Prevalence, Pattern and Associated Factors of Work-Related Musculoskeletal Disorders amongst Barbers in Nnewi, South-East Nigeria

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ABSTRACT

Background: Work-related musculoskeletal disorders (WRMSDs) represent one of the commonest occupational health problems in low and middle-income countries. **Objectives:** This study was designed to ascertain the prevalence, pattern and associated factors of WRMSDs among barbers in Nnewi, Nigeria. **Materials and Methods:** This cross-sectional survey involved a total of consecutively recruited 122 barbers. Participants were assessed for musculoskeletal disorders using validated measures. We excluded apprentices and barbers who had other jobs. We summarized data using mean, standard deviation, frequency and percentage. Putative risk factors of WRMSDs were identified using spearman correlation co-efficient. **Results**: The mean age of the participants (115 males and 7 females) was 25.7 ± 5.3 years. Among the 122 barbers, the point-prevalence of WRMSDs was 92.62%. Low back pain ranked highest (67.21%), followed by knee pain (31.97%), right shoulder pain (31.2%) and neck pain (27.9%). A significant weak correlation was observed between WRMSDs and education ($r = -0.171$, $p = 0.02$). Also, WRMSDs correlated with number of working days ($r = 0.213$, $p = 0.004$) and working hours ($r = 0.139$, $p = 0.046$) per week. **Conclusion:** WRMSDs is prevalent among barbers in Nnewi, Nigeria. A low level of education, lack of a day off work and prolonged working hours constitute putative risks for WRMSDs.

Keywords: Work-related musculoskeletal disorders, Associated factors, Barbers, Nigeria.

INTRODUCTION

Musculoskeletal disorders are arguably the most prevalent and well-known causes of long-term pain and physical disability globally.[1,2] One-quarter of adults in Europe suffer from long-term musculoskeletal disorders that impede their daily activities.[3] Workers who are exposed to manual labour characterized by repeated motions, static and limited posture, twisting, frequent bending, and poor psychological and social situations have a high prevalence of work-related musculoskeletal illnesses.[4,5] These disorders have also been recognized as a major source of human suffering, loss of productivity and societal economic burden.[6] Several factors contribute to and exacerbate the occurrence of work-

related musculoskeletal disorders (WRMSDs), including poor ergonomics at work, bad working conditions, a lack of an efficient work injury prevention program, as well as age and length of service.[7,8] Individuals who are constantly in awkward positions at work such as barbers are more susceptible to developing WRMSDs.[9] Carpal tunnel syndrome, lower back, upper limb pain, lower limb pain and neck problems are all common musculoskeletal disorders among barbers.[10] Barbing is one of the precarious occupations with several workplace risk factors inherently associated with the profession.[11] Barbers are predisposed to musculoskeletal diseases due to repetitive motions such as raising the arms above shoulder height, frequent bending of the waist, the necessity to hold body movement for a considerable amount of time, and uneven weight distribution on the feet. Several studies have reported a high prevalence of WRMSDs among barbers.[13,14] Despite the pervasiveness of WRMSDs among barbers as reported in other parts of the world,[13] there is a dearth of data on the burden, pattern and associated factors of WRMSDs among barbers in Nigeria context. In Nigeria, WRMSDs has been explored among a rural community (involving various occupational groups including artisans but not barbers specifically),[15] primary school teachers,[16] butchers,[17] nurses,[18] and hairdressers.[19] Although hairdressers may be classified as barbers in other parts of the world, in our context, barbers refer to persons who mostly cut, dress, groom, style, and shave the hair and beards of men and boys. Given the paucity of data on the burden of WRMSDs among barbers in the Nigerian context and the pervasive nature of WRMSDs, our study aimed to ascertain the prevalence, pattern and associated factors of WRMSDs among barbers in Nnewi Nigeria.

MATERIALS AND METHODS

This study was a cross-sectional survey conducted in Nnewi, Anambra State, Nigeria. It involved a consecutive sample of 122 full-time barbers who had worked at least a year, were 18 years and above, and worked at least five hours a day in Anambra state. We excluded apprentices, barbers who had another job at

the time of this study, and those whose workplaces were situated outside Nnewi. The study was completed in accordance with Helsinki Declaration. Ethical approval was sought and obtained from the Ethical Review Committee of the Faculty of Health Sciences and Technology, Nnamdi Azikiwe University, Anambra State, Nigeria. Informed consent was also sought and obtained from the prospective participants after the aim of the study was explained to them. Assurance of confidentiality was equally made to all the participants. We obtained socio-demographic data such as age, level of education and gender. A self-administered measure the Cornell Musculoskeletal Discomfort Questionnaire was administered to the participants.

The Cornell Musculoskeletal Discomfort Questionnaire[20] is an 11-item questionnaire that assesses musculoskeletal pain in the neck, shoulder, upper arm, lower back, forearm, wrist, buttock, thigh, knee and lower leg, and in terms of frequency, intensity, discomfort and disability (interference with work). The frequency of musculoskeletal pain was measured on a five-point scale 0 to 5 (0= Never, 1.5= 1-2 times/week, 3.5= 3-4 times a week; 5 = every day, 10=several times every day) while those of intensity was measured on a three-point scale. The scale for frequency was weighted with 0 assigned to Never, 1.5 assigned to 1-2 times/week, 3.5 assigned to 3-4 times/week, 5 assigned to everyday and 10 assigned to several times every day. The discomfort of musculoskeletal pain was measured on a three-point scale of 1 to 3 (1= slightly uncomfortable, 2= moderately uncomfortable, 3= very uncomfortable). The interference of musculoskeletal pain was measured on a three-point scale of 1 to 3 (1= Not at all, 2= slightly interfered, 3= substantially). The total score for musculoskeletal pain was obtained by multiplying the frequency score (0, 1.5, 3.5, 5, 10) by the discomfort score (1, 2, 3) by the interference score (1, 2, 3). The total score for musculoskeletal pain was obtained by multiplying the scores of each domain. The instrument has a high face validity while the test-retest reliability is mainly in the moderate to substantial range (0.62-0.92).[21]

Descriptive statistics of frequency, percentages, range, mean and standard deviation were used to

summarize participant characteristics. Spearman rank-order correlation coefficient and independent t-test were used to analyze the relationships between WRMSDs and sociodemographic and work-related factors. Data were analyzed using SPSS version 22, with a level of significance was set at P<0.05

RESULTS

Of the 122 study participants, 115 (94.3%) were male while 7 (5.7%) were female. Most (84.4%) of the participants were less than 30 years, while a few (4.9%) were above 35 years. The mean job experience was 4.3±3.3 years. The majority of the participants 91 (74.6%) worked every day of the week. The mean hours of work were 12.5±1.4 hours per day (Table 1).The prevalence of WRMSDs was 92.62%. Low back pain ranked highest(67.21%) followed by knee pain (both 31.97%), right shoulder

pain (31.15%) and neck pain (27.87%). Hip/buttock (0.8%) and thighs (0.8%) were the least prevalence (Table 2).

There was a weak negative correlation between participants' level of education and occurrence of WRMSDs (r= -0.171, p = 0.02). Also, we observed positive correlation between WRMSDs and each of number of working days per week (r = 0.213, p = 0.004) and hours per day (r = 0.139, p = 0.046). No significant relationship was observed between WRMSDs and each of years of work experience (r = -0.004, p = 0.948) and age (= -0.226; 0.821, 0.821) (Table 3).

Table 1: Socio-demographic distribution of participants

Variable		Mean±SD	Frequency	Percent
Years of experience		4.25±3.277	-	-
Hours per day		12.51±1.433	-	-
Age range	18-24 years	25.74±5.265	55	45.1
	25-30 years	-	48	39.3
	31-35 years	-	13	10.7
	36-40 years	-	4	3.3
	>40 years	-	2	1.6
Gender	Male	-	115	94.3
	Female	-	7	5.7
Level of education	Primary	-	16	13.1
	Secondary	-	95	77.9
	Tertiary	-	11	9
Days per week	5	-	6	4.9
	6	-	25	20.5
	7	-	91	74.6

Note: SD = standard deiviation

Table 2: Prevalence and pattern of work-related musculoskeletal disorders

Body part	Frequency	Percentage (%)
Neck	34	27.87
Right shoulder	38	31.15
Left shoulder	23	18.85
Upper back	3	2.46
Right upper arm	11	9.02
Left upper arm	4	3.28
Lower back	82	67.21
Right forearm	8	6.56
Left forearm	6	4.92
Right wrist	12	9.84
Left wrist	10	8.20
Hip/buttock	1	0.82
Right thigh	1	0.82
Left thigh	1	0.82
Right knee	39	31.97
Left knee	39	31.97
Right lower leg	6	4.92
Left lower leg	6	4.92
Right foot	22	18.03
Left foot	22	18.03
Overall prevalence	113	92.62

Table 3: Factors associated with work-related musculoskeletal disorders among barbers in Nnewi Nigeria

Variables	R/mean±SD	t-value	p-value
Age	0.028		0.668
Level of education	-0.171		0.021*
Days per week	0.213		0.004*
Hours per day	0.139		0.046*
Job duration	-0.004		0.948
Gender			
Male	23.97±53.22	-0.226	0.821
Female	28.571±27.36		

*Note: * =p < 0.05*
       r = Spearman's rank correlation coefficient

DISCUSSION

Work-related musculoskeletal disorders (WRMSDs) are highly prevalent among barbers in Nnewi, Nigeria; 9 out of every 10 barbers experienced WRMSDs in 1 week. This suggests that the burden of WRMSDs in this metropolis is high. Owing to the paucity of data on the burden and correlates of WRMSDs among barbers in Nigeria, it was difficult to compare and contrast the findings of this study vis-à-vis previous Nigerian data. The value achieved in our study is similar to the prevalence of 78% achieved by Saivash et al.[22] and Yarandi et al.[23] thus affirming the assertion that WRMSDs is pervasive among barbers.[13] Low back pain ranked highest, followed by knee, right shoulder, and neck pains. This is in line with the findings of Aweto et al.,[19] a Nigerian-based study, which reported high prevalence (75.6%) among hairdressers within a 12-month period thus projecting low back as a common observation among hair-related artisans in Nigeria. However, despite assessing seven days prevalence, our study reported comparable but higher prevalence than Aweto et al.,[19] which is suggestive of higher WRMSDs among barbers compared to hairdressers. The similarity could be because both groups are hair-related occupations with similar environments and ergonomic dispositions. However, the disparity may draw from the fact that barbers do stand all through the working hour, unlike hairdressers who could afford to sit while engaging in their job. This low back pain is often the result of the strain exerted on the vertebral structures following prolonged standing.[19] The exclusion of informal sectors in the national laws probably leads to poor access to occupational health and safety services, and this might explain the proliferation of WRMSDs among artisans.[13]

As expected, there was a significant correlation between WRMSDs and each of the days of work per week and daily working hours.[24] This is in agreement with Aweto *et al.*[19] and Fang et al.[14] This implies that the extended hours of standing and adopting an unnatural fixed posture that comes with barbing is an important factor to be considered when addressing the incidence of low back pain and WRMSDs among barbers in Nnewi, Nigeria. There are various causes

of back pain when standing for long periods, the most common of which is bad posture. During prolonged standing, the pelvis shifts backwards forcing the lower back to curve even more.[24] This increases the tension on the soft tissues around the spine, causing lower back muscles to tense or even move into spasm, resulting in discomfort in your spine's joints and nerves.[25]

Our study revealed the level of education as a correlate of WRMSDs, with the educational level being a risk for WRMSDs. This is further supported by the findings of Saivash et al.[22] This suggests that awareness of WRMSDs and practice of work-ergonomics and safety precautions may be determined by level of education. We found no correlation between WRMSDs and years of working experience. This is in line with the findings of Fang et al.,[14] which found no correlation between WRMSD and years of job experience but contrary to Mussi et al.[26] who reported length of professional engagement as a risk factor for WRMSDs. The disparity may be because the participants in the previous study, a Brazilian study had more years of work experience (15 years) than the participants in our study (4 years), thus suggesting that WRMSDs in hair-related occupations might occur independent of years of experience until a threshold is reached. Furthermore, our study showed no correlation between WRMSDs and age. In contrast, Aweto et al.[19] found a significant relationship between age and WRMSDs. The disparities may be attributable to the varied age groups employed in the two studies. Unlike our study, Aweto et al.[19] included a group of older adults who are often diagnosed with age-related degenerative alterations which constitutes a strong predictor of WRMSDs.[27-29] The cross-sectional nature of this study limits its inference, and hence constitute a limitation to the study findings. Notwithstanding, it is interesting to know that the factors associated with low back pain in our study are all modifiable, albeit, the weak association of the WRMSDs with these may be insufficient to advocate and inform early intervention. Also, how willing these young folks are to assimilate interventions that will likely reduce their working hour and hence their income in a country where social security is lacking remains a question that begs for further research. Preventive measures should focus on educating barbers on WRMSDs and ergonomic precaution measures.

CONCLUSION

In Nnewi, Nigeria, WRMSDs is a highly prevalent condition among barbers, with low back pain ranking highest. Putative risk factors of WRMSDs among barbers in Nnewi, Nigeria include educational attainment, number of working days per week and daily working hour. The preventive measure may focus on educating barbers on WRMSDs and ergonomic precautionary measures.

Conflict of interest
The authors report there are no competing interests to declare

Data availability statements
The data that support the findings of this study are available from the corresponding author, [EI], upon reasonable request.

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