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Social Distancing and Musculoskeletal Disorders in Supermarkets during COVID-19 Pandemic in Ogun State Southwest Nigeria

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Abstract

The Corona Virus (COVID-19) pandemic in Nigeria is part of the worldwide pandemic of virus disease that emerged in 2019. Social distancing is one of the recommended measures to reduce the spread of this virus, which is transmitted by air droplets. The COVID-19 lockdown presents certain challenges for patients with musculoskeletal conditions. The study was conducted among crowd queuing in supermarkets in Ogun State Southwest Nigeria between 30th March 2020 and 20th June 2020 during the ease of lockdown. Six hundred modified Nordic Musculoskeletal disorders questionnaire was administered to selected customers. The collected data were analyzed using SPSS 23 version through descriptive statistics and binary logistic regression accordingly. A. total of 593 (98.8%) respondents participated in the study. Result showed that 55.0% of the respondents were male with 45.0% female. The mean age of the respondents was 3.24(±0.94) years with age range between 32–37years (35.1%). and 84.8% married respectively. Results also showed that 70.2% of the respondents shopped at the supermarkets. The results further identified the MSDs on body parts, neck 19.7% with 95%CI (0.622–1.589), wrist/hand 10.1% with 95%CI (0.555–1.810), upper back 60.4% with 95%CI (2.664–5.593) and leg 100% with (0.021–0.840) 95%CI prevalence. However, 85.5% each reported low back pains and waist/hip respectively. Moreso, 41.8% observed resting or sleeping and 27.0% visited hospital for treatment. The study identified that the prevalence of MSDs is high due to the prolonged stayed on the queue while observing social distancing.

1. Introduction

The Corona Virus (COVID-19) pandemic in Nigeria may be a component of the worldwide pandemic of virus disease that emerged in 2019 is reportedly caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). The primary confirmed case in Nigeria was announced on 27th February 2020, when an Italian, citizen in Lagos tested positive for the virus, caused by SARS-CoV-2 [1], [2]. On 9 March 2020, a second case of the virus, a Nigerian citizen who had contact with the Italian citizen was reported in Ewekoro, Ogun State [3]. There are different measures put in situ by World Health Organization (WHO) and Nigeria Centre for Disease Control (NCDC) to curb and reduce the spread of the COVID–19. Social distancing is one among the recommended measures itemized to scale back the spread of the virus, which is transmitted by air droplets. The droplets produced by coughing, sneezing or forced speaking have a particular transmission distance. By keeping this distance, we will reduce the spread of the virus. Social distancing involved keeping a distance of 1.5m and 2m between people, which may prevent the

spread of most respiratory infectious diseases. Many of the citizens do leap out of their respective houses to get goods, foods etc after the convenience of lockdown. A part of the visited places during the convenience of lockdown includes supermarkets, stores, malls, eateries etc. Supermarkets develop gradually from traditional convenience stores, which sell distinctly food and drinks. Convenience stores are established to satisfy consumer needs including vegetables, fruits, spices, canned foods and drinks. From the sale of food and drinks, supermarkets emerged to include other needs like toiletries, fresh foods, baby goods, gadgets and appliances, clothing and stationeries. This evolution increased the recognition of supermarkets globally. Like other countries, Nigeria has also witnessed a proliferation of varied supermarket brands. Some major supermarkets have branches across the states in Nigeria, while others only operate within a state. In all, supermarkets are consistently meeting the requirements of individuals within the corporate world. George Eustice reported that the enforcement of social distancing in supermarkets would end in people being "huddled together" outside [4]. Supermarket queues are undoubtedly adding to the spread of the corona virus, not least due to a scarcity of social distancing.

Consequence of overcrowded supermarkets may lead many to stress about the likelihood of the virus spreading more easily. Standing on the queue to acquire goods during a mall or supermarket while observing social distancing may results into experiencing of musculoskeletal disorder like pains within the joints, ligaments, muscles, nerves, tendons, and also the structures that supported limbs, neck and back pains.

Musculoskeletal disorders (MSDs) are injuries or pain within the human system, including the joints, ligaments, muscles, nerves, tendons, and structures that support limbs, neck and back [5]. MSDs arise from a sudden exertion such as lifting a crucial object [6] or from making the same motions repeatedly repetitive strain, or from repeated exposure to force or awkward posture [7]. Injuries and pain within the system caused by acute traumatic events sort of a car accident or falls aren't considered musculoskeletal disorders [8].

MSDs can affect many various parts of the body including upper and lower back, neck, shoulders and extremities (arms, legs, feet, and hands)[9]. The COVID-19 lockdown presents certain challenges for patients with arthritis and musculoskeletal conditions. Researchers at the University of Aberdeen are awarded £52,000 to research the impact of lockdown on patients with arthritis and other musculoskeletal conditions - specifically arthritis, axial spondylo-arthritis, also referred to as Marie-Strumpell disease and chronic pain conditions including fibromyalgia. The report is to work out the consequences of lockdown on people with long term conditions and on how their health may have been affected [10].

Professor Macfarlane explained that the lockdown caused by the pandemic presents certain challenges for patients with arthritis and musculoskeletal conditions [10]. The 2 key aspects of musculoskeletal health are taking exercise and maintaining good psychological state the power to require exercise is probably going to possess been restricted while psychological state is probably going to be suffering from the anxiety round the pandemic generally, alongside concerns about one's own health also because the effects of social isolation [10].

Macfarlane G also stated that the study will help his team better understand the impact lockdown has for people with musculoskeletal conditions, and permit them to enhance healthcare and therefore the management of those conditions [10].

The most objective of this study is to work out the effect of social distancing on musculoskeletal disorders (MSDs) of crowd within the supermarkets during COVID-19 Pandemic in Ogun State Southwest Nigeria having discovered that, there has been minimal or no research focused on this area.

2. Methodology

A cross sectional study was conducted among crowd queuing to purchase goods in malls, supermarkets and stores randomly selected in Ogun State Southwest Nigeria between 30th March

2020 and 20th June 2020 during the ease of lockdown. Twenty five (25) malls, supermarkets and stores were randomly selected within the state. Six hundred (600) questionnaires were administered randomly to the selected customers while five hundred and ninety three (98.83%) participated with returned and completed questionnaire.

A structured modified Nordic Musculoskeletal disorders questionnaire (SNMQ) was used to assess the body parts with musculoskeletal disorders and their perceptions on health risk while observing social distancing in the markets. The questionnaire was designed to include i) Socio-demographic variables such as gender, age, marital status and education level of the respondents ii) physiological responses which identified where the respondents shop, number of persons on the queue and hour spent on the queue iii) Musculoskeletal disorders associated with occupational risk factors such as neck, wrist/hand, upper back (UP), low back (LB), waist/hip, leg (L), knee/Ankle/feet pains, iv) health implications and the impact of the social distance on the health status of the respondents.

The collected data were analyzed using SPSS 23 version through binary logistic regression accordingly. Descriptive analyses were performed on categorical variables summarized as percentages and frequencies. Subjects were calculated to characterize the study population including age group. Percentage value on prevalence of neck, wrist / hand, upper back (UP), low back (LB), waist / hip, leg (L), knee / Ankle / feet pains were calculated and 95% CI with P-Value <0.05 was also determined.

3. Results

A. total of five hundred and ninety three (593) respondents participated in the study giving a response rate of 98.83%.

Table 1: Socio-Demographic characteristic of the respondents

Categories for variables		Frequency (n = 593)	Percentage (%)
Gender			
i.	Male	326	55.0
ii.	Female	267	45.0
Age (years)			
i.	26 – 31	149	25.1
ii.	32 – 37	208	35.1
iii.	38 – 44	178	30.0
iv.	> 45	58	9.8
Marital Status			
i.	Married	503	84.8
ii.	Single	60	10.1
iii.	Divorcee	30	5.1
Education status			
i.	Secondary school	267	45.0
ii.	Tertiary school	326	55.0

3.1 Socio-Demographic Characteristics

Three hundred and twenty six (55.0%) of the respondents were male with 45.0% female. The mean age of the respondents was 32.4 (±0.94) years with age range between 32 – 37years (35.1%) and five hundred and three (84.8%) married while 10.1% and 5.15% of the respondents were single and divorcee respectively. With respect to the highest level of education, three hundred and twenty six (55.0%) achieved tertiary education while 45.0% had only secondary school education (Table 1).

Table 2: Physiological response of the respondent

Categories for variables	Frequency (n = 593)	Percentage (%)
Where do you shop?		
i. Supermarket	416	70.2
ii. Malls	87	14.7
iii. Others	90	15.2
How many people do you meet on the queue?		
i. 1 – 10	328	55.3
ii. 11 – 20	265	44.7
iii. 21 – 30	NIL	NIL
How many hours did you spent on the queue?		
i. 0 – 2hours	238	40.1
ii. 3 – 5hours	355	59.9
iii. 6 -8hours	NIL	NIL

3.2 Physiological Characteristics

Table 2 revealed that 70.2% of the respondents shopped at the supermarkets while 15.2% and 14.7% shopped in the malls, restaurant or stores respectively. Due to the COVID – 19 pandemic, observing of social or physical distancing is a paramount measure to curb the spread of this virus. The respondents need to be on a queue to purchase goods in the supermarkets. It was revealed that 328 (55.3%) respondents reported that range of 1 – 10 person(s) was met on the queue and three hundred and fifty five (59.9%) spent an average of 3 – 5hours, standing or seated on the queue.

Table 3: Musculoskeletal disorder characteristics

Categories for variables		Frequency (n = 593)	Percentage (%)
Do you feel pain in your body?			
	Yes	593	100
	No	Nil	Nil
Have you had any trouble (such as ache, pains, discomforts, numbness) while observing social distancing during COVID-19 Pandemic on:			
i.	**Neck**		
	Yes		
	No	117	19.7
		476	80.3
ii.	**Wrist / hand**		
	Yes	60	10.1
	No	533	89.9
iii.	**Upper back**		
	Yes	358	60.4
	No	235	39.6
iv.	**Lower back**		
	Yes	506	85.3
	No	87	14.7

v.	**Waist / Hip**		
	Yes	506	85.3
	No	87	14.7
vi.	**Leg**		
	Yes	593	100
	No	Nil	Nil
vii.	**Knee / ankle / feet**		
	Yes	593	593
	No	Nil	Nil

3.3 Magnitude and Characteristics of Musculoskeletal Disorders (MSDs)

The respondents were asked about the body pains. All the respondents complain of pains in their body parts. Similarly, the respondents were asked on the prevalence of self reported musculoskeletal disorders (MSDs). The work-related is widely described as the degenerative disease conditions that results in pain and functional affecting the neck, shoulder, elbow, lower back, upper back etc respectively.

A total of one hundred and seventeen (19.7%) and 60 (10.1%) of the respondents reported experiencing pains or discomforts in the neck and wrist / hand. However, 358 (60.4%) of the respondents complained of upper back pain while 506 (85.5%) reported low back pains and waist / hip respectively. This may be due to prolonged standing or sitting posture which often result into fatigue and discomforts in the leg and also led to the foot problems. The result also revealed that all (100%) of the respondents reported pains and discomforts in the two legs and the knee / ankle / feet (Table 3).

Table 4: Binary logistic regression: Variables in the Equation

MSDs	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Upper	Upper
Neck	-0.013	0.236	0.003	1	0.958	0.988	0.622	1.569
Waist/ Hand	0.002	0.302	0.000	1	0.993	1.002	0.555	1.810
Upper Back	1.377	0.203	46.198	1	0.000	3.962	2.664	5.893
Low Back	21.355	5113.848	0.000	1	0.997	1880170618.38	0000	.
Waist / Hip	-21.363	5113.848	0.000	1	0.997	.000	0.000	.
Leg	-2.034	0.943	4.653	1	0.031	.131	0.021	0.830

a. Variable(s) entered on step 1: Neck, waist Hand, Upper Back, Lower Back, Waist/Hip, Leg.

Table 5: Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics				
					R^2 Change	F Change	df1	df2	Sig. F Change
1	0.426[a]	0.182	0.175	0.452	0.182	26.103	5	587	0.000

a. Predictors: (Constant) i. Neck, iii. Upper back, iv. Lower back, v. Waist/hip, ii. Wrist/hand

3.4 Binary regression Analysis: Bivariate and Multivariate

Bivariate analysis was performed for potentially expected contributing risk factors. The risk factors associated with MSDs was determined using the proportion of 95% confidence interval (CI). The result revealed that MSDs in neck has 95% CI of 0.622 – 1.569, Upper back 95% of 2.664 – 5.893 and leg 95% CI of 0.0021 – 0830 (Table 4) The multivariate binary logistic regression analysis identified the MSDs on body parts, neck 117 (19.7%) with 95% CI (0.622 – 1.589), wrist / hand 60 (10.1%) with 95%CI (0.555 – 1.810) and upper back 358 (60.4%) with 95% CI (2.664 – 5.593)

prevalence. Table 5 shows the model summary which was checked using Hosmer-Lemeshow goodness of test which showed $R^2 = 0.182$ with 0.175 adjusted R^2.

Table 6: Health implications: types of treatment engaged

Categories for variables		Frequency (n = 593)	Percentage (%)
i.	Visit to Clinic/Hospital	160	27.0
ii.	Rest/Sleep	248	41.8
iii.	Self Medication	100	16.9
v.	Others (use of herbs etc)	85	14.3
Impact of social distancing on your health			
	Good	208	35.1
	Bad	385	64.9

3.6 Health implications: Types of treatment do you engaged

The respondents were asked the type of treatment they engaged after experiencing discomfort in their body parts. Two hundred and forty eight (41.8%) reported to observed resting or sleeping while 160 (27.0%) visit clinic and hospital for treatment. One hundred (16.9%) respondents engaged in the use of various pain relievers as self treatment and medication with 85 (14.3%) uses local herbs and concoction for treatment (Table 6).

The impact of the social distancing on the health of the respondents was also assessed. Three hundred and eighty five (64.9%) rated the social distancing as bad influence due to the prolonged standing on the queue while 208 (35.1%) attested to the social distancing as a good measure to curb the spread of the corona virus pandemic tagged COVID–19 (Table 6).

4. Discussion

This study aimed at investigating the effect of social distancing and musculoskeletal disorders (MSDs) during COVID–19 pandemic in Ogun State Southwest Nigeria. The musculoskeletal disorders were described as a common health problem throughout the world affecting people in all diverse [11]. Ndivhudzannyi reported that these MSDs have caused a significant human suffering as well as reduced working capacity and productivity [12]. Prolonged standing causes muscle fatigue around the hip resulting into low back pain and also leg pains.

This present study revealed that all the respondents (100%) reported musculoskeletal disorders in their various body parts and this was higher than 88.7% prevalence rate in Dar es Salaam, Tanzania [13], 72.5% in USA [14] and 65% in Modjo Dry Port Ethiopia [15]. Due to the novelty of this study, the comparison of this finding with the findings of other surveys in musculoskeletal epidemiologic case definition may not exist among different studies. Variations in epidemiological case definition have major impacts on prevalence of common musculoskeletal disorders [16]. Similarly, the variations observed with other studies could be due to the differences in methodology and sample sizes.

The most reported pains in this study were leg and knee/ankle/feet at 100% prevalence rate. The presence of multiple disorders is likely caused or exacerbated by the fact that most of the respondents have spent considerable hours on the queue while observed social distancing. Prolonged hours on the queue makes the participants fall victim of risk of MSDs.

Additionally, there is an association between low back pain, waist / hip pain and prolonged standing on the queue. Five hundred and six (85.3%) of the respondents reported low back pain and waist / hip. This could be due to long stress that activated the body's stress response which creates a cascade

of chemical change in the body which in turn leads to muscle tension, muscle spasm and consequent low back pain.

5. Conclusion

This study identified some risk factors associated with MSDs during COVID–19 pandemic. The prevalence of MSDs during COVID–19 pandemic is high due to the prolonged stay on the queue while observing social distancing. The study revealed that not all the respondents utilized the health care by visiting the clinic or hospital. The identified risk factors associated with MSDs needs to be considered when exploring effective and concrete intervention strategies for MSDs.

Conflicts of Interest: The authors declare no conflicts of interest.

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