Occupational Medicine & Health Affairs
ISSN: 2329-6879

Maduagwu et al., Occup Med Health Aff 2014, 2:3
DOI: 10.4172/2329-6879.1000169

Research Article Open Access

Prevalence and Patterns of Work-related Musculoskeletal Disorders among Bankers in Maiduguri, Northeast Nigeria

Stanley M Maduagwu[1,2*], **Rebecca DW Maijindadi**[1,2], **Kunaba I Duniya**[2], **Adetoyoje Y. Oyeyemi**[1,2], **Ismaila A. Saidu**[1,2] **and Bukola J Aremu**[3]

[1]*Department of Physiotherapy, University of Maiduguri Teaching Hospital, Maiduguri, Nigeria*

[2]*Department of Physiotherapy, College of Medical Sciences, University of Maiduguri, Maiduguri, Nigeria*

[3]National Orthopaedic Hospital, Igbobi, Lagos, Nigeria

[*]**Corresponding author:** Stanley M Maduagwu, Department of Physiotherapy, University of Maiduguri Teaching Hospital, Maiduguri, Nigeria, Tel: 2348034998207; E-mail: stmanofpeace@gmail.com

Received date: May 09, 2014, **Accepted date:** June 26, 2014, **Published date:** June 30, 2014

Abstract

Background: Maiduguri is the largest and most developed capital city in the northeast Nigeria and hence a home for many banks.

Purpose: The survey was conducted to examine the prevalence, pattern and risk factors of WMSDs among bankers in Maiduguri.

Method: Two hundred and twenty six bankers who had spent at least one-year on the job participated in this survey. They were recruited by non-probability sample of convenience from various banks situated in Maiduguri.

Results: Two hundred and twenty six questionnaires were duly completed. Most participants were males (76.55%). Their ages ranged from 20-48 years (mean=31.54 ± 8.71). One hundred and sixty two (71.68%) of the respondents reported WMSDs in at least one region of the body in the previous 12 months. Conclusion: The study revealed that significant percentage (71.68%) of the bankers reported WMSDs in at least one region of the body in the previous one year.

Keywords: Musculoskeletal injury; Risk factors; Degenerative conditions; Banking sector

Introduction

Musculoskeletal disorders encompass a collection of inflammatory and degenerative conditions that affect the joints and surrounding soft tissues of the body as well as the peripheral nerves and supporting blood vessels with resultant physical and psychosocial symptoms, mostly pain and discomfort [1,2]. Musculoskeletal injury resulting from a work-related event is termed work-related musculoskeletal disorder (WMSD) [3]. It is an effect of overexertion which occurs when workers are repeatedly exposed to forceful and prolonged activities in awkward postures or unsympathetic environments [4].

In the banking sector, bankers' works involve the use of computer for data collection, processing and programming, hence they are exposed to risk factors for the development of musculoskeletal disorders inherent in the computing industries. Jobs requiring stereotyped movements of the arms, hands and fingers, and repetitive occupational tasks with short cycle times have become more and more frequent in modern technology as seen in banking jobs with many of them associated with increased rates of pain and musculoskeletal disorders [5].

Although several empirical data have been documented on the prevalence of WMSDs among computer users and/or office workers [2,5-14], only few of these focused on banking industry. Among Hong Kong bankers, the prevalence of WMSDs in various body parts was reported as follows: neck—31.4%, back 30.6%, shoulder—16.5%, hand and wrist—14.9% and arm—6.6% [15]. A Kuwaiti study on musculoskeletal disorders among bank office workers reported that the most affected body parts were the neck (53.5%), lower back (51.1%), shoulders (49.2%) and upper back (38.4%) [16]. Lacerda et al. [17] found a prevalence rate of 56.2% WMSDs among bank workers in Northeast Brazil. In Nigeria, Tella et al. [18] reported an annual prevalence of neck and upper extremity WMSDs among bank workers in Lagos situated in the southwest Nigeria as 79%. These Nigerian authors also incriminated the neck as the most affected area (66.8%) while the elbow was the least affected (22.5%).

To the best of our knowledge, based on literature search, there seems to be a dearth of published data on the prevalence of WMSDs among bankers in Nigeria. In addition, the study by Tella et al. [18] was conducted in the Southwest Nigeria with emphasis on the neck and upper extremity, hence this study in Maiduguri, a capital city in the Northeast Nigeria was conceived and executed to bridge the gap created by the paucity of literature on the prevalence of WMSDs among bankers in Nigeria. It is also envisaged to act as a contribution from Nigeria to the body of existing knowledge on prevalence studies of WMSDs among different populations in general and bankers in particular. The study therefore aimed to investigate prevalence, pattern and risk factors of WMSDs among bankers in Maiduguri, Nigeria. Maiduguri is the capital city of Borno State, one of the six states that make up the northeast geo-political zone in Nigeria. Maiduguri, being the capital of the former Northeast Nigeria, over the years has grown gradually to become the largest commercial and the most developed capital city in the Northeast of the country and hence a home for many

commercial banks as well as a branch of the Nigerian epic bank (Central Bank of Nigeria), notwithstanding the current insecurity caused by insurgency in the city and its environs.

Methods

The participants for this study were 226 bankers who had spent at least one-year on the job. They were recruited from the various banks situated in Maiduguri, Northeast Nigeria. Staff of banks that are not bankers were excluded from the study. The excluded non bankers were the auxiliary staff which included messengers, cleaners, janitors, and security men and women. Bankers in other hand are those technical and skilled staff that are involved in the use of computer or other means for data collection, processing and programming of day to day financial and business transactions in the banking sector. Before executing this study, ethical approval was sought and obtained from the principal author's institution's Research and Ethical Committee. Cover letters explaining the purpose of the study as well as assurance that the information obtained will be used strictly for research purposes were distributed to all the managers of the banks where the participants were recruited. Every participant was also requested to sign a consent form prior to the study. The objective, procedure of filling the questionnaire and benefits of the study were explained to the participants, and they were assured that the study has no known inherent physical harm.

A close-ended structured questionnaire drafted and modified (to suit the purpose of the study and Nigerian environment) from the short version of the standardized Nordic Musculoskeletal Questionnaire (NMQ) for investigating work-related musculoskeletal symptoms in working populations [19] was utilized by the authors in this study. The questionnaire was assessed by a panel of 3 experts knowledgeable in MSDs to ensure its validity. A pilot study was conducted on 20 bankers to evaluate the suitability of the items in Nigerian environment and culture. The questionnaire comprised the following sections:

The first section of the questionnaire was designed to elicit questions on socio-demographic variables. The second section contained questions on prevalence, risk factors and coping strategies of WMSDs. Questions on prevalence constituted a picture of human form with nine body areas shaded and defined as follows: neck, shoulders, upper back, lower back, elbows, wrists/hands, thighs, knees and ankles. This was relevant to a table that requested a 'yes' or 'no' response for each body area to three questions concerning weekly prevalence, annual prevalence and any disability during the last year (annual disability). The items on risk factors described features that could contribute to work related discomfort or injury. It consisted of 15 items such "as performing the same tasks over and over", "attending to a large number of customers in one day", "not a enough breaks rest during the day," "working in awkward or cramped positions" etc. and the responses were rated on "not important", "minimally important", "moderately important" and "significantly important". The items on coping strategies were 9 and covered responses that the participants with WMSDs thought might alleviate the symptoms on their bodies when working. They included and not limited to "I get someone else to help me carryout my work/ functions", "I change my sitting/standing posture regularly when carrying out my functions", "I pause regularly so I can stretch", "I select work/functions that will not aggravate/provoke my discomfort". The respondents were required to respond as follows: "almost always", "sometimes" or "almost never."

The participants for this study (a cross sectional survey) were recruited using non probability sample of convenience. Descriptive statistics of mean, percentage and frequency were used to summarize the data.

Results

Two hundred and seventy five out of 350 copies of questionnaire on work-related musculoskeletal disorders (WMSDs) distributed were returned yielding a response rate of 78.57%. Two hundred and twenty six (82.18%) of the returned questionnaire were duly completed and thus used for data description. Most participants were males (76.55%), majority (58.41%) was between 20 and 30 years old, and about 72% had less than 6 years working experience (Table 1).

Variables	Frequency (N=226)	% Total (226)
Gender		
Male	173	76.55
Female	53	23.45
Age group		
20-29	132	58.41
30-39	86	38.05
40 and above	8	3.54
Working Experience (yrs)		
1 – 5	163	72.12
6 – 10	39	17.26
10 – 15	17	7.52
≥ 15	7	3.1

Table 1: Frequency Distribution of Bankers by Socio-Demographic Variables

Their ages ranged from 20-48 years with a mean of 31.54±8.71 years. One hundred and sixty two (71.68%) of the respondents reported work-related musculoskeletal disorders in at least one region of the body in the previous 12 months, while 130 (57.52%) suffered from the same problem during the last 7 days. Respondents who were prevented by WMSDs from carrying out daily activities (i.e. those that had disabling attacks) accounted for 24.78%. Table 2 depicts socio-demographic distribution of total sample based on prevalence of WMSDs and percentage of the participants with the condition.

Variables	Frequency in total sample (N=226)	Participants with WMSDs (within variable)	Prevalence of WMSDs within each variable	% of total number of participants with WMSDs (n=162)
Gender				
Male	173	123	71.1	75.93
Female	53	39	73.58	24.07
Age group				
20-29	132	115	87.12	70.99

30-39	86	44	51.16	27.16
40 and above	8	3	337.5	1.85
Working experience (yrs)				
1 – 5	163	133	81.6	82.1
6 – 10	39	21	53.85	12.96
10 – 15	17	6	35.29	3.7
≥ 15	7	2	28.57	1.24

Table 2: Socio-Demographic Distribution of Total Sample Based on Prevalence of WMSDs and Percentage of the Participants with the Condition

For instance, out of the 162 respondents that presented with symptoms of WMSDs in the last one year, 75.93% (123) were males and 24.07% (39) were females, constituting an annual prevalence of 71.10% and 73.58% for male and female respectively.

Table 3 represents prevalence of WMSDs by body regions among the participants, Table 4 reveals opinions of the respondents on risk factors that contribute to their WMSDs and Table 5 shows coping strategies adopted by the bankers to alleviate their WMSDs.

Body part affected by WMSDs		Previous 7 days n(%)	Previous 12 months n(%)	Disabling attack n(%)
Neck				
	No	156(69.03)	98(43.36)	192(84.96)
	Yes	70(30.97)	128(56.64)	34(15.04)
Shoulders				
	No	151(66.81)	122(53.98)	198(87.61)
	Yes	75(33.19)	104(46.02)	28(12.39)
	Right	31(13.72)	37(16.37)	-
	Both	40(17.70)	59(26.11)	-
Elbows				
	No	212(93.81)	190(84.07)	220(97.35)
	Yes	14(6.19)	36(15.93)	6(2.65)
	Right	4(1.77)	12(5.31)	
	Left	2(0.88)	5(2.21)	
Wrists/Hands				
	No	203(89.82)	187(82.74)	200(88.50)
	Yes	23(10.18)	39(17.26)	26(11.50)
	Right	11(4.87)	20(8.85)	-
	Left	5(2.21)	8(3.54)	-
	Both	7(3.10)	11(4.87)	-
Upper back				
	No	180(79.65)	153(67.70)	191(84.51)
	Yes	46(20.35)	73(32.30)	35(15.49)
Lower back				
	No	156(69.03)	124(54.87)	202(89.38)
	Yes	70(30.97)	102(45.13)	24(10.62)
Hips				
	No	207(91.59)	194(85.84)	215(95.13)
	Yes	19(8.41)	32(14.16)	11(4.87)
Knees				
	No	197(87.17)	181(80.09)	206(91.15)
	Yes	29(12.83)	45(19.91)	20(8.85)
Ankles/ feet				
	No	208(92.04)	193(85.40)	218(96.46)
	Yes	18(7.96)	33(14.60)	8(3.54)

Table 3: Prevalence of WMSDs by Body Region Among Bankers in Maiduguri, Nigeria, During the Previous Week or Year, and Prevalence of Disabling Disorders (N=226)

Risk Factors	Not Important	Minimally Important	Moderately Important	Significantly Important
Performing the same task over and over	21(12.96%)	32(19.75%)	48(29.63%)	61(37.66%)
Attending to a large number of customers in one day	17(10.50%)	40(24.69%)	54(33.33%)	51(31.48%)
Not enough rest breaks during the day	0(0.00%)	7(4.32%)	57(35.19%)	98(60.49%)
	35(21.60%)	29(17.90%)	52(32.10%)	46(28.40%)
	31(19.14%)	42(25.93%)	45(27.77%)	44(27.16%)
Working in the same position for long periods	4(2.47%)	26(16.05%)	43(26.54%)	89(54.94%)
Bending or twisting your back in an awkward way	23(14.20%)	20(12.35%)	51(31.48%)	68(41.97%)
Reaching or working away from your body	64(39.50%)	38(23.46%)	23(14.20%)	37(22.84%)
Working at or near your physical limits (overwork)	7(4.32%)	12(7.41%)	44(27.16%)	99(61.11%)
Continuing to work when injured or hurt.	13(8.03%)	28(17.28%)	58(35.80%)	63(38.89%)
Work scheduling (over time, irregular shift, etc.)	10(6.17%)	22(13.58%)	53(32.72%)	77(47.53%)
Inadequate training in injury prevention	9(5.56%)	19(11.73%)	40(24.69%)	94(58.02%)
Carrying, lifting or moving heavy materials or equipment	50(30.86%)	73(45.06%)	31(19.14%)	8(4.94%)
Working many days in a week	11(6.79%)	11(6.79%)	45(27.78%)	95(58.64%)
Demanding/stressful job description and work function	8(4.94%)	6(3.70%)	57(35.19%)	91(56.17%)

Table 4: Opinion of Bankers in Maiduguri, Nigeria on how the Following Risk Factors Contribute to Their WMSDs (n=162, i.e. respondents that reported WMSDs).

Coping strategies	Almost always	Sometimes	Almost never
I get someone else to help me carryout my work/functions	48(29.63%)	51(31.48%)	63(38.89%)
I change my sitting/standing posture regularly when carrying out my functions	83(51.23%)	49(30.25%)	30(18.52%)
I pause regularly so I can stretch	45(27.78%)	57(35.18%)	60(37.04%)
I adjust my chair and/or desk	28(17.28%)	40(24.69%)	94(58.03%)
I select work/functions that will not aggravate/provoke my discomfort	15(9.26%)	38(23.46%)	109(67.28%)
I stop the work if it aggravates my discomfort	11(6.79%)	22(13.58%)	129(79.63%)
I take a break from work for the day	0(0.00%)	4(4.32%)	155(95.68%)
I take a break from work for a couple of days	0(0.00%)	0(0.00%)	162(100.0%)
I seek medical attention	25(15.43%)	42(25.93%)	95(58.64%)

Table 5: Coping Strategies by the Bankers with WMSDs in Maiduguri, Nigeria (n=162)

Discussion

This is the first study investigating the prevalence of WMSDs among bankers in Maiduguri, Northeast Nigeria. Our study showed that only 23.45% of the respondents were females. This is not surprising, because the study was carried out in Maiduguri, a city in the northeastern Nigeria. Islam is the predominant religion in this part of the country, because of this, most women are in Purdah [20], thus access to work, especially in banking sectors is restricted. However, the annual prevalence of WMSDs in the female sex (73.58%) is slightly

higher than that of the male (Table 2). Although, the low number of female respondents in this study may be perceived to have accounted for this higher prevalence, however, several studies [16-18] have implicated female gender preponderance in WMSDs. This female bias in the prevalence of WMSDs, according to Jenson et al. [21] could be ascribed to differences in workloads or biological and anthropometric measurements. Hormonal differences, psychosocial and cultural phenomena have been documented to play some roles [22].

The bankers in the age range of 20-29 years had the highest prevalence of WMSDs (87.12%) while those in the oldest age group (40 years and above) had the least (37.50%) (Table 2). This high prevalence of WMSDs among the participants in the lowest age group might be as a result of lower professional experience, knowledge and skills. Increased work load among this age group could be another factor for this higher prevalence of WMSDs compared to other age groups. The plausible explanation in our study for the lower prevalence of WMSDs among the older age groups apart from higher professional experience, knowledge and skills, could be as a result of rise in rank. As their ranks increase, they move out of direct banking job into administrative positions, which are less physically demanding. This higher prevalence of WMSDs among bankers in the age range of 20 - 29 years compared to that among those in the oldest age group (40 years and above) should be interpreted with caution because of the higher number (132) of the participants in the youngest age group which did mot commensurate with that (8) of the oldest age group. This very high ratio (16.5:1) might have had a skewing effect on the result. Although, Lacerda et al. [17] in their study reported that increasing age appeared to confer protection from WMSDs. Also Adegoke et al. [23] observed that the prevalence of WMSDs was higher among younger participants that were less than 30 years of age.

The study revealed that 71.68% of bankers reported WMSDs in at least one region of the body in the previous 12 months, 57.52% suffered from the same problem during the last 7 days and those that had disabling attacks accounted for 24.78%. Akrouf et al. [16] using the same questionnaire (NMQ) on Kuwaiti bankers reported the following proportions: 80%, 57% and 42% respectively. Our study depicted that neck, shoulder and lower back accounting for 56. 64%, 46.02% and 45.13% respectively were the most commonly affected body regions during the previous 12 months. Similar trends in affectation were also observed for WMSDs occurring in the previous 7 days among bankers. Past studies [15-18] have so far incriminated the neck as the most affected region among bankers suffering from WMSDs. Several risk factors such as static or maintained postures, duration of fixed sedentary posture at work and limited or lack of breaks have been identified as significantly responsible for neck and shoulder disorders [5,6,8,9].

Our study showed that overwork (61.11%), not enough rest breaks during the day (60.49%), working many days in a week (58.64%), inadequate training in injury prevention (58.02%), working in the same position (54.94%) among others were the most prevalent risk factors identified by our respondents, while carrying, lifting or moving heavy objects or equipment was the least identifiable risk factor. Tella et al. [18] reported working posture and work demand as the most prevalent risk factors among their respondents.

Limitation

The core limitation of our study was the use of non probability sampling technique (convenience sampling). This obviously impacted on the generalizability of the findings. It was difficult to randomize the participants because the researchers went to the banks to distribute the questionnaire, meeting a particular participant at a particular time and place was not feasible. In order to minimize this effect, we administered our questionnaire in all the banks located in Maiduguri city anticipating that our sample will reflect the general characteristics of bankers in Maiduguri. Also the participants might have mistook other musculoskeletal discomforts they experienced at the time of the survey for WMSDs. Additionally, some participants might have underrated their injuries in order to avoid being labeled 'sick' or perceived negatively at their place of work which may affect their promotion or other employment opportunities. Moreover, the lack of inferential statistics to analyze the relationship between risk factors or coping strategies and the occurrence of MSDs was an additional major limitation to this study.

Conclusion

Despite the aforementioned limitations, our study showed that 71.68% of the bankers reported WMSDs in at least one region of the body in the previous one year. This high prevalence calls for preliminary measures in the areas of ergonomics at work place to prevent or reduce such occurrence. In other words, taking into cognizance the sedentary nature of banking job, bankers should be well educated on safe measures as regards correct posture and ergonomics at their work places. They should also be advised on proper exercise programmes to improve their general wellbeing and health. These will inadvertently improve quality of life and productivity.

References

1. Punnett L, Wegman DH (2004) Work-related musculoskeletal disorders: the epidemiologic evidence and the debate. J Electromyogr Kinesiol 14: 13-23.
2. Janwantanakul P, Pensri P, Jiamjarasrangsi W, Sinsongsook T (2009) Associations between prevalence of self-reported musculoskeletal symptoms of the spine and biopsychosocial factors among office workers. J Occup Health 51: 114-122.
3. Salik Y, Ozcan A (2004) Work-related musculoskeletal disorders: a survey of physical therapists in Izmir-Turkey. BMC Musculoskelet Disord 5: 27.
4. Sommerich CM, McGlothlin JD, Marras WS (1993) Occupational risk factors associated with soft tissue disorders of the shoulder: a review of recent investigations in the literature. Ergonomics 36: 697-717.
5. Turhan N, Akat C, Akyüz M, Cakci A (2008) Ergonomic risk factors for cumulative trauma disorders in VDU operators. Int J Occup Saf Ergon 14: 417-422.
6. Wahlström J (2005) Ergonomics, musculoskeletal disorders and computer work. Occup Med (Lond) 55: 168-176.
7. Kesavachandran C, Rastogi SK, Das M, Khan AM (2006) Working conditions and health among employees at information technology--enabled services: a review of current evidence. Indian J Med Sci 60: 300-307.
8. Karlqvist LK, Hagberg M, Köster M, Wenemark M, nell R (1996) Musculoskeletal Symptoms among Computer-assisted Design (CAD) Operators and Evaluation of a Self-assessment Questionnaire. Int J Occup Environ Health 2: 185-194.
9. Cook C, Burgess-Limerick R, Chang S(2001) The prevalence of neck and upper extremity musculoskeletal symptoms in computer mouse users. Int J Ind Erg 26: 347–356.
10. Jensen C, Borg V, Finsen L, Hansen K, Juul-Kristensen B, et al. (1998) Job demands, muscle activity and musculoskeletal symptoms in relation

to work with the computer mouse. Scand J Work Environ Health 24: 418-424.

11. Marcus M, Gerr F (1996) Upper extremity musculoskeletal symptoms among female office workers: associations with video display terminal use and occupational psychosocial stressors. Am J Ind Med 29:161–170.
12. Ekman A, Andersson A, Hagberg M, Hjelm EW (2000) Gender differences in musculoskeletal health of computer and mouse users in the Swedish workforce. Occup Med (Lond) 50: 608-613.
13. Demure B, Luippold RS, Bigelow C, Ali D, Mundt KA, et al. (2000) Video display terminal workstation improvement program:. Baseline associations between musculoskeletal discomfort and ergonomic features of workstations. J Occup Environ Med 42:783–791.
14. Johnson OE, Onigbinde AT, Onasanya SA, Emechete AAl, Gbela TO (2008) An assessment of ergonomic workstations and pain among computer users in a nigerian university community. Nig J Med Rehab 13: 1-2.
15. Yu IT, Wong TW (1996) Musculoskeletal problems among VDU workers in a Hong Kong bank. Occup Med (Lond) 46: 275-280.
16. Akrouf QA, Crawford JO, Al-Shatti AS, Kamel MI (2010) Musculoskeletal disorders among bank office workers in Kuwait. East Mediterr Health J 16: 94-100.
17. Lacerda EM, Nácul LC, Augusto LG, Olinto MT, Rocha DC, et al. (2005) Prevalence and associations of symptoms of upper extremities, repetitive strain injuries (RSI) and 'RSI-like condition'. A cross sectional study of bank workers in Northeast Brazil. BMC Public Health 5: 107.
18. Tella BA, Akodu AK, Fasuba OO (2010) The Prevalence Of Neck And Upper Extremity Repetitive Stress Injury Among Bank Workers In Lagos, Nigeria. The Internet J Rheum 6: 2.
19. Kuorinka I, Jonsson B, Kilbom A, Vinterberg H, Biering-Sørensen F, et al. (1987) Standardised Nordic questionnaires for the analysis of musculoskeletal symptoms. Appl Ergon 18: 233-237.
20. Akinpelu AO, Maduagwu SM, Odole AC, Alonge TO (2011) Prevalence and pattern of knee osteoarthritis in a Northeastern Nigerian rural community. East Afr Orth J 5: 5-11.
21. Jenson C, Ryholt CU, Burr H, Villadsen E, Christensen H. Work-related psychosocial, physical and individual factors associated with musculoskeletal symptoms in computer users. Work and stress 16:107–120.
22. Hart DA, Archambault JM, Kydd A, Reno C, Frank CB, et al. (1998) Gender and neurogenic variables in tendon biology and repetitive motion disorders. Clin Orthop Relat Res : 44-56.
23. Adegoke BO, Akodu AK, Oyeyemi AL (2008) Work-related musculoskeletal disorders among Nigerian physiotherapists. BMC Musculoskelet Disord 9: 112.