Available online at **www.ijmrhs.com**

ISSN No: 2319-5886

International Journal of Medical Research & Health Sciences, 2019, 8(6): 99-105

Prevalence of Musculoskeletal Disorders among Brewery Workers in South-west Nigeria

Adewoyin Osonuga[1], Ayokunle Osonuga[2]* Josephine Onuorah[1] and Adebayo Dacosta[3]

[1] Department of Adult Nursing, School of Nursing, Babcock University, Ikenne, Nigeria

[2] Department of Internal Medicine, Babcock University Teaching Hospital, Ikenne, Nigeria

[3]Department of Emergency Medicine, Medway Maritime Hospital, Kent, England

**Corresponding e-mail: ayo.osonuga@gmail.com*

ABSTRACT

Background: *Work-related musculoskeletal disorders (WRMSD) occur when workers are repeatedly exposed to forceful and prolonged activities in awkward postures, disproportionate force, abnormal movement, vibration, unsympathetic environments, and psychological stress.* ***Aim:*** *To describe the pattern of WRMSD and its consequences on workers at a brewery in southwest Nigeria.* ***Study Design:*** *This descriptive cross-sectional study was carried out among brewery workers in Southwest, Nigeria.* ***Methods:*** *Ethical approval was granted by the research and ethics committee of the University. Data was collected using a self-administered questionnaire to cover 4 sections of interest to the researchers. Collected data were analyzed using relevant statistical software.* ***Results:*** *69% of the respondents had WRMSD with work-related functional impairment mostly manifesting as back pain (65.2%) which was managed with several strategies including the use of over the counter medication (21%). The most common etiology of MSDs among brewery workers was awkward positioning while performing their duties (25.4%).* ***Conclusion:*** *Our study showed that increasing age and years of service in the brewery significantly affected the development of MSD ($p<0.05$). MSD is common in brewery workers hence occupational health services and education should be incorporated into small and medium scale industries with perhaps subsidy from the government for their services, so as to reduce the burden of MSDs and improve the quality of life of workers.*

Keywords: Work-related, Musculoskeletal disorders, Prevalence, Occupational health

INTRODUCTION

Musculoskeletal disorders (MSD) are generally described as disorders of the soft tissues and their surrounding structures that are not related to an acute or instantaneous event; mostly occurring in the regions of the neck, shoulders, elbows, wrist and lower back [1].

In recent times, occupational therapist and public health specialists have been drawn to work-related musculoskeletal disorders which specifically refer to impairments in muscles, joints, tendons, nerves or the localized blood circulation of the affected areas that are caused by or aggravated by performance of work and the effect of the immediate environment in which such work is carried out [2].

Work-related MSD [WRMSD] occur when workers are repeatedly exposed to forceful and prolonged activities in awkward postures, disproportionate force, abnormal movement, vibration, unsympathetic environments [3]; not forgetting individual factors and psychological stress. These factors may combine together causing significant impairment in functioning and subsequently reduced efficiency, the decline in productivity and at times early retirement of workers [4].

MSDs are the most common self-reported work-related hazard having a high cost incurred from the long-term disability suffered by these workers [5]. They pose a huge financial burden on businesses, insurance companies, and health services providers as well [6]. For example, in the United States, up to 65% of all occupational injuries are WRMSDs, with prevalence ranging from 75-77% of workers [6].

According to the World Health Organization (WHO), more than half of workers are employed in the informal sector with no social protection and regulatory enforcement of occupational and safety standards [7]. This adds to the burden

of WRMSDs. In Nigeria, occupational health services are scarce, especially in small to medium scale businesses [6]. This is largely in an attempt to cut the cost of production and maximize the profit of business owners. Hence, no special services are available to advise and educate employees and employers on improving working conditions and monitoring the health of workers [6].

WRMSDs have been classified into 3 main groups; clinically well-defined disorders, less clinically well-defined conditions and non-specific disorders [6]. The result in absence from work and sick leave, functional impairment in hearing, vision, use of limbs, early retirement amongst others. This has led to reduced quality of life, less job satisfaction, depression, and other mental illnesses and medication abuse especially analgesics [6].

Adele, et al., outlined the rate of musculoskeletal disorders in some industries; they found that the construction, agro-allied, transport and medical services had high rates of MSDs [6]. However, they did not explicitly describe the situation among brewery workers.

In view of these attendant problems of occupational exposure, this study aims to provide prevalence data about work-related musculoskeletal disorders and pattern of injuries among brewery workers in a Nigerian brewery. We further describe the level of awareness about the consequences of MSD and the personal perspectives of employees on WRMSDs.

MATERIALS AND METHODS

Study Design

This study was a descriptive cross-sectional study done among brewery workers in Ijebu-Ode town in Ogun state, Southwest, Nigeria.

Data was collected using a designed self-administered questionnaire, pretested among 10 nursing tutors of the Department of Nursing of Babcock University, Ilisan-Remo. Concerns raised about questions that seemed ambiguous were addressed. The questions involved a mixture of 5 rating scale questions, open and closed-ended questions.

The questionnaire was divided into 4 sections; socio-demographic data, assessment of knowledge about MSD, the spectrum of MSD among the respondents and consequences of MSD on work.

Study Population/Sample Size

The factory has 182 workers cutting across a various cadre of staff. The sample size was determined by Yamane's formula with an online sample size calculator which put our study population at 125. Putting the attrition rate at 10%, we increased the sample size to 138.

Sampling Technique

Sampling was done by stratified convenience random sampling technique. The total number required per strata was determined by the formula: Sample size/strata=Total number in the population/required number per strata

182/138=1.32; therefore, all strata were divided by 1.32.

Inclusion Criteria

Staff members who were involved in operating machinery, lifting, prolonged sitting, have been in the employment of the brewery for more than a year, have no previous medical diagnosis that could impair functioning were included in the study.

Exclusion Criteria

Staff members on contract, those with a previous medical diagnosis that can contribute to MSD, staff not entitled to healthcare at the breweries health center were excluded from the study.

Data Analysis

Collected data were entered into SPSS version 18, descriptive analysis was used for socio-demographic data, central tendency parameter for the scoring prevalence of work-related MSD. Simple t-test was used to determine if the age and years of working in the brewery significantly affected the development of MSD ($p<0.05$ was considered statistically significant).

Ethical Considerations

Ethical approval was obtained from the Babcock University Research Ethics Committee (BUREC). Information that could reveal the identity of the respondents was removed. Returned questionnaires were checked for completeness and computed for analysis of the collected data.

RESULTS

Sociodemographics

Of the 138 brewery workers that participated in this study, 95 (68.9%) had MSD at the time of the study. However, this increased to 81.1% (112/138) when MSD was assessed in the last 4-weeks prior to the study. Only 18.9% (26/138) did not have any form of impairment from working at the brewery (Table 1, Figures 1-3).

Table 1 Sociodemographic data of the respondents. Where *p<0.05, which is statistically significant for MSD

Variable	Frequency
Age groups* (N=138)	
21-30	35 (25.4%)
31-40	62 (44.9%)
41-50	30 (21.7%)
51-60	11 (8.0%)
Sex	
Male	110 (79.7%)
Female	28 (20.3%)
Highest level of Education	
Ordinary National Diploma	5 (4.1%)
Higher National Diploma	24 (19.7%)
Undergraduate degree	47 (38.5%)
Postgraduate degree	42 (34.4%)
Others	4 (3.3%)
Years of working experience*	
1-5	47 (41.6%)
6-10	37 (32.7%)
11-15	7 (6.2%)
16-20	17 (15.0%)
>21	5 (4.4%)

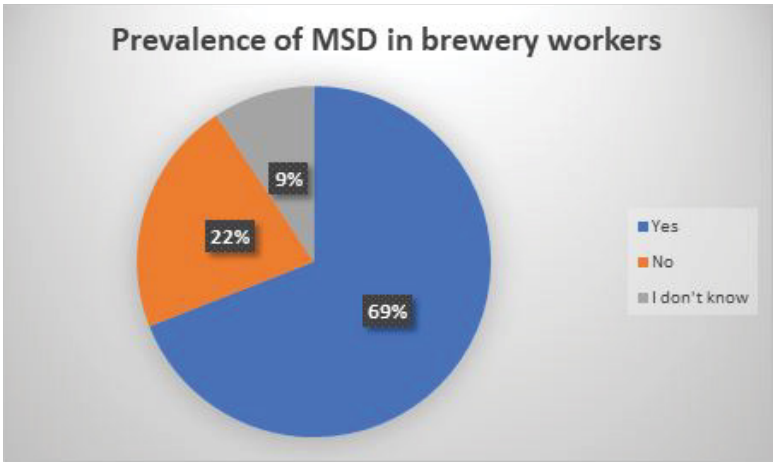

Figure 1 Pie chart showing the prevalence of work-related musculoskeletal disorders among the respondents

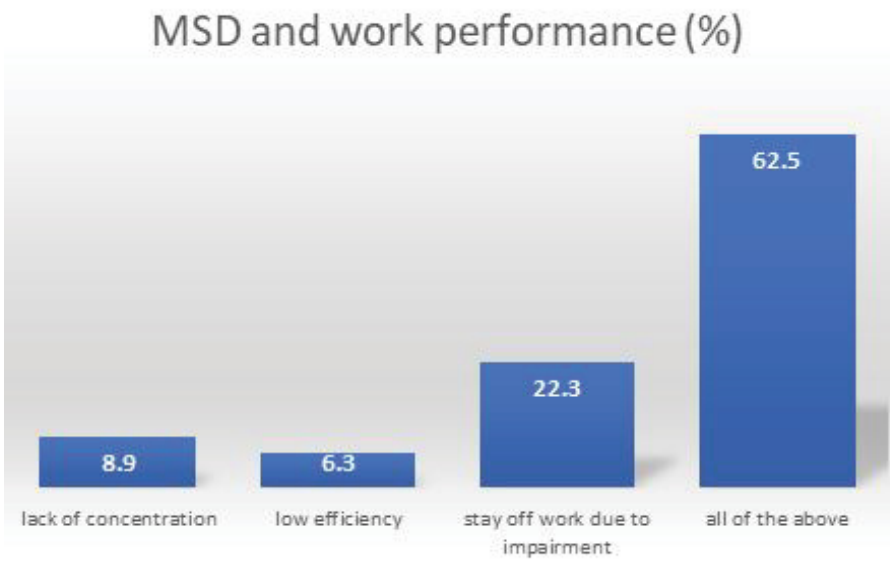

Figure 2 Showing the consequences of MSD on the activities of brewery workers. Most (62.5%) of the respondents had all the consequences of MSD, while 22.3% stayed of work due to MSD

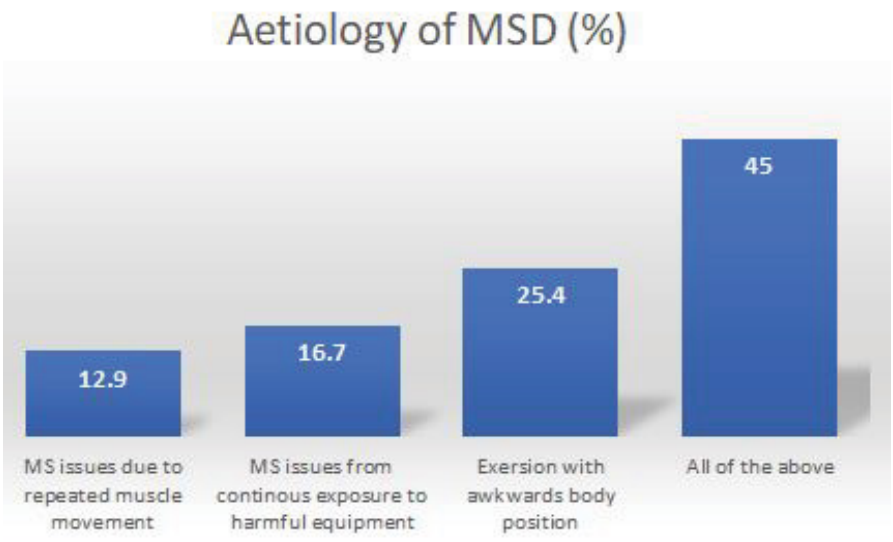

Figure 3 Aetiology of musculoskeletal (MS) disorders among brewery workers

The 5-point rating scale was used to assess factors affecting efficiency at work and the perceived effects of WRMSD on the brewery workers. Equipment related factors including obsolete equipment, poorly calibrated machines, and faulty equipment were reported to have affected workers efficiency (71.6-78.8%), while MSDs resulted in lack of interest in the job (91.4%), long-standing impairment (88.4%), unhappy work environment and depression (82.6%), less productivity even when at work (82.6%), increased expenses on nursing oneself to recovery (81.9%), resignation/ early retirement (81%), low job satisfaction (78%), and absenteeism (75.5%) (Figure 4).

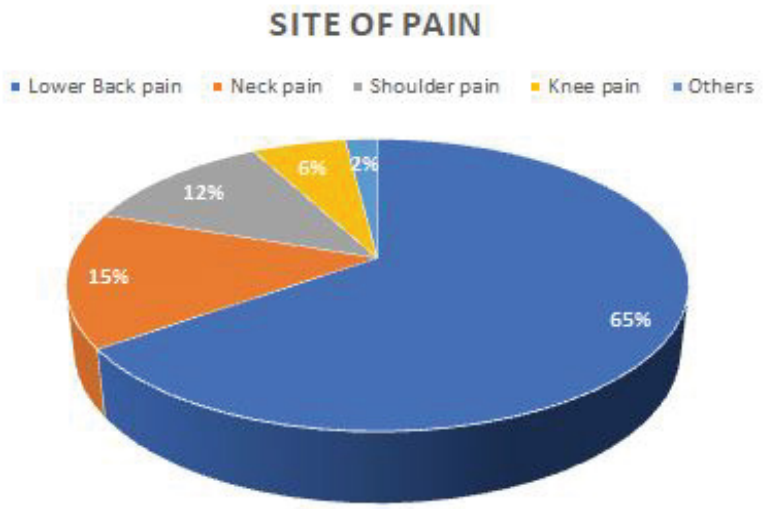

Figure 4 Showing the common sites of MSDs among brewery workers

DISCUSSION

The aim of this study was to describe the pattern of MSDs in a Nigerian brewery. In our study, the prevalence of WRMSD was 69% (Figure 1). This concurs with previous researchers who ranked MSDs are the most common work-related injuries [9,11]. The risk factors we identified for the development of MSD among brewery workers were older age and duration of working in the brewery. This is also consistent with other studies [12,13].

Lower back pain was the most common MSD in our study. Lower back pain has been a source of concern to healthcare practitioners including a neurologist, orthopedic surgeons, family physicians, nurses, physiotherapists and occupational therapist [9,11,15,16]. With 65.2% of MSDs attributed to lower back pain, it is a public health problem which requires a multi-disciplinary approach for its prevention and treatment.

Despite the impairment suffered by these individuals, only 15.9% sort formal medical care (Figure 5).

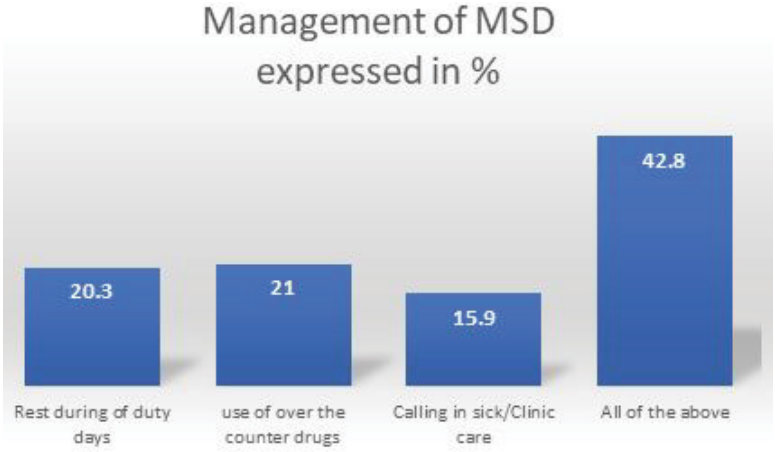

Figure 5 Showing the management strategies adopted by brewery workers to cope with MSD

More worrying is the frequent use of over the counter (OCT) medications among brewery workers with MSD, especially analgesics. In most part of sub-Saharan Africa, these drugs are relatively cheap and can be purchased without prescription [17-19]. This explains why 21% of the respondents use OTC. However, these drugs have attendant side effects which on long-term can cause several other medical and psychological complications including dependence, analgesic nephropathy, medication-induced headaches, overdose, and live failure [19].

Among the aetiologies of MSD described in our study, carrying out duties in awkward positions was a major cause of MSD among the workers, leading to a myriad of complications including lack of interest in the job, unhappy work environment, decreased productivity and low job satisfaction. This finding is in agreement with Neupane, et al., who suggested that abnormal posture in sitting, lifting objects can precipitate or worsen MSD, subsequently reduce productivity, efficiency and the quality of life of the employee [20].

CONCLUSION

In conclusion, WRMSDs is not uncommon among brewery employees. It is therefore important that occupational health specialists and therapist provide adequate support and health education to employees on how to manage their health. Agents of government responsible for policy, planning, monitoring, and evaluation, should also ensure that employers adhere to internationally acceptable minimum safety standards.

DECLARATIONS

Conflict of Interests

The authors declare that they have no competing interests.

REFERENCES

[1] Silvian, Paul S., et al. "MSD's in an industry-a careful examination of the predictors using MANOVA." *International Journal of Logistics Economics and Globalisation,* Vol. 6, No. 4, 2017, pp. 255-72.

[2] Podniece, Zinta, S. Heuvel, and B. Blatter. "Work-related musculoskeletal disorders: prevention report." 2008.

[3] Hossain, Mohammad Didar, et al. "Prevalence of work-related musculoskeletal disorders (WMSDs) and ergonomic risk assessment among readymade garment workers of Bangladesh: A cross-sectional study." *PloS One,* Vol. 13, No. 7, 2018, p. e0200122.

[4] Sommerich, Carolyn M., et al. "Collaborating with sonographers and vascular technologists to develop ergonomics interventions to address work-related musculoskeletal disorders." *Journal of Diagnostic Medical Sonography,* Vol. 35, No. 1, 2019, pp. 23-37.

[5] Summers, Kate, Kimberly Jinnett, and Stephen Bevan. "Musculoskeletal disorders, workforce health, and productivity in the United States." *The Center for Workforce Health and Performance. London: Lancaster University*, 2015.

[6] Bhattacharya, Anasua. "Costs of occupational musculoskeletal disorders (MSDs) in the United States." *International Journal of Industrial Ergonomics,* Vol. 44, No. 3, 2014, pp. 448-54.

[7] Daneshmandi, Hadi, et al. "The effect of musculoskeletal problems on fatigue and productivity of office personnel: a cross-sectional study." *Journal of Preventive Medicine and Hygiene,* Vol. 58, No. 3, 2017, p. E252.

[8] Punnett, Laura, and David H. Wegman. "Work-related musculoskeletal disorders: the epidemiologic evidence and the debate." *Journal of Electromyography and Kinesiology,* Vol. 14, No. 1, 2004, pp. 13-23.

[9] Tinubu, Bolanle MS, et al. "Work-related musculoskeletal disorders among nurses in Ibadan, South-west Nigeria: a cross-sectional survey." *BMC Musculoskeletal Disorders,* Vol. 11, No. 1, 2010, p. 12.

[10] Pinder, A. D. J., Adele Reid, and Simon Monnington. *Musculoskeletal problems in bricklayers, carpenters, and plasterers: Literature review and results of site visits*. Health and Safety Laboratory, 2001.

[11] Anap, D., Chandra Iyer, and Keerthi Rao. "Work-related musculoskeletal disorders among hospital nurses in rural Maharashtra, India: a multicenter survey." *International Journal of Medical Sciences,* Vol. 1, No. 2, 2013, p. 101.

[12] Goulet, Joseph L., et al. "The musculoskeletal diagnosis cohort: examining pain and pain care among veterans." *Pain,* Vol. 157, No. 8, 2016, p. 1696.

[13] Buscemi, Valentina, et al. "The role of psychosocial stress in the development of chronic musculoskeletal pain disorders: protocol for a systematic review and meta-analysis." *Systematic Reviews,* Vol. 6, No. 1, 2017, p. 224.

[14] Lourenço, Sara, et al. "Patterns of biomechanical demands are associated with musculoskeletal pain at the beginning of professional life: a population-based study." *Scandian Journal of Work and Environmental Health,* Vol. 41, No. 3, 2015, pp. 234-46.

[15] Vieira, Edgar R., et al. "Work-related musculoskeletal disorders among physical therapists: an online survey." *Disability and Rehabilitation,* Vol. 38, No. 6, 2016, pp. 552-57.

[16] Marin, Teresa J., et al. "Multidisciplinary biopsychosocial rehabilitation for subacute low back pain." *Cochrane Database of Systematic Reviews,* Vol. 6, 2017.

[17] Chikowe, Ibrahim, et al. "Amoxicillin quality and selling practices in urban pharmacies and drug stores of Blantyre, Malawi." *The American Journal of Tropical Medicine and Hygiene,* Vol. 99, No. 1, 2018, pp. 233-38.

[18] Apetoh, Edwige, et al. "Home treatment and use of informal market of pharmaceutical drugs for the management of pediatric malaria in Cotonou, Benin." *Malaria Journal,* Vol. 17, No. 1, 2018, p. 354.

[19] Moore, R. Andrew, et al. "Non-prescription, OTC) oral analgesics for an acute pain an overview of Cochrane reviews." *Cochrane Database of Systematic Reviews,* Vol. 11, 2015.

[20] Neupane, Subas, et al. "Developmental pathways of multisite musculoskeletal pain: what is the influence of physical and psychosocial working conditions?." *Occupational and Environmental Medicine,* Vol. 74, No. 7, 2017, pp. 468-75.