

The Prevalence Of Neck And Upper Extremity Repetitive Stress Injury Among Bank Workers In Lagos, Nigeria.

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Citation

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Abstract

Background: Repetitive stress injury (RSI) has been reported to be a universally accepted occupational health problem. Certain occupational groups have an increased risk of developing RSI. Among these are bank workers, whose activities with repetitive movements increase their risk of RSI. This study investigated the prevalence of neck and upper extremity repetitive stress injury among bank workers and the associated risk factors among bank workers in Surulere Local Government area (LGA) of Lagos, Nigeria. **Methods:** A cross sectional survey was carried out among bankers within Surulere Local Government Area (LGA) of Lagos by using a 54- item questionnaire. Participants were selected randomly from 10 different bank branches, 200 copies of self administered questionnaire were distributed to bankers that met the inclusion criteria, but 178 bankers returned the completed questionnaires giving a response rate of 89%. Data were analyzed using descriptive statistics of mean, standard deviation, frequencies, percentages and chi square. Level of significance was set at $p < 0.05$. **Result:** A 12-month prevalence of neck and upper extremity repetitive stress injury was observed to be 79%. The prevalence of neck and upper extremity RSI was higher among female bank workers at 52.5% than male bank workers. The neck was the most affected area (66.8%) while the elbow was the least affected (22.5%). The highest prevalence was found among Cashiers (87.5%). **Conclusion:** The findings of this study suggest that neck and upper extremity repetitive stress injury is prevalent among bank workers in Surulere LGA of Lagos state, Nigeria. And this may be associated with the type of job, work station design and job demand.

INTRODUCTION

Repetitive stress injury (RSI) is an injury of the musculoskeletal and nervous systems that may be caused by repetitive tasks, vigorous exertions, vibrations, mechanical compression (pressing against hard surfaces), or sustained or awkward positions (William et al, 1994). According to the Centers for Disease Control and Prevention, more than 156,000 cases of Repetitive stress injuries are reported each year. Eighty percent of these cases occurred in businesses such as manufacturing, assembly, and service jobs. The remainder of cases were reported in clerical, sales, professional managerial, secretarial, and data-entry jobs (Emil, 2008).

RSI generally affects the group of workers who commonly use excessive and repetitive motion of the hand, neck and head. For example, people who work on computer restlessly, bank workers, people who use musical instruments and who work in the production line are at risk of RSI (Ring et al, 2005). About 60% of all occupational injuries are caused by repetitive stress (O'Neil, 2001). Certain occupational groups have an increased risk of developing RSI. Among these are

bank workers, predominantly cashiers, whose activities with repetitive movements increase their risk of upper limb symptoms and RSI (Yu and Wong, 1996). However, only a few studies have investigated the prevalence of upper limb symptoms in these high risk group of workers (Pinheiro et al, 2002). Known risk factors of RSI includes personal attributes, working posture, repetitive movements, and workstation design (Yu and Wong, 1996). Two of the most common risk factors investigated in literature so far have been posture and work station design (Laceder et al, 2005). Little or no research has been done in this country on the prevalence of neck and upper extremity repetitive stress injury among bank workers.

This study therefore was designed to evaluate the prevalence of neck and upper extremity RSI among bank workers, and to determine which banking department is more predisposed to RSI. This study also evaluated the ergonomic risk factors that contribute to RSI.

METHODOLOGY

Two hundred bank workers were proposed for this study, but

only One hundred and seventy eight male and female Bank workers, aged between 21 and 60 years participated in this study. They were selected randomly from 10 different banks located within Surulere Local Government Area, Lagos State Nigeria. A cross - sectional survey design was employed for this study.

Ethical approval was sought and obtained from the Committee of the Lagos University Teaching Hospital, Idi-Araba, Lagos, Nigeria (LUTH) on Research and Ethics.

The instrument used for this study was a 54-item open ended structured questionnaire, adapted from a previous study by Eltayeb et al, (2003). It was divided into 3 sections as follows: Section A (1-5) collected general information on the bio-data of the bankers, and this includes; age, gender, nationality, marital status. Section B (6 – 37) collected information on the potential risk factors involved and it includes level of work of the bankers, workstation design and body posture, the physical job demand, quality of breaks within work. Section C (38 – 54) collected information on the bankers complaints of musculoskeletal discomfort in the upper extremity.

STATISTICAL METHOD

Data analysis including descriptive statistics of mean, standard deviation, frequencies, percentages was done using Epi-Info statistical package version 3.5.1. Significant difference between bank work demand and the experience of neck and upper extremity repetitive stress injury was determined using chi square. Level of significance was set at $p < 0.05$.

RESULTS

PARTICIPANTS

Two hundred (200) copies of the questionnaire were distributed and a total of 178 were completed and returned. This gave a response rate of 89%. Respondents were all Nigerians with ages ranging between 20 and 60 years (mean age was 31.3 ± 7.28 years). Majority 99 (55.6%) of the respondents ages ranged between 21-30 years, 55 (30.9%) ranged between 31-40 years, 23 (12.9%) ranged between 41-50years and 1(0.6%) ranged between 51-60 years (Table 1). Eighty six (48.3%) of the respondents were females while ninety two (51.7%) were males (figure 7). Eighty six (48.3%) of the respondents were single, ninety (50.6%) of the respondents were married making up the majority while two (1.1%) were divorced.

NATURE OF WORK

Results showed that one hundred and seventy one (96%) of the respondents use computers for their works while seven (4%) do not. Figure 1 shows the type of computer mainly used, desktop (156 respondents), laptops (19 respondents) and palmtops (3 respondents). Table 1 shows that daily working hours, ranged between 4 and 12 hours. Twelve (8.5%) of the respondents worked for 4-6 hours, ninety-six (54.2%) worked 7 – 9 hours, while sixty-six (37.3%) worked 10 – 12 hours daily .

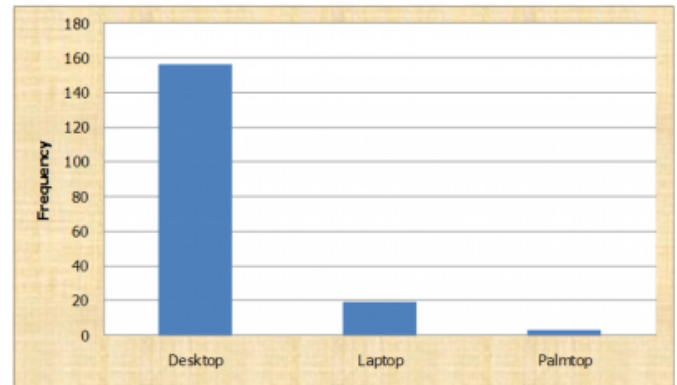
Figure 1

Table 1: Frequency of working hours per day.

NUMBER OF WORKING HOURS PER DAY	FREQUENCY	PERCENTAGE (%)
4 – 6	12	8.5
7 – 9	96	54.23
10 – 12	66	37.29
> 12	3	1.67
TOTAL	177	100.0

Figure 2

Figure 1: Types of computer mostly used.



PREVALENCE, LOCATION AND POTENTIAL RISK FACTORS OF UPPER EXTREMITY RSI.

Regions of the upper extremity that were considered were the Neck, Shoulder, Upper arm, Elbow, Lower arm, Wrist and Hand.

Figure 2 shows the twelve-month prevalence of upper extremity RSI. One hundred and forty one (79%) of the respondents had complaints of musculoskeletal discomfort in at least one of the regions of the upper extremity. Sixty seven (37.43%) were male respondents and 74 (41.57%) were female respondents, representing 72.8% and 86.2% of

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the total male and female respondents respectively. One hundred and twenty (67.8%) had complaints during or after work, while fifty seven (32.2%) did not have any work related complaints in the past twelve months.

The highest prevalence of upper extremity RSI were found for Neck 119 (66.8%) and shoulder 107 (60.1%), followed by Hand 58 (32.6%), upper arm 57 (32.0%), lower arm 56 (31.5%), wrist 50 (28.1%), and elbow 40 (22.5%) (figure 2). The right, left or both sides were affected in each of the upper extremity regions (figure 3).

Figure 3

Figure 2: Prevalence of RSI in different upper extremity regions

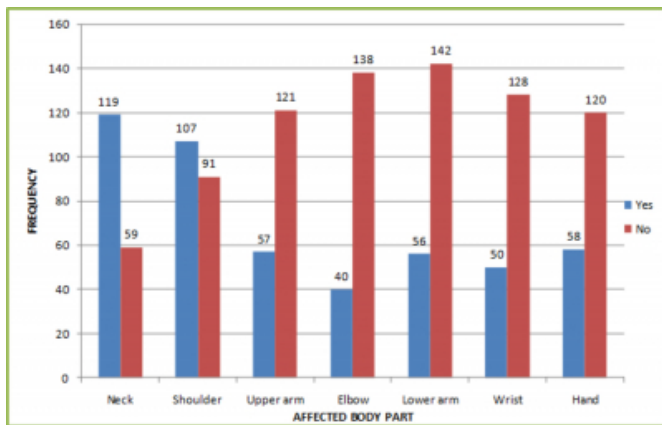


Figure 4

Figure 3: Showing side of affectation of the upper extremity regions.

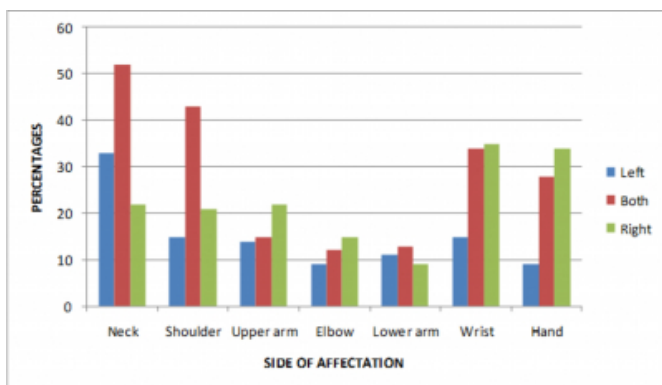


Table 2 shows information on hours of working behind the computer and analysis revealed that there is a relationship between long hours of working behind the computer and the experience of neck and upper extremity complaints. The prevalence increased with increasing working hours. Bankers who worked for between 1-3 hours, 4-6 hours, 7-9 hours and 10-12 hours had prevalence rates of 76.0%,

75.4%, 80.8% and 92.9% respectively.

Figure 4 shows that majority {156 (88%)} of the respondents are placed on high work demand. High work demand showed a prevalence of 85.7%, poor work station gave a prevalence of 80%, while poor work break revealed a prevalence of 82.5% (Table 3).

Many of the respondents (77) sometimes, seldom or never assume a comfortable or good posture during work. Majority (82) always or often sit with lifted shoulders for more than two hours daily, while 96 of them do not. Most of the respondents (112) always or often sit in for long hours in one position, and when working head is always or often bent(105), and sometimes twisted more to the left or right in 139 respondents. A large percentage 42.7% (76) indicated that they always perform repetitive tasks while only 1.1% (2) indicated that they never perform repetitive tasks (Table 4).

Figure 5

Table 2: Working hours behind the computer and prevalence of upper extremity RSI

HOURS SPENT ON COMPUTER	PREVALENCE n (%)
1 – 3	19 (13.47%)
4 – 6	46 (32.62%)
7 – 9	63 (44.68%)
10 – 12	13 (9.23%)

Figure 6

Figure 4: Level of job demand among Bankers

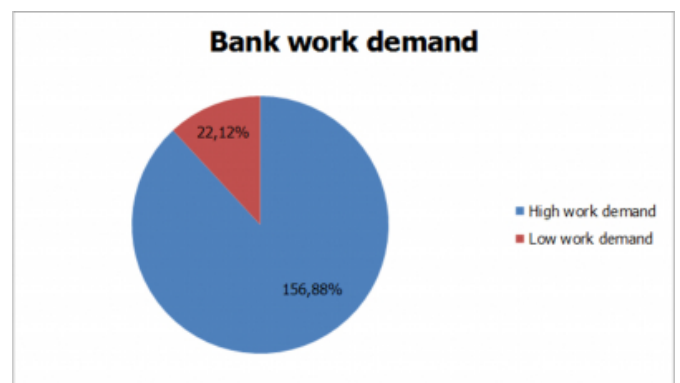


Figure 7

Table 3 : Risk factors associated with the prevalence of upper extremity RSI.

VARIABLES	PREVALENCE	p value
HIGH JOB DEMAND	132(85.70%)	X ² = 23.30 p= 0.0000
POOR WORK STATION	105(80.80%)	X ² = 0.587 p= 0.2215
POOR BREAK	80(82.50%)	X ² = 0.587 p= 0.2215
LONG WORK HOUR (79.5%)	13(92.9%)	X ² = 13.00 P= 0.2934

Figure 8

Table 4: POSTURES ASSUMED BY BANK WORKERS.

Variable	Always n (%)	Often n (%)	Sometimes n (%)	Seldom n (%)	Never n (%)
At work, I keep a good posture	44(24.7%)	57(37.6%)	50(28.1%)	16(9.0%)	1(0.6%)
I sit with lifted shoulders for more than 2 hours daily	26(14.6%)	56(31.5%)	64(36.0%)	21(11.8%)	11(6.2%)
At work, I sit in for long hours in one position	53(29.8%)	59(33.1%)	40(22.5%)	18(10.1%)	8(4.5%)
At work, I perform repetitive tasks	76(42.7%)	54(30.3%)	39(21.9%)	7(3.9%)	2(1.1%)
When I work, my head is bent	47(26.6%)	58(32.8%)	48(27.1%)	14(7.9%)	10(5.6%)
Head is twisted more to the left or right	34(19.1%)	46(25.8%)	59(33.1%)	26(14.6%)	13(7.3%)

DISCUSSION

The result from the research shows that neck and upper extremity repetitive stress injury is prevalent among Bank workers. This is in concordance with a research by Lacerda et al, (2005) who reported the prevalence and association of upper extremity repetitive stress injury symptoms among bank workers in Northeast Brazil.

It was observed from this study that the prevalence of neck and upper extremity repetitive stress injury was higher among the female gender than the male gender, therefore the female gender is at risk of upper extremity repetitive stress injury. This inference is in agreement with the studies by Lacerda et al, (2005) and Akrouf et al (2010), which reported that upper extremity repetitive stress injury is higher among the female gender than male. This may possibly be as a result of the anatomical differences in the carpal tunnel, hormonal differences and importantly, differences in the activities performed by men and women or

by other biomechanical differences such as elbow carrying angles and lean body mass. Psychosocial and cultural phenomena also play roles (Hart and Kydd, 1998).

The findings from this study showed that 96% of the respondents use computers for their works and that majority of them (56.2%) spend between 7 – 12 hours daily working behind the computer. Analysis however, shows that there was an increasing prevalence among these individuals, with the highest prevalence among those that worked for longer hours between 9 – 12 hours daily. This corresponds to a survey by the Occupational Health and Safety Council of Hong Kong in 2002 that showed that computer workers complained of musculoskeletal discomfort in the neck, shoulders, upper back (Goonetilleke et al, 2003), and with another study that reported that working long hours on the computer is an associated risk factor for neck and upper extremity repetitive stress injury (Sillanpa et al, 2003).

This study revealed that job distribution in the bank has a relationship with neck and upper extremity repetitive stress injury. This is probably because different banking unit have different and unequal workload and demand. For example cashiers are responsible for financial transactions, i.e. receiving and paying out money and keeping financial records, while customer service officers are responsible for opening account and attending to problems relating to customers account. This study however, revealed that cashiers have the highest prevalence and therefore are at risk of neck and upper extremity repetitive stress injury. This is in agreement with the study carried out by Lacerda et al, (2005) who reported that the highest occupational risk factor was for cashiers.

Recent literature has identified work place ergonomics as a determinant for musculoskeletal injury, Ergonomics is the science of designing the job, equipment, and workplace to fit the worker. Proper ergonomic design is necessary to prevent repetitive strain injuries, which can develop over time and can lead to long-term disability (Berkeley, 2008). This study shows that there is a high prevalence of repetitive stress injury among workers with a poor work station and ergonomics such as inappropriate location of the screen, keyboard and mouse, than those with a good work station. This is in accordance with study by Cheung et al, (2008) who stated that known risk factors for repetitive stress injury included personal attributes, working posture, repetitive movements, and workstation design.

The results analyzed on working posture and work demand both showed relationship with the prevalence of upper extremity repetitive stress injury, as both variables were both in high prevalence. This is in agreement with a study that found out that high job demands appeared to confer the strongest work-related psychosocial risk of repetitive stress injury (Bongers et al, 1993; Andersen et al, 2002,).

CONCLUSIONS

The result of this study showed that the prevalence of neck and upper extremity repetitive stress injury is 79% among bank workers in Surulere local government area of Lagos state Nigeria. And this may be associated with the type of job, work station design and job demand. The author recommend that work demand should be reduced especially for the female bankers, since they are at higher risk of upper extremity repetitive stress injury and construction of work station should be such that positioning the monitor forms an angle of between 15 to 45 degrees inferior to an imaginary horizontal line extended from the eye, whilst monitor should be 5 to 20 cm above the work table, generally the keyboard and mouse are supposed to be at around elbow height so that the forearm could be at 90 degrees with the wrist straight. Bankers should be educated on ergonomics, posture, taking breaks in between work and relaxation as this will ultimately improve job satisfaction and performance. The use of software that will monitor time spent while working on computer and prompt the user to take a break when working for too long can also be employed. Work place modifications such as rotation policy among workers, alternating job works, flexible working hours should be employed.

References

- r-0. Andersen JH, Kaergaard A, Frost P (2002). Physical, psychosocial, and individual risk factors for neck/shoulder pain with pressure tenderness in the muscles among workers performing monotonous, repetitive work. *Spine* 27:660-7.
- r-1. Akrouf QAS, Crawford JO, Al-Shatti AS, Kamel MI (2010). Musculoskeletal disorders among bank office workers in Kuwait. *Eastern Mediterranean Health Journal* 1(2): 112-118.
- r-2. Berkerley Lab (2008). Integrated safety management. *Ergonomics*. Available @ www.lbl.gov. retrieved on 09/07/08.
- r-3. Bongers PM, De Winters CR, Kompier MA, Hildebrandt VH (1993). Psychosocial factors at work and musculoskeletal disease. *Scandinavian Journal of Work Environmental Health* 19: 297-312.
- r-4. Cheung JPY, Fung B, Ip WY, Chow SP (2008). Occupational repetitive stress injury in Hong kong. *Hong kong medical journal* 14(4): 296- 302.
- r-5. Eltayeb SJ, Bart S, Janneke K, Petra HG, Rob A (2007). Prevalence of complaints of Arm, Neck and Shoulder among computer office workers and Psychometric evaluation of a risk factor questionnaire. *BMC Musculoskeletal disorders*. www.medscape.com. Retrieved on 16/10/2007.
- r-6. Emil PF, Redmond WA (2009). Repetitive Stress Injury. Microsoft® Encarta® 2009.
- r-7. Goonetilleke RS, Witana CP (2003). Utilizing advancements in data acquisition and control in the design of computer workstations. *Proceedings of SEAMEC* 2:40-44.
- r-8. Hart DA, Archambault JM, Kydd A (1998). Gender and neurogenic variables in tendon biology and repetitive motion disorders. *Clinical Orthopaedics* 351: 44-56.
- r-9. Lacerda EM, Nacul LC, Augusto LG, Olinto MT, Rocha DC, Wanderley DC (2005). Prevalence and association of symptoms of upper extremity repetitive strain injury(RSI) and RSI-like conditions. A cross sectional study in Northerneast Brazil. *BMC Public Health*, 5: 107.
- r-10. O'Neil BA, Forsythe ME, Stanish WD (2001). Chronic occupational repetitive strain injury. *Canadian Family Physician* 47: 311-316.
- r-11. Ring D, Kadzielsky J, Malhotra L, Lee SP, Jupiter JB (2005). Psychological factors associated with fore arm pain. *Journal of Bone and Joint Surgery* 10; 87: 374-380
- r-12. Sillanpää J, Huikko S, Nyberg M, Kivi P, Laippala P, Uitti J (2003). Effect of work with visual display units on musculo-skeletal disorders in the office environment. *Occupational Medicine (London)* 53:443-51.
- r-13. Pinheiro FA, Troccoli BT, Carvalho CV (2002). Validity of the Nordic musculoskeletal questionnaire as morbidity measurement tool. *Rev Saude Publica* 36: 307-331.
- r-14. William R, Westmorland M (1994). Occupational cumulative trauma disorders of the upper extremity. *American Journal of Occupational Therapy*, 48(10):95.
- r-15. Yu IT, Wong TW (1996). Musculoskeletal problems among visual display unit workers in a Hong Kong Bank. *Occupational Medicine*, 46:275-280.

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