Kuwait.[11,12,21,23] Slightly lower proportions were reported in Thailand and Sri Lanka.[20,] This difference could be due to methodological differences as a different study instrument was used in the Sri Lanka study (Maastricht questionnaire). Bankers in this present study reported more neck symptoms than their civil servant counterparts. Bank tellers tend to have more time pressure and may sit for longer periods with sustained posture coupled with placing the neck in a flexed/ non- neutral position. With the influx of more people into Port Harcourt city in search of improved livelihood, the population has continued to increase thus creating more interaction between bankers and customers. This could increase their workload, longer working hours at their computers and consequently more strain on the neck. Civil servants tend to have a more varied work pace with more workload at certain periods than other times.

Among the bankers in this study, following neck pain in prevalence was upper back, shoulder and low back pain- in that order. However, among the civil servants, lower back pain was next after neck pain. This was followed by pain in the shoulder and upper back. Other studies have identified these body regions as common areas for musculoskeletal symptoms among computer users.[10,25] These symptoms are as a result of the relatively fixed/ sedentary position the body assumes coupled with the repetitive tasks performed. A similar pattern of body region affectation as seen here was also reported in the studies conducted in other parts of Nigeria.[26,28] Contrary to the finding in this present study, the lower back had the highest prevalence in a study of bankers in Ghana where the bankers were drawn from different departments and not only the tellers were studied.[55] This difference may be explained by the heterogeneity of the work population used in the Ghana study as they may not all be frequent VDU users though they also had sedentary jobs.

Low back pain was also a common finding in this study. The 12-month prevalence of low back pain among the civil servants in this study was found to be slightly lower than that of the bankers. This difference was not found to be statistically significant. However, both were higher than the prevalence obtained in some studies carried out among office workers/ civil servants in Ibadan, Nigeria and Greece.[12,29] These two studies were not exclusive to computer users

though the respondents engaged in sedentary work too. A systematic review of low back pain in Africa revealed that the one-year prevalence among Africans was comparable to that of Western countries.[30] It is note-worthy that the WHO global burden of disease studies has predicted that the greatest increases in low back pain prevalence will be seen in developing nations.[111] Thus, targeted interventions and prevention strategies are necessary to forestall this likely increase. Primary prevention is an important consideration in a resource- poor setting like ours bearing in mind the huge costs (including economic and social) of managing musculoskeletal pain over time as there is a tendency towards chronicity with continued exposure to risk factors.

Musculoskeletal disorders could prevent/ restrict workers from effectively carrying out their daily tasks where disabling attacks occur. Such disabling attacks were reported among a quarter of bankers in the Maiduguri study.[26] A much higher proportion was reported in the Middle East.[52] Among respondents in this present study, mostly symptoms in the neck were severe enough to prevent both groups of workers from doing their normal work (in the past 12 months). Respondents with this complaint accounted

for less than a quarter in each group- bank tellers and civil servants. The much lower report of functional impairment/ disabling attacks observed in this present study may be due to geographical and methodological differences. Similar proportions were obtained in Kumasi but the lower back contributed the highest to functional impairment.[25] In the Kumasi study, lower back pain was also the most reported symptom overall for prevalence. Apart from the neck, symptoms in the shoulder and upper back among bankers and symptoms in the lower back among civil servants prevented them from functioning optimally. The least symptoms were reported in the elbow and ankle/feet regions. This is similar to findings in other studies.[11,30]

Coupled with functional impairment, musculoskeletal disorders could lead to absence from work/ loss of man hours. This present study showed that sickness absence due to musculoskeletal problems in the past twelve months was reported by more than a tenth of the bankers and civil servants respectively. Civil servants reported a slightly higher proportion than bankers. However, the difference in proportions between both groups of workers was statistically significant. This finding is similar to that observed in New Zealand

where similar proportions of office workers required time off work due to musculoskeletal conditions.[31] Whereas a much lower finding was seen in Ibadan.[12] The Ibadan study was specific to sickness absence due to low back pain. Most of the bankers that were absent from work were away for more days compared to the civil servants who were mostly absent for fewer than three days per episode. 'Presenteeism' may be worth investigating in these workers as they may be at work despite the discomfort/ pain they may be experiencing in a bid to beat deadlines and meet their targets. Presenteeism tends to lead to reduced job performance as a result of the presence of the health condition.[112] When workers are present at work, it is expected that they are able to perform their duties effectively. As highlighted by Omokhodion et al[21], sickness absence is comparatively low in this population as there are no sick pay schemes in the country unlike industrialized nations where musculoskeletal disorders have been reported to cause work absenteeism or disability than any other group of diseases.[2132,33] Preventive efforts that limit disability are recommended to minimize economic losses due to functional impairment and sickness absence. With the bidirectional interaction of work and health, the health of the worker could affect the work and the work could affect the health of the worker.

Potential risk factors for musculoskeletal problems have been classified as individual, physical/ biomechanical and psychosocial as seen in previous studies.[14,34] The individual/ lifestyle factors included age, gender, smoking status, exercise etc. The biomechanical factors relate to repetitive motion as seen with the frequent use of computers, awkward working postures in which the back is bent, prolonged sitting (sitting for more than 3 hours), workstation etc. Psychosocial factors included job satisfaction, perceived workload/ job demand, perceived job stress, social support (from colleagues and supervisors) as well as decision latitude (opportunity to make decisions).

In this study, factors identified as being associated with musculoskeletal symptoms include sex, years on the job, daily hours of work, workstation, adjustable chair, perceived workload and rest breaks. From multivariate analysis, the identified predictors of musculoskeletal symptoms among respondents are female gender, more years on the job (above 5 years), more hours of daily work, discomfort with workstation

(poor workstation), lack of functional adjustable chair and non- observance of rest breaks. Among the bankers, the main predictors identified were female gender, above 5 years on the job, daily work of 8 hours and above and non-usage of adjustable chair.

Findings from this study revealed that females were 2.481 times more likely (95% CI= 1.345, 4.575) to report symptoms compared to their male counterparts. This is comparable to similar studies conducted in China where female VDU users were also found to be twice as likely to report symptoms. [35] This female preponderance has been reported in various local, regional and international studies. [11,25,27,29,36] This female preponderance has been partly attributed to hormonal/ biological differences in gender as well as differential exposure to psychosocial strain. [37]

Concerning job duration, civil servants reported longer job duration compared to bankers. Respondents that had been on the job for up to 5 years and above were two times more likely (OR= 2.288; 95%CI= 1.195,4.380) to report musculoskeletal symptoms compared to those who had worked for less than five years. This is in agreement with local and regional studies that have shown that the risk of musculoskeletal disorders increases as the years of computer work increases. [13,25] With increasing years on the job, there is increased exposure hence the higher likelihood of occurrence. With computer users, it has been shown that the monotonous repetitive actions they undertake at work leads to the same parts of the muscle fibres being activated for long periods or with a high frequency and may be subject to overload. The same body parts are repeatedly activated with little or no periods of relaxation/ rest. [38] This subsequently leads to the pain experienced by these workers.

Regarding the workstation, a study carried out in Finland did not find a positive association between the daily duration of computer use and musculoskeletal pain but workers' perception of their workstation as being poor was associated with increased likelihood of experiencing these symptoms. [39] Similarly in this present study, majority of the bankers and civil servants who were uncomfortable with their workstation reported musculoskeletal symptoms. Workers who were not using a chair with adjustable height/ back support were more likely to report symptoms. The importance of ergonomic considerations in the design of workstations is vital. [42] Employers should look into improving

workstations for the workers. As they spend most of their waking hours in the workplace, worker comfort and safety is important. Ergonomics fits the workplace conditions and job demands to the capabilities of the worker and successful fits enhance productivity and minimize the likelihood of adverse health effects.[6] Workstations that enable workers to work in different stances (sitting and standing) may be worth considering particularly for bankers who sometimes have deep seating positions. Such workstations would obviate the need to remain in a fixed position for long periods thereby taking the strain away from particular muscle groups while alternating between sitting and standing. A similar intervention proved useful among 70% of bank tellers in Australia who reported a resultant reduction in musculoskeletal symptoms.[43] Undoubtedly, refitting workstations would draw on funds but it might be worth considering in the long run bearing in mind the possible benefits to the employee and employer.[40]

Rest breaks help workers recharge and better able to perform their tasks thereby, reducing the likelihood of injuries/ accidents. The importance of intermittent breaks has been documented with regular short pauses preferable to irregular longer pauses.[45]

When workers have to work for protracted periods before going on a break, they are often already exhausted; resuming work and maintaining performance thereafter can be difficult. This present study found an increased likelihood of musculoskeletal disorders from prolonged computer time without breaks. This is similar to findings among bankers in studies carried out in Asia.[19,41]

Concerning psychosocial factors, this study did not find associations between the occurrence of musculoskeletal symptoms and selected psychosocial factors. Although majority of respondents who were not satisfied with their job reported symptoms, this relationship was not statistically significant. Over three quarters of respondents had adequate on-the-job support; bankers had a lower decision latitude and more than three-quarters reported perceived job stress and described their workload as high. On the other hand, less than half of the civil servants reported perceived job stress and described their workload as moderate. This difference was statistically significant. Risk factors often coexist resulting in a synergistic effect. It is therefore recommended that prospective studies be carried out to validate the above mentioned risk factors.

Regarding the level of awareness of the risk of musculoskeletal disorders and preventive measures, this study found that most of the respondents had good awareness. The civil servants were reported to have a higher level of awareness compared to the bankers though the awareness in both groups was generally high. However, it is noteworthy that having good awareness does not necessarily translate to taking appropriate steps to prevent the development of musculoskeletal disorders. This is in keeping with a study in Kenya which showed good awareness but limited application. Even though more civil servants were reported to have a higher awareness score, they also reported more symptoms overall. The awareness could have followed the development of the symptoms or vice versa. It is difficult to say which preceded the other in this study. Civil servants had been on the job for a longer duration which could account for more exposure and consequently reporting more symptoms. This could have led them to seek more information about musculoskeletal disorders and the potential risk factors as awareness may derive from personal experience. According to Legg's aphorism, it is important that workers are told something about the hazards of their work and not left to find out on their own.

The presence of an ICT training school in the State Secretariat complex could also explain the higher level of awareness among the civil servants as training has been found to improve awareness.[34] Some studies reported a lower awareness than that obtained in this present study.[41,42] The difference in the cadre of study participants may explain the observed difference.

Care seeking behaviour for musculoskeletal disorders varies across populations and settings. Studies have shown that people seek a range of options ranging from orthodox to unorthodox.[40] In the western world, it has been observed that care is often sought via consultation with a medical professional or purchase of OTC medication.[32] Different studies conducted among different occupational groups have found that the observed variation may be linked to people's perception of the illness.[33-35] Where symptoms are bothersome, multiple and restrictive, people are more likely to consult a health practitioner. In resource- poor settings however, people tend to seek less expensive options initially in the hope that the health problem would be managed without huge expenses incurred in consulting a health professional.

In this study, information was obtained as to where participants sought care for musculoskeletal conditions. The findings revealed that less than a third of bankers and fewer civil servants had consulted a health professional for musculoskeletal symptoms. Most of the workers preferred to have a massage done and this accounted for a third of bankers and a little less of civil servants. In the South- South region of Nigeria, it is not uncommon to find people with various ailments seeking the massage option. Culturally, in this part of the country (South-South), it is believed to be a panacea for a number of health conditions even among pregnant women. The proportion who sought medical consultation in this study was similar to that obtained in a study in Europe where it was reported that a quarter of the study participants visited a health care provider for their symptoms. Those seeking medical consultation tended to have more discomfort/ affectation of normal function. This is in contrast to a study conducted in Bangladesh, where over 60% of the respondents consulted a health professional while only 1.4% resorted to rest.[87] The remainder opted for self-medication/ over-the-counter drugs. Rest has been observed to be a common option in studies among Africans.[10] Studies carried out in South West Nigeria revealed that 'rest' accounted for a third of the options sought.[34] The observed differences may not be unconnected with socio-cultural differences as cultural practices have been known to influence care-seeking behaviour.[19] There is also increasing awareness especially in Western countries of the role of physical activity/ exercise in the management of musculoskeletal problems hence inactivity is less favoured. Being active and engaging in regular exercise tends to improve the outcome. A study in South West Nigeria reported about a third of the respondents opting for self-medication which is higher than the index study.[8] This present study also found out that a quarter of civil servants and less than that proportion of bankers sought care through self- medication and this difference was statistically significant. This could be due to the worker's perception of the condition and the ease of obtaining over the counter medication in the neighbourhood pharmacy. The danger of self-medication needs to be borne in mind and this calls for health education to address such practices. There needs to be more enlightenment among the Civil Service workforce to utilize the civil servants clinic which is located within the Secretariat complex. This co-location enhances

convenience and workers should be encouraged to take advantage of this health facility as it is close to where they work. Next to massage, bankers tended to seek medical consultation for their symptoms. The retainership arrangement most banks have with hospitals in the city may explain this. This health plan by the banks enhances access to these services by its workers. As such, they do not have to make unplanned/huge expenses at the point of use.

Conclusion: Musculoskeletal symptoms are common among bank tellers and administrative civil servants in Port Harcourt. These musculoskeletal symptoms were higher among civil servants than their bank teller counterparts due to poor ergonomics and respondents' attitude towards prevention of these workplace ailments. The government should provide and enforce appropriate occupational health and safety legislation that aim to promote and maintain the highest level of health for the worker. Employers should provide information/ training on the hazards of computer usage, control measures including adoption of proper posture and good work practices. Office ergonomics trainings have been found to be useful in reducing the risk of musculoskeletal disorders. Printed material/leaflets and conspicuous signage in the offices would serve as useful visual reminders.

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