

Health problems, workplace hazards and health needs of artisans in Ibadan, Nigeria

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Abstract

Background: Artisans constitute a significant proportion of the workforce in Nigeria and are exposed to workplace hazards which pose a risk to their health. Little or no occupational health services are provided for these workers who are mainly in the informal sector.

Aims: To assess health problems, workplace hazards and health care needs of artisans as a basis for developing occupational health services for these workers

Methods: A community-based cross sectional study was carried out. A total sampling of artisans in Ward 3 of Ibadan North Local Government area was done. A semi-structured interviewer administered questionnaire was utilized to collect data. Data were analysed using descriptive statistics, chi-square test and logistic regression at 5% level of significance.

Results: A total of 509 artisans were interviewed comprising tailors, mechanics, hairdressers, welders and carpenters. Reported work related health problems include musculo-skeletal/joint pain (63.3%) and low back pain (54.7%). Needle pricks was the commonest accident mostly among tailors (79.9%) and hairdressers (57.8%). Cuts and lacerations were the commonest injuries mostly among carpenters (96.7%) and mechanics (90.9%). Hazards reported were physical; noise (71.0%), chemical; fumes (43.4%), mechanical; sharp metals (85.9%), biological, insect bites (91.0%) and psychosocial; low income (68.9%). These hazards differed by occupational groups. Singles were more likely to have work place accidents. Respondents working for > 8 hours per day were more likely to experience occupational injury compared to those working for ≤ 8 hours per day.

Conclusion: Occupational health services and health education on control of workplace hazards and accident prevention is needed for this group of workers.

Keywords: *Artisans, workplace hazards, health problems, accidents*

Résumé

Contexte: Les artisans constituent une proportion importante de la population active au Nigeria et sont exposés à des risques en milieu de travail qui présentent un risque pour leur santé. Peu ou pas des services de santé occupationnelles sont fournis pour ces travailleurs qui sont principalement dans le secteur informel.

Objectifs: Pour évaluer les problèmes de santé, les risques en milieu de travail et les besoins en soins de santé des artisans comme base pour le développement des services de santé occupationnelles pour ces travailleurs.

Méthodes: Une étude transversale à base communautaire a été réalisée. Un échantillonnage total des artisans dans le Secteur 3 de la Zone du Gouvernement Local d'Ibadan-Nord a été fait. Un questionnaire semi-structuré administré par intervieweur a été utilisé pour recueillir des données. Les données ont été analysées à l'aide de statistiques descriptives, test du chi-carré et la régression logistique au niveau de signification de 5%.

Résultats: Un total de 509 artisans ont été interviewés comprenant des tailleurs, mécaniciens, coiffeurs, des soudeurs et des charpentiers. Les problèmes de santé signalés liés au travail comprennent la douleur musculo-squelettique / articulation (63,3%) et le lumbago (54,7%). La piqûre à l'aiguille était le plus fréquent accident principalement chez les tailleurs (79,9%) et les coiffeurs (57,8%). Les coupures et les lacerations étaient les injures les plus fréquentes surtout chez les charpentiers (96,7%) et les mécaniciens (90,9%). Les risques rapportés étaient physiques; bruit (71,0%), chimique; fumées (43,4%), mécanique; métaux tranchants (85,9%), les biologiques, les piqûres d'insectes (91,0%) et psychosocial; faible revenu (68,9%). Ces risques différaient par groupes professionnels. Les célibataires étaient plus susceptibles à avoir des accidents de lieu de travail. Les répondants qui travaillent pour > 8 heures par jour étaient plus susceptibles de subir un accident du travail par rapport à ceux qui travaillent pour d' 8 heures par jour.

Conclusion: Les services de santé occupationnelle et l'éducation de santé sur le contrôle des risques en milieu de travail et la prévention des accidents est nécessaire pour ce groupe de travailleurs.

Mots-clés: *Artisans, risques en milieu occupationnel, problèmes de santé, accidents*

Introduction

In many developing countries micro-enterprises in the urban informal sector make a significant contribution to the economy by generating employment and often constitute the main source of income for disadvantaged groups [1]. About 70% of the workforce in Nigeria is engaged in small scale enterprises in the informal sector. These workers include artisans who are self-employed and engaged in jobs such as carpentry, automobile repair, bricklaying, plumbing and hairdressing. Artisan groups comprise workers who use hand held tools or carry out their work manually. Majority have learnt a trade as a means of livelihood usually after having dropped out of school. As such, most artisans are poorly educated and of low socio economic status. They work on road sides, within residential premises and in poorly constructed workshops with little or no sanitary facilities. Their workplaces are poorly regulated and they have uncontrolled exposure to physical and chemical agents which could pose a risk to their health. Artisans like other workers in the informal sector are neglected in terms of health services and have been tagged –the forgotten masses [2]. Many works in home based shops and are ignorant of the hazards they and their families are exposed to [3].

Several publications have focussed on the hazards and health problems of workers in small scale enterprises [4-14]. Occupational hazards of bricklayers [5,6], cement workers [7], painters [8,9], fabric workers [10], mechanics [11,12], carpenters [13] and butchers [14] have been reported in the literature. In Nigeria, few studies have focussed on the health problems of artisans such as mechanics [4], hairdressers [15,16] sawmill workers [17] and food mill workers [18]. Work related health problems reported among artisans in other countries include contact dermatitis in metal workers, labourers, car mechanics and painters [19,20] asthma in welders; musculoskeletal disorders in welders, road construction operatives and labourers [20,21] and hand dermatitis in hairdressers [22]. There is very little information about their workplace hazards and health needs of these workers and consequently little baseline data to assist with developing an occupational health programme for them. There is a need to document the hazards many of the professions involved in artisan trades are exposed to. Although primary health care services by definition should provide health care in places where people live and work, little or no health service is provided in workplaces in the informal sector in Nigeria because primary health care workers are not

trained to provide such services. The aim of this study is to collect data on the workplace hazards, health problems and health needs of these workers which can be utilised to provide appropriate health services for them.

Materials and methods

The study design was descriptive and cross sectional. The study was carried between September and October, 2013 in the catchment area of the Primary Health Care Centre run by the Department of Community Medicine of the University College Hospital at Ibadan. This area has a large concentration of several residents and non-residents engaged in artisan jobs in small workshops and residential premises. Mechanics predominate in this area, working in large settlements known as ‘mechanic villages.’

A list of artisan groups in the study area was obtained from community leaders. The various artisan group leaders were contacted and the purpose of the study was explained to them at their artisan group meetings. A total sampling of all artisans and their apprentices working in the study area was done. All artisans and apprentices were requested to participate in the study. Those who had worked in the area less than 6 months before the study were excluded.

Written informed consent was obtained from each artisan. All consenting artisans were interviewed by trained research assistants who had at least post-secondary education such as OND. A structured interviewer administered questionnaire was used to collect information for this survey. The questionnaire covered the following areas; socio-demographic characteristics, occupational data, workplace hazards, history of accidents and injuries, use of personal protective equipment and self-reported health problems. Questions on health service utilization were also included.

The questionnaire was pretested among artisans in another local Government Area and modified before the commencement of the study. It was translated into Yoruba, the local language, and back translated to English to ensure the retention of the meaning of the questions. The Yoruba version was used on the field.

Dependent variables for this study include self-reported work related illnesses, occupational accidents, injuries in the 12 months preceding the study and workplace hazards. Workplace hazards included physical, chemical, biological, mechanical and psychosocial hazards. The independent variables are demographic characteristics assessed using the

following indicators: age of respondents (grouped as ≤ 30 and >30 years); sex (grouped as male and female), highest level of education was classified as Junior Secondary School and below and Senior Secondary School and above. Occupational groups included mechanics, hairdressers, tailors, welders, carpenters and others such as vulcanizers, photographers, plumbers, panel beater, painter and electrician. Job grade was grouped as apprentice and qualified. The data were analysed with SPSS (Statistical Package for Social Sciences) software programme version 20 (SPSS 20.0 Command Syntax Reference 2012). Data were analysed using descriptive statistics. Bivariate analysis was done to test for association between variables using the chi-square test. Multivariable logistic regression was used to identify independent factors associated with health problems, workplace hazards, occupational accidents and injuries. Odds ratios and their 95% confidence intervals were reported. Variables significantly associated with outcome variables at $p=0.05$ were included in the logistic regression model. Variable entry into the multiple logistic regression was in block, i.e. all independent variables were entered at the same time into the model in a single step. Level of significance for all tests was at 5%.

Results

A total of 509 respondents were interviewed. They comprised of various Artisan groups; tailors (36.5%) mechanics (19.4%), hairdressers (17.7%), welders (9.8%) and carpenters (5.9%). Others included vulcanizers, photographers, plumbers, panel beater, painter and electrician; 10.6%. Table 1 shows the sociodemographic characteristics of the respondents. Their mean age was 29.2 ± 10.8 years, 60.7% were aged ≤ 30 years, 56.0% were males, 55.6% were married, 68.0% had secondary education, and 61.5% were qualified artisans. Majority (90%) worked for > 8 hours per day and 73.5% respondents worked six days a week. The mean number of days worked per week was 6.2 ± 0.7 days.

Regarding their work conditions, the mean length of their working day was 10.6 ± 1.7 hours. More than half of respondents 284 (55.8%) reported that their jobs involved prolonged standing for 2-4 hours and 142 (52.0%) reported prolonged sitting for 2-4 hours. Awkward postures at work were reported; bending (52.3%), pedalling (44.9%), squatting (30.6%), heavy lifting (28.5%), hand raising (28.3%) and twisting (23%).

Figure 1 shows current health problems of respondents by occupational groups. Mechanics had the highest prevalence of low back pain (51.5%),

other musculoskeletal and joint pain (53.5%) and cuts / lacerations (23.2%). Prevalence of upper respiratory tract infection was highest among carpenters (16.7%). Eye problems were mostly reported by welders (20.0%).

Table 1: Sociodemographic characteristics of respondents

Sociodemographic characteristics	n(%)	N=509
<i>Age group(years)</i>		
≤ 30 years	309	(60.7)
> 30 years	200	(39.3)
<i>Marital status</i>		
Single	223	(43.8)
Ever married	283	(55.6)
No response	3	(0.6)
<i>Level of education</i>		
Below secondary education	137	(27.1)
Secondary education and above	369	(72.9)
<i>Job grade</i>		
Apprentice	196	(38.5)
Qualified	313	(61.5)
<i>No of hours spent at work</i>		
≤ 8 hours	51	(10)
>8 hours	458	(90)
<i>Artisan groups</i>		
Tailors	186	(36.5)
Mechanics	99	(19.4)
Hairdressers	90	(17.7)
Welders	50	(9.8)
Carpenters	30	(5.9)
Others**	54	(10.6)

**Others (vulcanizers, photographers, plumbers, panel beater, painter and electrician)

The top three reported work related health problems of most concern to respondents were musculo-skeletal/joint pain (63.3%), low back pain (54.7%) and cuts/laceration (47.5%). Others were needle/pinpricks (21.6%) and eye problems (18.8%).

Figure 2 shows prevalence of accidents and injuries among the different occupational groups. Accidents were mostly reported by welders (90%), mechanics (85.9%) and tailors (83.3%). Needle pricks was the commonest accident reported by respondents mostly among tailors (79.9%) and hairdressers (57.8%). Trauma from falling objects was reported mostly by carpenters (80.0%), mechanics (68.7%) and welders (64.0%). Injuries were reported by 96.7% of carpenters, 92.9% of mechanics and 92.0% of welders. Cuts and lacerations were the commonest injuries reported mostly among carpenters (96.7%), mechanics (90.9%) and welders (86.0%).

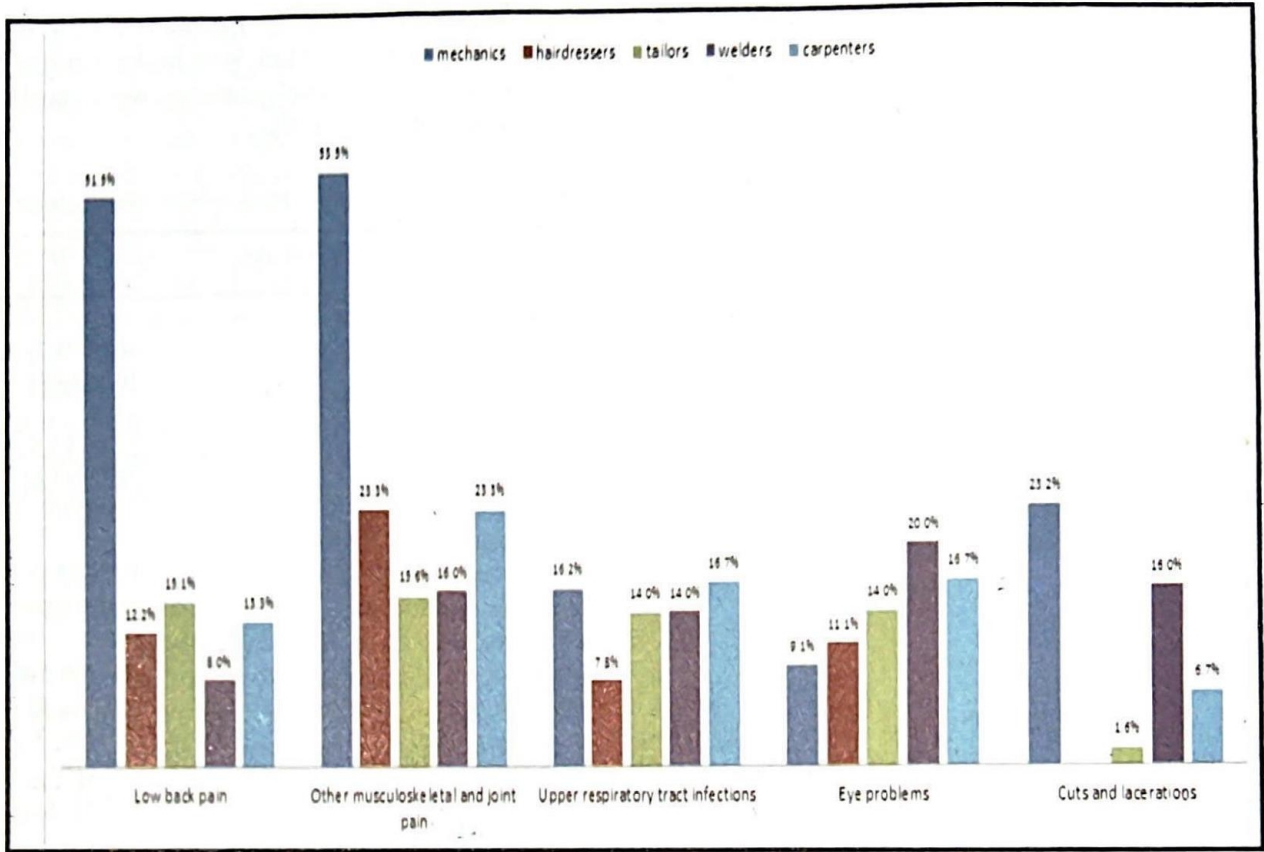


Fig. 1: Prevalence of current health problems by artisan groups

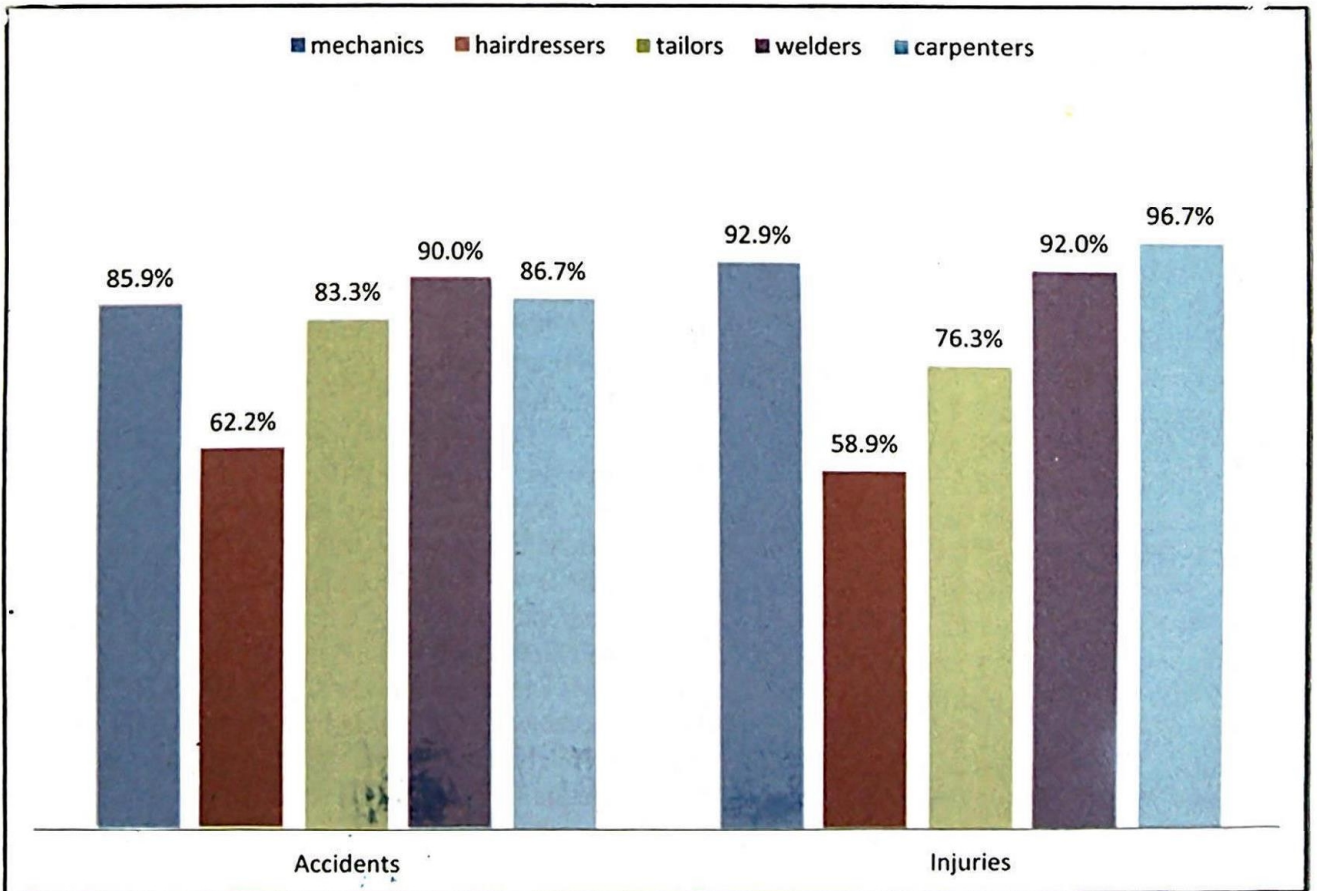


Fig. 2: Prevalence of accidents and injuries among the different artisan groups

Table 2: Types of workplace hazards by occupational groups

Types of Hazards	Total	Mechanics (99)	Hairdressers (90)	Tailors (186)	Welders (50)	Carpenters (30)	Others** (54)
Physical	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Noise*	355(71.0)	79(79.8)	36(40.0)	123(66.1)	49(98.0)	27(90.0)	41(75.9)
Vibration*	237(47.6)	64(64.6)	1(1.1)	75(40.3)	48(96.0)	25(83.3)	24(44.4)
Excessive heat*	151(30.2)	69(69.7)	5(5.6)	5(2.7)	46(92.0)	8(26.7)	18(33.3)
Chemical							
Fumes*	216 (43.3)	70(70.7)	13(14.4)	43(23.1)	43(86.0)	16(53.3)	31(57.4)
Liquid chemicals*	216 (43.3)	89(89.9)	53(58.9)	1(0.5)	28(56.0)	21(70.0)	24(44.4)
Dust*	188(37.7)	45(45.4)	11(12.2)	44(24.7)	36(72.0)	29(96.7)	23(42.6)
Mechanical							
Sharp metals*	433 (85.9)	93(93.9)	66(73.3)	167(89.7)	50(100.0)	29(96.7)	28(51.9)
Exposed moving parts*	282 (55.4)	88(88.9)	1(1.1)	103(55.4)	44(88.0)	27(90.0)	19(35.2)
Heavy load lifting*	214 (42.9)	74(74.7)	12(13.3)	35(18.8)	44(88.0)	28(93.3)	21(38.9)
Psychosocial							
Irregular income*	282(64.7)	69(69.7)	44(48.9)	78(41.9)	31(62.0)	19(63.3)	41(75.9)
Low income	303(68.9)	75(75.8)	45(50.0)	94(50.5)	33(66.0)	20(66.7)	36(66.7)
> 10hours at work	333(67.1)	68(68.7)	60(66.7)	128 (68.8)	34 (68.0)	14 (46.7)	29(53.7)

**Others (vulcanizers, photographers, plumbers, panel beater, painter and electrician) * $p < 0.05$

Table 3: Logistic regression analysis of sociodemographic characteristics of respondents and work related accidents, injuries and workplace hazards

Socio-demographic characteristics	Outcome variables				
	Work related accident in the last twelve months	Work related injury in the last twelve months	Exposure to noise	Exposure to fumes	Exposure to heavy load lifting
<i>Age group (yrs)</i>					
≤30 years	0.9 (0.5-1.6)	1.5 (0.8-2.7)	1.5(0.8-2.8)	1.4 (0.7-2.9)	1.4 (0.5-4.0)
> 30 years	1	1	1	1	1
<i>Sex</i>					
Male	1.9 (0.8-4.3)	0.7 (0.4-1.4)	0.6 (0.3-1.7)	2.0(1.1-3.7)*	0.7 (0.1-3.6)
Female	1	1	1	1	1
<i>Marital status</i>					
Single	2.6 (1.5-4.8)*	1.7 (0.9-3.0)	0.9 (0.5-1.6)	1.4 (0.7-2.8)	0.8(0.3-2.1)1
Ever married	1	1	1	1	1
<i>Level of education</i>					
Below secondary education	1.3 (0.7-2.3)	1.1 (0.6-1.9)	1.4 (0.7-2.8)	2.2 (1.1-4.2)*	2.9 (0.9-8.8)
Secondary education and above	1	1	1	1	1
<i>Occupational group</i>					
Welders	3.4 (0.8-13.2)	16.7 (4.0-69.3)**	48.8 (5.9-403.1)**	18.3 (5.6-59.3)**	41.2(11.9-146.5)**
Carpenters	2.4 (0.6-9.9)	43.0 (4.9-378.0)*	9.9 (2.4-40.7)*	3.8 (1.2-11.9)*	179.9 (19.8-1633.5)**
Mechanics	2.3 (0.8-6.7)	16.7(5.3-52.9)**	5.2 (2.0-13.3)*	9.1 (3.4-24.8)**	20.5(7.1-58.9)**
Tailors	2.4 (1.3-4.5)*	2.4 (1.3-4.4)*	2.7 (1.6-4.8)**	1.4(0.6-2.8)	1.5(0.7-3.1)
Others	0.4 (0.1-1.1)1	1.1 (0.4-2.7.)	4.2 (1.6-11.2)*	4.7 (1.7-13.1)*	3.6(1.2-10.6)*
Hairdressers	1	1	1	1	1
<i>Time spent at work daily</i>					
> 8 hours	1.6 (0.8-3.4)	2.8 (1.3-5.9)*	0.6 (0.3-1.7)	1.2 (0.5 -2.9)	1.3 (0.5-3.6)
≤ 8 hours	1	1	1	1	1

* $p < 0.05$ ** $p < 0.001$

Table 2 shows that exposure to workplace hazards differed among occupational groups. Regarding physical hazards, a higher proportion of welders reported noise (98.0%), vibration (96.0%) and excessive heat (92.0%) than other occupational groups ($p < 0.05$). In addition a higher proportion of welders reported exposure to fumes than other occupational groups ($p < 0.05$). Exposure to liquid chemicals was mostly reported by mechanics (93.7%) ($p < 0.05$). A higher proportion of carpenters (97.5%) reported exposure to dust as workplace hazard compared to other occupational groups ($p < 0.05$). All artisan groups reported exposure to sharp metals with carpenters (100.0%) having most exposure ($p < 0.05$). All except hairdressers were exposed to moving parts of a machine ($p < 0.05$). Carpenters (96.6%), welders (88.0%) and mechanics (77.9%) reported a lot of heavy lifting activities ($p < 0.05$). All artisan groups reported low and irregular income. A high proportion of all artisan

groups except carpenters reported spending more than 10 hours at work.

Table 3 presents logistic regression analysis of sociodemographic characteristics of respondents and work related accidents, injuries and workplace hazards. Singles were more likely to have work place accidents in the preceding 12 months, OR 2.6, 95% CI (1.5-4.8). Respondents working for more than 8 hours per day were more likely to experience workplace injury compared to those working more than 8 hours per day, OR 2.8, 95% CI (1.3-5.9). Males, OR 2.0, 95% CI (1.1-3.7) and artisans with less than secondary education, OR 2.2, 95% CI (1.1-4.2) were more likely to be exposed to fumes.

Using hairdressers as reference group, logistic regression showed that tailors were more likely to experience occupational accidents, OR 2.4, 95% CI (1.3-4.5); welders, OR 16, 95% CI (4.0-69.3) and mechanics, OR 16.7, 95% CI (5.3-52.9) were more likely to experience occupational injuries, welders

were more exposed to noise, OR 48.895% CI (5.9-403.1); welders, OR18.3 95% CI (5.6-59.3), carpenters, OR3.8, 95% CI (1.2-11.9) and mechanics, OR9.1, 95% CI (3.4-24.8) were more exposed to fumes. Welders, OR41.2 95% CI (11.9-146.5), carpenters, OR179.9 95% CI (19.8-1633.5) and mechanics, OR20.5 95% CI (7.1-58.9) were more likely to report heavy load lifting.

Discussion

This study found that low back pain and musculoskeletal/joint pain and cuts/laceration were the work related health problems of most concern to artisans. More than half of the respondents reported that their jobs always involved bending. Work activities involved bending, pedalling, squatting, heavy lifting, hand raising and twisting in at least one quarter of artisans. These work postures are associated with low back pain and musculoskeletal disorders [4,15]. Majority of the respondents worked for more than 8hrs in a day and more than half of them reported prolonged standing for 2-4hrs. Long working hours and prolonged standing in a physically demanding job are associated with low back pain [15]. Morbidities were highest among mechanics. This is in line with other reports that mechanics have higher rates of occupational health problems compared to workers in other artisan occupations [12]. Inadequate use of personal protective equipment has been reported among workers in small scale industries leading to uncontrolled work exposures [4,15]. Uncontrolled exposure to dust among carpenters may be responsible for upper respiratory symptoms reported by this group [13]. Similarly, uncontrolled are associated exposure to fumes may account for high prevalence of eye problems among welders. In addition, welders have been shown to be prone to eye injuries from flying metal chips [24, 25].

Needle pricks were the commonest accident reported mostly among tailors and hairdressers. Activities in both occupations involve the use of needles. Hairdressers use needles for fixing hair attachments. Needle pricks have also been reported to be a common hazard among hairdressers in Southwest Nigeria [15]. Single respondents than married were more likely to experience accidents. This is probably because majority of these single respondents' were apprentices and are more prone to accidents due to fewer number of years of experience compared to qualified artisans [15]

Artisans in this study worked for a mean of 11 hours a day and most did not run shifts. Those who spent more than 8hrs were more likely to have injuries at work. Other studies have reported an

association between long working hours and an increased risk of injuries [23]. Commonest reported injuries were cuts and lacerations which were mostly reported by carpenters, mechanics and welders probably due to their exposure to moving machine parts and sharp metals.

Welders, carpenters and mechanics were more likely than hairdressers to be exposed to physical, chemical and mechanical hazards. This is in line with other literature [4,25,26]. Noise was the most prevalent physical hazard reported by a significant proportion of all occupational groups. Artisan groups comprise mostly of workers who use hand held tools that generate a lot of noise. Welders and mechanics were mostly exposed to fumes and liquid chemicals. Activities in their workplaces involve the use of chemicals especially as a cleaning agent. The finding that males were more likely than females to be exposed to chemicals may be due to the fact that almost all the welders and mechanics in this study were males.

The strength of our study was that we explored work related health problems and workplace hazards among a variety of occupational groups which may inform interventions for these group of workers. Total sampling of artisans who were eligible for the study was done to reduce the problem of selection bias.

This study however has some limitations. Health problems, workplace hazards were based on self-reports and could not be ascertained. Recall bias was however not an issue as current health problems were assessed. Evaluation of workplace hazards such as noise measurements was not done.

We conclude that health concerns were mainly musculoskeletal disorders and injuries which are largely preventable. Morbidities were highest among mechanics. Majority engaged in work activities involving awkward postures. Needle pricks were frequent among tailors and hairdressers while cuts and lacerations were the most prevalent injuries among mechanics, welders and carpenters. Noise was commonest physical hazard reported.

Occupational health services tailored to meet the needs of artisans should focus on health education on workplace hazards, accident prevention, training on lifting techniques and work postures, provision of first aid, use of personal protective equipment and primary care for musculoskeletal diseases. Evaluation of hazards should be done and control measures put in place to ensure health and safety in these workplaces.

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