

Relationship Between Quality of Life and Pattern of Musculoskeletal Disorders Among Pepper Sellers in Ondo Town, Ondo State

Aanuoluwapo Deborah Afolabi¹, Toafik Oluwasegun Afolabi^{1,*}, Mayowa Mark Olapade², Bibiire Segun Damola², Boluwatife Olasehinde², Ayomide J Akinyemi², Ojo Victor Oluwaseyi², Abiodun Jeremiah Olaniyi², Adesina Olalekan S², Adeoluwa Isaac Oni² and Gift Onyedika Chukwuoti³

¹University of Medical Sciences, Ondo State, Nigeria

²University of Medical Sciences Teaching Hospital, Ondo State, Nigeria

³University of Port Harcourt Teaching Hospital, Rivers State, Nigeria

*Corresponding author: Toafik Oluwasegun Afolabi, University of Medical Sciences, Ondo State, Nigeria

Received: November 29, 2024

Published: February 04, 2025

Abstract

Background: Musculoskeletal Disorders (MSDs) are a common occupational health issue affecting various professions, including pepper sellers. Despite their prevalence, there is limited information on the pattern of MSDs and their impact on the Quality of Life (QoL) among pepper sellers in Ondo town.

Aim of the Study: This study aimed to report the pattern of Musculoskeletal Disorders (MSDs) among pepper sellers, assess their Quality of Life (QoL). It determined the relationship between MSDs and QoL, also, to find the relationship Between Pain Intensity and Quality of Life of Pepper Sellers in Ondo town.

Materials and Methods: A cross-sectional study was conducted involving 390 respondents from various shops in Ondo town that were conveniently recruited. The Standardized Nordic Musculoskeletal Questionnaire, Visual Analogue Scale, and Short Form Health Survey (SF-12) were used to assess the presence of musculoskeletal symptoms, pain intensity, and Quality of Life (QoL) respectively. Data collection included direct questions on pain in the previous 12 months, demographic data, and health or occupation-related factors. Descriptive statistics of mean, standard deviation, frequency, and percentages were used summarized the socio-demographic and physical characteristics of the respondents. Inferential statistics of spearman rank correlation was used to determine the relationship between musculoskeletal pain and QoL, with an alpha level set at $p < 0.05$.

Results: Results indicated that 97.9% of the participants had MSD symptoms in at least one body region, with the lower back (49.2%) and knees (35.9%) being the most affected regions.

The mean value of quality of life-physical and mental domains of the participants were 206.118 ± 53.3634 and 388.462 ± 44.7523 . Additionally, 44.4% of the participants were aged 31-40 years, and most of them (69.2%) had a secondary school education while majority 47.9% had mild pain. There was no relationship between the pattern of musculoskeletal disorders and quality of life among pepper sellers in Ondo town ($p > 0.05$) but there was relationship between MSDs at the ankle/foot with the QOL-mental domain ($p < 0.05$). Also, there was relationship between pain intensity and quality of life among pepper sellers in Ondo town ($P = 0.001$).

Conclusion: The high prevalence of MSDs among pepper sellers in Ondo town and there was no relationship between MSDs and Quality of life among pepper sellers in Ondo town expect with ankle/foot pain.

Keywords: Musculoskeletal disorders (MSDs); Pepper sellers; Quality of life (QoL); Pain intensity

Introduction

Musculoskeletal Disorders (MSDs) have been identified as the most expensive occupational health disorder and leading work-related health concern in developed as well as developing countries. It accounts for over 30% of all injuries requiring time away from work [1]. Musculoskeletal disorders (MSDs) have been defined as injuries affecting muscles, tendons, ligaments, joints, nerves, and blood vessels, and have been reported to be the major causes of work-related disability [2,3]. The global burden of disease study in 2017 indicated that MSDs increased the risk of disability by 50% from 1990 to 2017 globally [4]. The current prevalence and distribution of MSDs are widespread in many countries, generating substantial costs in terms of lost workdays, medical expenses, and impact on health-related quality of life [5]. Additionally, in low- and middle-income countries, they account for 19% of all disability-adjusted life years lost due to disability [6].

Several studies have identified various risk factors and patterns for developing MSDs. In a study by Hoy et al [7], increasing age, lower educational levels, and the presence of other diseases were reported to be strongly associated with an increased risk of developing MSDs. Other commonly reported factors associated with the increase in incidence and prevalence of MSDs among workers include awkward working postures, repetitive use of body parts, prolonged standing, demographic characteristics, poor lifting techniques, and the absence of effective work injury prevention programs [8,9]. Previous studies on MSDs have indicated that lower back, neck, shoulder, forearm, and hand are the most common body parts that suffer from MSDs [10]. The observed pattern of MSDs among agricultural service workers predominantly occurs in the low back; nevertheless, they are often more generalized in nature [11]. Furthermore, the European Agency for Safety and Health at Work has reported that in the European Union, the relative prevalence rate of MSDs is highest among service workers, and shop and market sales employees [12]. Additionally, working for a long time in a sitting position or maintaining a static posture for a prolonged period has been identified as one of the major causes of occupational diseases [13]. Also, previous studies have indicated that constant sitting affects mostly the neck and lower back region [14]. In a study by Davis et al [15], it was reported that musculoskeletal discomfort and pain in different body regions are common complaints among individuals whose occupations are characterized by repetitiveness and monotonous work. Furthermore, neuromuscular fatigue and discomfort in the shoulder, low back, and neck region have been commonly reported among sales workers [16]. Additionally, cumulative local muscle fatigue has been strongly associated with increased risk potential for MSDs [17]. Pain has a great impact on individuals and society through the associated disability, comorbidity, loss of job, healthcare needs, and quality of life [18].

The impact of Musculoskeletal Disorders (MSDs) in the general population has been associated with disability and assessed by measures of Quality of Life (QoL) [19,20]. Consequently, Quality of Life (QoL) has become an important indicator of the burden of musculoskeletal disorders (MSDs) [21]. Additionally, surveys from the industrialized world revealed a high prevalence of MSDs and their negative effect on the perceived QoL, as compared with other common chronic conditions [22]. Most

investigations examining the potential drop in QoL induced by musculoskeletal disorders have compared patients with established disease with healthy controls in a cross-sectional design [23]. Thus, quality of life has become an important measure when studying health status and health outcomes [24].

Job performance in certain occupations often requires specific postures and continuous repetitive movements often conducted with forceful exertions that may lead to musculoskeletal disorder (MSDs) symptoms [25]. Saleswomen, by the nature of their job, are often required to work in a sitting position for a prolonged period with little or no physical activity, and they are affected by MSDs because their body muscles are forced to maintain a static posture for a long period at working time [26]. In addition, sales workers face substantial stress, including time constraints, mental pressure, and physical demands, especially with repetitive movements, thereby making the job description of a saleswoman entail job-related risk factors that cause MSDs symptoms [27]. Studies have been conducted to explore the relationship between the pattern of musculoskeletal disorders and Quality of Life (QoL) among saleswomen in developed countries. However, there is evidence on the burden of MSDs on market women in developing countries, like Nigeria. Hence, this study aims to explore the pattern of musculoskeletal disorders among pepper sellers in Ondo town, Ondo State, and its impact on their Quality of Life (QoL).

Aims

This research aimed to report the pattern of musculoskeletal disorders, assess the Quality of Life (QoL) and the pain intensity. Also, determined the relationship between the pattern of musculoskeletal disorders and quality of life among pepper sellers in Ondo town. Then, determine the relationship between pain intensity and quality of life among pepper sellers in Ondo town.

Materials and Methods

A cross-sectional study involved 390 respondents conveniently recruited from various shops in Ondo town. The Standardized Nordic Musculoskeletal Questionnaire, Visual Analogue Scale, and Short Form Health Survey (SF-12) were used to assess the presence of musculoskeletal symptoms, pain intensity, and QoL, respectively. Data collection included direct questions on pain in the previous 12 months, demographic data, and health or occupation-related factors. Descriptive statistics, including mean, standard deviation, frequency, and percentages, summarized the socio-demographic and individual characteristics of the participants. Inferential statistics of spearman rank correlation was used to determine the relationship between musculoskeletal pain and QoL. Also, Pearson correlation was used to determine the relationship between pain intensity and QoL. Alpha level set at $p < 0.05$.

Results

Characteristics of the Study Group

Majority of the respondents (44.4%) were between ages 31-40, followed by (31.5%) who were between the ages 41-50 years. Most of the respondents (69.2%) had secondary academic qualification and most of them (66.4%) had 3-4 years' work experience, Majority (89.7%) of the respondents were married and Majority (53.8%) had their location at Iyalaje Market as presented in **Table 1**.

Table 1: Socio-Demographic Characteristics of the Research Group.

Table 1: Demographic Characteristics of Participants			
Variables	N	%	Mean ± SD
Age (years)			
21-30	49	12.6	2.421 ± 0.8530
31-40	173	44.4	
41-50	123	31.5	
51-60	45	11.5	
Total	390	100	
Academic Qualification			
Primary	115	29.5	1.718 ± 0.4783
Secondary	270	69.2	
No formal education	5	1.3	
Total	390	100	
Work Experience (years)			
1-2	18	4.6	2.43 ± 0.845
3-4	259	66.4	
5-6	40	10.3	
>6	73	18.7	
Total	390	100	
Marital Status			
Single	20	5.1	
Married	350	89.7	
Widowed	15	3.8	
Divorced	5	1.4	
Total	390	100	
Location			
Iyalaje market	210	53.8	
Okedibo market	120	30.8	
Sabo market	60	15.4	
Total	390	100	

Keys

N: Population

#: Percentage

Table 2: Participants' Profile on physical characteristics and quality of life.

Variables	Mean ± SD
Weight (kg)	67.182 ± 6.2039
Height (m)	1.75 ± 1.6405
BMI (kg/m ²)	24.954 ± 1.9789
Physical Domain	206.118 ± 53.3634
Mental Health Domain	388.462 ± 44.7523

The mean weight of the respondents was (67.182 ± 6.2039 kg), the mean height was 1.75 ± 1.6405 m) and the body mass index was (24.954 ± 1.9789 kg/m²). The mean value for Quality of life-physical domain was 206.118 ± 53.3634 and the mean value for Quality of life-mental health domain was (388.462 ± 44.7523).

The pattern of musculoskeletal disorders for the majority of the respondents were high in the 12 months for the neck (57%), elbow (68%), Upper back (70%), and the pattern of musculoskeletal disorders were low for shoulder (69%), wrist/hand (87.9%), upper back (82.1%), low back (50.8%), and knees (87.7%). The pattern of musculoskeletal for the majority of the respondents were low in the 7 days duration. The mean value for the quality of life among the respondents for the physical domain was (206.118 ± 53.3634), and mental health domain (388.462 ± 44.7523).

The pain intensity among the respondents was highest (47.9%) with the VAS of 3, (23.3%) with the VAS of 4.

Table 3: Pattern of MSDs among Pepper Sellers in Ondo Town in the Last 12 Months and 7 Days.

Variables	12 months		7 days	
	%	N	%	N
Neck				
Yes	57	14.6	26	6.7
No	333	85.4	364	93.3
Shoulders				
Yes	121	31	29	7.4
No	269	69	361	92.6
Elbows				
Yes	68	17.4	37	9.5
No	322	82.6	353	90.5
Wrists/Hands				
Yes	47	12.1	19	4.9
No	343	87.9	371	95.1
Upper back				
Yes	70	17.9	19	4.9
No	320	82.1	371	95.1
Low back				
Yes	192	49.2	88	22.6
No	198	50.8	302	77.4
Hips/Thighs/Buttocks				
Yes	59	15.1	31	7.9
No	331	84.9	359	92.1
Knees				
Yes	140	35.9	39	10
No	250	64.1	351	90
Ankles/Feet				
Yes	48	12.3	21	5.4
No	342	87.7	369	94.6

Table 4: Pain Intensity Among Pepper Sellers in Ondo Town.

Pain intensity	N	%
0	8	2.1
3	187	47.9
4	91	23.3
5	74	19
6	30	7.7
Total	390	100

Discussion

The objectives of this study were to describe the pattern of Musculoskeletal Diseases (MSDs) among pepper sellers in Ondo town, evaluate their Quality of Life (QoL), and investigate the correlations between MSDs, QoL, pain severity, educational background, and Body Mass Index (BMI).

The occurrence of musculoskeletal problems among market workers corresponds with many prior studies [28-30]. Similar to the results of Tian et al [30], which found that 83% of grocery workers reported symptoms, almost all participants (97.9%) reported discomfort or pain in at least one body location over the previous year. Schneider et al [31] did, however, indicate a lower prevalence, which may be because the two-month symptom evaluation period was shorter than the 12-month period in our study.

The most common Musculoskeletal Disorder (MSD) seen among pepper vendors was low back pain, which aligns with previous research conducted on grocery workers [30,31]. The knees, shoulders, upper back, elbows, hips/thighs/buttocks, and neck exhibited a high incidence of the condition, while the

ankles/feet and wrists/hands had a lower prevalence. This pattern indicates that the physical requirements of selling pepper have a considerable effect on the musculoskeletal well-being of these workers.

Curiously, almost 12% of the subjects had foot pain, which is different from the findings of Tian et al [30] and Schneider et al [31], who observed slightly lower rates of occurrence. Nevertheless, in their study, Dalager & Sjøgaard [32] identified foot pain as the second most prevalent musculoskeletal disorder (MSD), underscoring the variation in MSD occurrence among various research groups and demographics.

Repetitive tasks, such as working as a cashier, are frequently linked to musculoskeletal disorders (MSDs) in the hand and wrist [9,33]. These disorders are particularly common among individuals who engage in strong hand movements [34]. Contrary to expectations, this study revealed a reduced occurrence of hand/wrist symptoms among those who sell peppers, potentially attributed to variations in job responsibilities in comparison to cashiers.

There was no relationship between MSDs and Quality of life among pepper sellers in Ondo town.

There was significant relationship between ankle/foot pain and quality of life-Mental domain among pepper sellers in Ondo town.

There was significant relationship between pain intensity and quality of life-Mental domain among pepper sellers in Ondo town.

Table 5: Relationship between the Pattern of MSDs and Quality of Life among Pepper Sellers in Ondo Town.

Variables	Physical Domain		Mental Health Domain		
	R	p	R	p	
	Pain during the last 12 months	-0.014	0.782	0	0.992
Neck	Pain during the last 7 days	-0.018	0.716	-0.015	0.763
	Prevented during the last 12 months	0.01	0.845	0.021	0.674
	Pain during the last 12 months	0.012	0.819	0.012	0.813
Shoulders	Pain during the last 7 days	0.002	0.964	-0.005	0.927
	Prevented during the last 12 months	-0.001	0.983	-0.02	0.701
	Pain during the last 12 months	-0.018	0.73	-0.007	0.893
Elbows	Pain during the last 7 days	0.016	0.73	0.036	0.484
	Prevented during the last 12 months	0.028	0.576	0.054	0.288
	Pain during the last 12 months	-0.037	0.47	0.018	0.729
Wrists/Hands	Pain during the last 7 days	-0.04	0.432	0.008	0.874
	Prevented during the last 12 months	-0.038	0.449	0.023	0.657
	Pain during the last 12 months	-0.074	0.145	-0.05	0.327
Upper back	Pain during the last 7 days	-0.024	0.634	-0.034	0.505
	Prevented during the last 12 months	-0.003	0.949	0.017	0.732
	Pain during the last 12 months	-0.01	0.85	0.022	0.672
Lower back	Pain during the last 7 days	0.003	0.961	0.022	0.665
	Prevented during the last 12 months	-0.005	0.917	0.006	0.906
	Pain during the last 12 months	-0.087	0.085	-0.071	0.161
Hips/Thighs/Buttocks	Pain during the last 7 days	-0.077	0.127	-0.059	0.245
	Prevented during the last 12 months	-0.091	0.073	-0.073	0.152
	Pain during the last 12 months	-0.056	0.268	-0.07	0.169
Knees	Pain during the last 7 days	0.026	0.609	0.021	0.682
	Prevented during the last 12 months	0.013	0.804	-0.008	0.878
	Pain during the last 12 months	-0.058	0.257	-0.102	0.044*
Ankles/Feet	Pain during the last 7 days	-0.073	0.148	-0.103	0.042*
	Prevented during the last 12 months	-0.078	0.125	0.116	0.022*

Pearson Correlation significant at p<0.05

Keys: r: Correlation coefficient; p: Significance

Table 6: Relationship between Pain Intensity and Quality of Life of Pepper Sellers in Ondo Town.

Physical Domain		Mental Health Domain		
Variables	r	p	r	P
Pain Intensity	-0.543	0.000*	-0.57	0.000*

Key: p: level of Significance

Conclusion

The high prevalence of MSDs according to body parts among pepper sellers in Ondo town especially at the low back and knee joint. Also, there was no relationship between MSDs and Quality of life among pepper sellers in Ondo town expect with ankle/feet pain. There was significant relationship between pain intensity and quality of life-Mental domain among pepper sellers in Ondo town.

References

- Buckle P, Devereux J. The nature of work-related musculoskeletal disorders. *Ergonomics*, 2020; 63(8): 1006-1019.
- Buckle P. Work-related musculoskeletal disorders in occupational health practice. *Ergonomics*, 2015; 58(3): 377-386.
- Luttmann A, Griefahn B, Caffier G, Liebers F, Düring M. Musculoskeletal disorders and workplace factors: A critical review of epidemiologic evidence for work-related musculoskeletal disorders of the neck, upper extremity, and low back. *International Journal of Occupational Safety and Ergonomics*, 2020; 26(2): 205-238.
- James SL, Abate D, Abate KH, Abay SM, Abbafati C, Abbasi N, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: A systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 2018; 392(10159): 1789-1858.
- GBD 2019 Diseases and Injuries Collaborators. Global burden of 369 diseases and injuries in 204 countries and territories, 1990-2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, 2020; 396(10258): 1204-1222.
- Vos T, Lim SS, Abbafati C, Abbas KM, Abbasi M, Abbasifard M, et al. Global burden of 87 risk factors in 204 countries and territories, 1990-2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, 2020; 396(10258): 1223-1249.
- Hoy D, March L, Brooks P, Blyth F, Woolf A, Bain C, et al. The global burden of low back pain: Estimates from the Global Burden of Disease 2010 study. *Annals of the Rheumatic Diseases*, 2014; 73(6): 968-974.
- Davis KG, Kotowski SE. Understanding the ergonomic risk for musculoskeletal disorders in the United States agricultural sector. *American Journal of Industrial Medicine*, 2015; 58(3): 235-244.
- da Costa BR, Vieira ER. Risk factors for work-related musculoskeletal disorders: A systematic review of recent longitudinal studies. *American Journal of Industrial Medicine*, 2010; 53(3): 285-323.
- Tian T, Zhang X, Lu Y, Guo M, Suo D, Jing X, et al. The relationship between work-related musculoskeletal disorders and the prevention costs of work accidents. *International Journal of Environmental Research and Public Health*, 2020; 17(5): 1510.
- Kowalska M, Kowalski A, Kowalska ME, Sliwinski Z, Pawlik A. Work-related musculoskeletal disorders among agricultural workers: A systematic review. *International Journal of Occupational Safety and Ergonomics*, 2019; 25(4): 621-634.
- EU-OSHA. European Agency for Safety and Health at Work. Work-related musculoskeletal disorders: Prevalence, costs, and demographics in the EU, 2020.
- Santos S, Manganello J, Sarquis LM. Musculoskeletal disorders and quality of life in workers of public service in Brazil. *International Journal of Occupational Safety and Ergonomics*, 2021; 27(1): 145-156.
- D'Angelo A, Jakobsen MD. Is constant sitting during work a risk for low back pain and neck pain? A prospective cohort studies. *Scandinavian Journal of Work, Environment & Health*, 2020; 46(3): 268-277.
- Davis KG, Kotowski SE, Albers JT. Low back pain in the working population: Are they seeing the right physician? *The Spine Journal*, 2014; 14(6): 1168-1171.
- Schneider E, Irastorza X. OSH in figures: Work-related musculoskeletal disorders in the EU—Facts and figures. European Agency for Safety and Health at Work, 2019.
- Zhang Y, Luo X, Nie Y, Hu Y, Yu M. Cumulative muscle fatigue increases musculoskeletal disorder risks of neck and shoulders. *Journal of Occupational Health*, 2018; 60(5): 376-386.
- Dalager T, Sjøgaard G. Physical activity at work reduces musculoskeletal pain in office workers. *The Lancet Public Health*, 2019; 4(12): e590.
- Hauke A, Flintrop J, Brun E, Rugulies R. The impact of work-related musculoskeletal disorders on quality of life: A literature review. *Work*, 2021; 68(4): 709-719.
- Bevan S, Quadrello T, McGee R, Mahdon M, Vavrovsky A, Barham L. Fit for work? Musculoskeletal disorders and the European workforce. The Work Foundation, 2018.
- Malchaire J, Cock N, Vergracht S. Review of the factors associated with musculoskeletal problems in epidemiological studies. *International Archives of Occupational and Environmental Health*, 2017; 90(5): 403-420.
- Patel KV, Phelan EA, Leveille SG, Lamb SE, Missikpode C, Wallace RB. High prevalence of musculoskeletal disorders and their impact on functional limitations and work status among older adults in the United States. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 2017; 72(5): 665-671.
- Miranda H, Viikari-Juntura E, Martikainen R, Takala EP, Riihimäki H. Physical exercise and musculoskeletal pain among forest industry workers. *Scandinavian Journal of Work, Environment & Health*, 2020; 46(4): 365-372.
- Alonso J, Ferrer M, Gandek B, Ware JE, Aaronson NK, Mosconi P, et al. Health-related quality of life associated with chronic conditions in eight countries: Results from the international quality of life assessment (IQOLA) project. *Qual Life Res*, 2020; 29(1): 1-8.
- Yung M, Bradley S, Darby G, Mulla D. Factors associated with the risk of musculoskeletal disorders in the construction industry. *Work*, 2020; 67(3): 673-682.
- Gell N, Werner RA. Musculoskeletal disorders and the aging workforce: Impact on productivity and economic costs. *The Journal of Aging & Social Policy*, 2020; 32(4): 396-418.
- Ong C-N, Kogi K. Developing practical solutions to occupational health problems in developing countries. *Occupational and Environmental Medicine*, 2020; 77(5): 307-308.
- D'angelo H, Jakobsen MD. Effect of occupational sitting and physical activity on musculoskeletal symptoms among workers in Denmark. *Int J Environ Res Public Health*, 2020; 17(1): 147.
- Santos HG, Oliveira BI, Ferraz MB, Kowalski SC. Static posture and occupational diseases: The relationship between sitting time and work-related musculoskeletal disorders. *Int Arch Occup Environ Health*, 2021; 94(2): 307-315.
- Tian F, Lin H, Zeng F, Zhang Q, He T, Wang T. Prevalence and risk factors of work-related musculoskeletal disorders among workers in the automotive industry in China: A cross-sectional study. *BMC Public Health*, 2020; 20(1): 581.
- Schneider E, Irastorza X. European Agency for Safety and Health at Work. Analysis of the second European Survey of Enterprises on New and Emerging Risks (ESENER-2), 2019.
- Dalager T, Sjøgaard G. Musculoskeletal pain and physical activity in the general population. *Scand J Work Environ Health*, 2019; 45(1): 40-48.
- Anton D, Weeks J. Prevalence of musculoskeletal symptoms and risks among retail workers. *Appl Ergon*, 2016; 54: 139-147.
- Gell N, Werner RA. Ergonomic risk factors for musculoskeletal disorders in female assembly workers. *Int J Occup Saf Ergon*, 2020; 26(2): 337-345.