



Research Article

Workplace Hazards and Safety Practices amongst Small Scale Industry Workers in a Rural Community in Lagos, Southwest, Nigeria

Bakare Omowunmi Q¹, Akinyinka Modupe R¹, Wright Kikelomo O¹, Elias Simiat O².

¹Department of Community Health & Primary Health Care, Lagos State University College of Medicine, Ikeja, Lagos, Nigeria. ²Department of Physiology, Lagos State University College of Medicine, Ikeja, Lagos, Nigeria

**Author for Correspondence:*

Bakare Omowunmi Q

omowunmi.bakare@lasucom.edu.ng

+234 802 304 4194

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ABSTRACT

Objective: To assess the level of awareness of workplace hazards, safety practices and self-reported health complaints amongst small scale industries in a rural community in Lagos, Southwest, Nigeria.

Methods: A descriptive cross-sectional study was conducted among workers engaged in small scale industries in a rural community of Lagos, Southwest, Nigeria. Using an interviewer-administered methodology, a total of 120 consenting respondents were recruited. The categories of the workers consisting of – auto-mechanic (34.2%), bricklaying (23.3%), carpentry (18.3%), hairdressing (12.5%) and welding (11.7%) were studied. Observational checklist was also used. Ethical approval was obtained from the Health Research and Ethics committee of Lagos State University Teaching Hospital (LASUTH) and analysis was done using Statistical Packages for Social Sciences (SPSS) version 24.

Results: Many (68.1%) of the respondents were aware of the workplace hazards on the job. About (78.6%) of carpenters claimed to have been exposed to noise, bricklayers (59.1%) to vibrations and welders (42.9%) to electric shocks. The use of preventive practices was poor. Observation of the work environment revealed a poor physical and chemical working environment. Self-reported health complaints included headaches (72.7%) and backaches (86.4%) among bricklayers, hairdressers had more cuts (32.1%) and skin burns (26.0%).

Conclusion: Numerous hazards and injuries were inherent in the small scale industries associated with poor safety practices. The integration of Occupational health services for the informal sector into the Primary health care system may prevent occupational hazards and promote safety practices. Continuous health education should be provided on the various Occupational hazards.

INTRODUCTION

Small scale industries (SSIs) have been a characteristic mode of employment since earliest times.[1] These SSIs play a crucial role in the development of the national economy, generation of employment and self-employment regarded as the unregulated, non-formal portion of the market economy that produces goods and services for sale or for other forms of remuneration. Global estimates from the World Health Organization (WHO) and the International Labour Organization (ILO), showed that about 271 million and 2 million workers suffer work-related injuries and deaths annually, respectively.[2] In developing countries, the impact of work-related injuries and diseases is about 10-20 times higher compared to developed countries. The effect is even greater in the rural areas compared to the urban areas.[3]

Awareness of potential occupational hazards and proper use of safety measures among workers in SSIs is an important indicator for the prevention and/or reduction of the hazards associated with work. Evidence has shown that workers in SSIs are not aware of occupational hazards in their

workplace and the preventive practices. Studies in India and Ghana found inadequate safety management practices among the small and medium scale enterprises.[4-5] However, studies in Uganda and Tanzania reported that about 92% claimed to be aware of the injuries and diseases caused by their work.[6-7] Another study in Sekondi-Takoradi Metropolitan Area of Ghana found that majority of the workers were aware of the various hazards they were exposed to in their workplaces.[8]

In Nigeria, small scale industries (SSIs) have continued to lead in the job creation drive, accounting for 61.5% of the total jobs created in the fourth quarter of year 2014. According to the latest Job Creation Survey published by the National Bureau of Statistics (NBS), a total of 369,485 jobs were created across all sectors of the Nigerian economy, 227,072 (> 60%) were in the informal sector while 138,026 (about 40%) were in the formal sector.[9] The economic recession experienced in 2015, with high rate of unemployment and inflation had stimulated the creation of more small and medium scale industries which might not necessarily be documented.[9] As a result, many of the

workers in the small scale industries might be exposed to various risks and hazards in the workplace which they might not even be aware of. Some studies in parts of Africa reported poor level of awareness of occupational hazards, non-availability and improper use of safety measures among the workers in small scale industries.[10,11,14] Studies in Nigeria demonstrated adequate awareness about workplace hazards and injuries.[12,13]

Injuries related to work present a major public health problem resulting in serious social and economic consequences which can be prevented with appropriate occupational health and safety measures. Unhealthy and unsafe working environments including hazardous chemicals and physical risks, undesirable sanitary facilities, inadequate safety equipment, and unsafe manufacturing methods, all of which are commoner in SSIs compared to the larger-scale ones. [15,16] This has led to an increase in the proportion of accidents and disabling diseases occurring in SSIs. A study among welders in Kaduna metropolis, Northern Nigeria demonstrated high incidence of work-related injuries - cuts/injuries to hands and fingers (38.0%), back/waist pain (19.0%), burns (14.0%).[13]

Personal Protective Equipment (PPE) has an important role in protecting workers from occupational injuries and diseases. A study in Kano demonstrated that a majority (84.7%) of the respondents used face masks for the prevention of pulmonary injury or infections among workers. About 70.8% claimed to use hand gloves to protect against abrasions and cuts.[12] However, studies conducted in Tanzania, Turkey and Botswana revealed that the use of PPEs was poor.[7,17,18] This study therefore assessed the level of awareness of occupational exposure to hazards and safety practices among rural workers in SSIs in Lagos State, Nigeria.

MATERIALS AND METHODS

Background information to study area

The study was carried out among workers in SSIs during the month of December 2017 in Agbowo community in Epe Local Government Area (LGA) of Lagos State. Epe LGA comprises of 1 LGA (Epe) and 2 Local Council Development Areas (LCDAs) - Ikosi-Ejirin and Eredo LCDA. Agbowo community is located in Ikosi-Ejirin LCDA.

Majority of the inhabitants were engaged in farming, fishing and petty trading. Some also operate SSIs. Although each SSI was not registered with the Local Government, the association of each group of SSIs was registered. Five categories of SSIs were selected based on availability during the period of the study. These included mechanic, hairdressing, bricklaying, carpentry, and welding.

Study design

The study was a descriptive cross-sectional one conducted among workers in small scale industries in Agbowo communities in Epe Local Government Area of Lagos State.

Sample Size Determination

The minimum sample size was calculated using Fisher's formula for cross-sectional study. The minimum sample size $N = Zpq/d^2$ where p is the proportion of the level

of awareness of occupational hazards in a previous study,[7] and $q = 1 - p$. At 95% level of confidence, $Z = 1.96$ and $d =$ error margin of 5% at $p < 0.05$. The minimum sample size calculated was 113 but increased to 120 in anticipation of non-response by some participants.

Sampling technique

A multistage sampling technique was used for the selection of the respondents. In the first stage, Ikosi-Ejirin LCDA was selected out of the existing 2 LCDAs and 1 LGA by balloting. In the second stage, from a total of 6 wards in Ikosi Ejirin LCDA, two (2) wards, Agbowo 1 and Agbowo 2 were selected by balloting. For the third stage, in each ward, the respondents for the study were selected by a convenience sampling method based on availability and accessibility during the period of study. Each small-scale industry had the owner and between 3 – 5 apprentices. The respondents that consented to be interviewed were recruited into the study. The categories of SSIs selected for the study included mechanics, hairdressing bricklaying, carpentry and welding. A total of 120 respondents were recruited into the study.

Data instrument and collection strategies

Two instruments were used for the study:

The first tool was a closed-ended interviewer-administered questionnaire which was developed from extensive literature review. The questionnaire comprised of five sections. The first section elicited information on the socio-demographic characteristics of the respondents, while the remaining sections were on the awareness of workplace hazards, availability and use of PPEs, self-reported health problems on the job and the actions taken on the complaints. Data was collected by 10 trained Research Assistants who were 600 level Medical Students during their rural health posting in Agbowo community. The Research Assistants were trained for 2 days prior to the data collection. The questionnaire was pre-tested among a similar group of small-scale industries in Kosofe LGA to verify ambiguous questions and necessary adjustments were made to the final design of the instrument.

The second tool consisted of a 10-item observation checklist. Observation of the workplace hazards and the use of safety practices were conducted while the interviewing was going on and recorded on this checklist.

Data management and analysis

Data were collected, cleaned and analyzed using IBM SPSS Statistics for windows Version 21.0 (IBM Corps. Armonk, NY, USA). Univariate and bivariate analysis were conducted on the data. Frequency distribution tables and percentages were generated. The Chi-square test was used to determine association between variables and the level of statistical significance was set at $p < 0.05$.

Ethical considerations

The respondents were informed of the objectives of the study. There was no risk to them as there was no invasive procedure. Ethical clearance was obtained from Lagos State University Teaching Hospital (LASUTH) Health Research Ethics Committee with Reference Number LREC/06/10/982 (13/3/18 – 11/9/18).

RESULTS

As shown on Table 1, the age of the respondents ranged from 15 – 70 years with a mean age of 36.21 ± 11.38 years. Most (55.1%) of the respondents were in age group 20 – 39 years. Almost two-thirds of the respondents were males, 67.5% were married and 60% had a secondary school education. Of the five categories of SSIs, mechanic constituted 43.2%, hairdressing (23.3%), bricklaying (19.1%), carpentry (18.3%) and welding was (11.7%). Majority (68.1%) of the respondents were in full-time employment and only (29.4%) had formal training of the job.

Awareness of workplace hazards was high (68.1%) and majority (60.0%) of the respondents learnt about the hazards on the job. More than half (55.0%) of the respondents were aware of noise in the workplace, direct sunlight

(48.3%), dust (47.7%) and poor posture (78.3%). However, majority of the respondents claimed to be aware of sexual abuse (98.3%) and stress (82.5%) (Table 2).

About 80% of the workplaces inspected were clean. However, slippery floors were observed in 23.3% of the workplaces. About 41.7% had exposure to hazards - wood dusts (15.8%), fumes (8.3%), smoke (17.6%), vibrations (50%) and presence of sharp metals (45.6%). A third (34.2%) of the respondents had overalls on during the period of the study whilst 22% had gloves but the use of PPE was only observed in (7%) of the workplaces (Figure 1). Among the SSIs assessed, only 11.7% had First Aid Boxes while fire extinguishers were present only in 5.0% of the workplaces.

There was a statistically significant association ($p=0.00$) between bricklaying industry and awareness of vibrations. Similarly, there was a statistically significant ($p=0.05$) association between welding and hairdressing and awareness of welding fumes and electric shocks respectively in the workplaces. A significant statistical association ($p=0.05$) existed between all the categories and awareness of poor posture (Table 3).

Most of the self-reported health complaints included backaches (77.5%), headaches (66.4%) and cuts (34.2%). Hearing problems were the least reported (3.3%). Majority (84.6%) of the respondents engaged in self-medication following health complaints. About 74% of the respondents used local herbs for the health complaints while 70% visited the chemist.

Table 1: Socio-demographic characteristics of respondents

Variables	Frequency (120)	Percent (%)
Age (Years)		
<20	12	9.2
20–39	81	55.1
40–59	37	25.7
Sex		
Male	75	62.5
Female	45	37.5
Marital Status		
Single	33	27.5
Married	81	67.5
Divorced	2	1.7
Widowed	4	3.3
Educational level		
Primary	37	30.8
Secondary	72	60.0
Tertiary	11	9.2
Category of work		
Mechanic	41	31.2
Hairdressing	28	23.3
Bricklaying	23	19.1
Carpentry	22	18.3
Welding	14	11.7

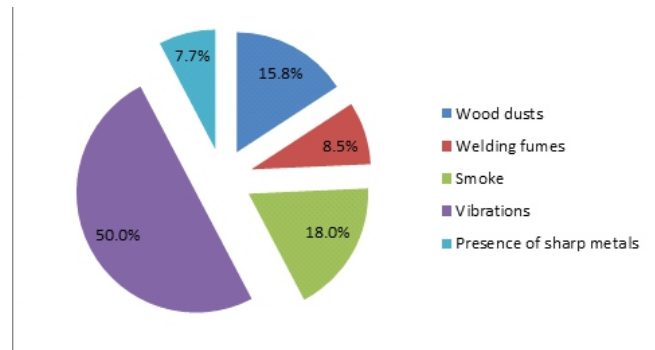


Figure 1: Distribution of workplace hazards during Observations

Table 2: Awareness of workplace hazards among respondents.

Variables	Frequency Yes (%)	No (%)	Total (%)
Physical hazards			
Noise	66(55.0)	54(45.0)	120(100.0)
Vibrations	46(36.3)	74(61.7)	120(100.0)
Burns	42(35.0)	78(65.0)	120(100.0)
Filthy environments	42(35.0)	78(65.0)	120(100.0)
Direct sunlight	58(48.3)	62(51.7)	120(100.0)
Chemical hazards			
Smoke	47(39.5)	73(60.5)	120(100.0)
Dust	57(47.7)	63(52.5)	120(100.0)
Welding fumes	7(6.6)	112(93.3)	120(100.0)
Ergonomic hazards			
Poor posture	94(78.3)	26(21.7)	120(100.0)
Psychosocial hazards			
Sexual abuse	118(98.3)	2(1.7)	120(100.0)
Stress	97(82.5)	21(17.5)	120(100.0)

Table 3: Association between category of SSIs and the awareness of workplace hazards

Category of hazards	Frequency			X ²	df	p-value
	Yes (%)	No (%)	Total (%)			
Noise						
Mechanic	21(51.2)	20(48.7)	41(100.0)	17.89	10	0.57
Hairdressing	11(39.3)	17(60.7)	28(100.0)			
Bricklaying	15(68.2)	7(31.8)	22(100.0)			
Carpentry	11(78.6)	3(21.4)	14(100.0)			
Welding	8(57.1)	6(42.9)	14(100.0)			
Vibrations						
Mechanic	9(22.0)	32(78.0)	41(100.0)	31.48	10	0.00*
Hairdressing	5(17.9)	23(82.1)	28(100.0)			
Bricklaying	13(40.6)	9(59.4)	22(100.0)			
Carpentry	12(85.7)	2(14.3)	14(100.0)			
Welding	6(46.2)	7(53.8)	13(100.0)			
Burns						
Mechanic	13(31.0)	29(69.0)	42(100.0)	9.07	10	0.52
Hairdressing	20(71.4)	8(28.6)	28(100.0)			
Bricklaying	10(45.5)	12(54.5)	22(100.0)			
Carpentry	6(42.9)	8(57.1)	14(100.0)			
Welding	6(42.9)	8(57.1)	14(100.0)			
Electric shocks						
Mechanic	6(14.6)	35(85.4)	41(100.0)	17.78	10	0.05*
Hairdressing	8(29.6)	19(70.4)	27(100.0)			
Bricklaying	2(9.1)	20(90.9)	22(100.0)			
Carpentry	2(9.1)	20(90.9)	22(100.0)			
Welding	6(42.9)	14(57.1)	20(100.0)			
Welding fumes						
Mechanic	1(2.4)	40(97.6)	41(100.0)	39.75	10	0.00*
Hairdressing	1(3.5)	27(96.4)	28(100.0)			
Bricklaying	2(9.1)	20(90.9)	22(100.0)			
Carpentry	2(14.3)	12(85.7)	14(100.0)			
Welding	5(35.7)	9(64.3)	14(100.0)			
Posture						
Mechanic	23(67.6)	11(32.4)	34(100.0)	8.65	10	0.05*
Hairdressing	24(85.7)	4(14.3)	28(100.0)			
Bricklaying	15(71.4)	6(28.6)	21(100.0)			
Carpentry	13(92.9)	1(7.1)	14(100.0)			
Welding	10(71.4)	4(28.6)	14(100.0)			

DISCUSSION

There was a higher male preponderance to female which was similar to a study conducted among workers in small and medium-scale manufacturing industries in Anambra State, Nigeria.[19] Only about 30% of the respondents had formal training of the job they were engaged in while about 60% learnt on the job. This was similar to the findings from a study conducted among small scale saw milling industries in Tamale Metropolis, Ghana, where the respondents had low levels of formal education but acquired their expertise through substantial years of work experience.[5]

About (68.1%) of the respondents were aware of the hazards inherent in their job which they learnt while on the job. This was similar to the findings of a study conducted among small scale industry workers in Dar es Salam, Tanzania where all groups of workers reported very high exposure to at least one hazard on the job.[7] However, several cross-sectional studies reported a higher level of awareness among respondents with poor safety practices in

the workplace.[14,20-22] Observation of the work environment in the current study showed a poor physical and chemical working environment - noise (20.8%), vibrations (20.2%) and dust (16.0%) which were the most common uncontrolled agents. This was similar to the findings of some studies among small scale industry employees who reported a high level of noise exposure.[5,13,19] Other harmful activities such as difficult postures are an important risk factor in the occurrence of a wide range of work-related musculoskeletal disorders in the working populations. In the current study, poor postures were the most common adverse working conditions. This was similar to the results of a study conducted in Iran that reported 82.7% of workers in small and medium enterprises working under poor ergonomics conditions.[23]

Safety practices in small scale industries have been reported to be sub-optimal. Personal Protective Equipment (PPE) have an important role in protecting workers from occupational injuries and diseases. In the current study, the use of PPE was poor among the SSI workers. This was

consistent with findings of a study conducted among small-scale garment enterprises in Gaborone, Botswana.[18]

Injuries and accidents are mostly caused by cutting or sharing blades and wood handling while amputations and blindness are typical of wood working accidents. The most self-reported health complaints in the current study were backaches (77.5%), headaches (55.4%) and cuts (34.2%). These results of the present study were at variance with those from an earlier work done in Anambra State which reported higher proportion of cuts and other injuries among the respondents.[19] The variance could be due to the higher sample size of their study.

Poor posture was associated with all the categories of small-scale industries, although more in carpentry (92.9%), hairdressing (85.7%) and welding (71.4%). These findings were similar to those found in a study conducted among garment workers in Gaborone, Botswana.[18]

Majority of the respondents(84.6%) undertook self-medication when they had health complaints. About 70% visited the chemist shops while about half of the respondents visited hospitals. Only 11.7% of the SSIs studied claimed to have a First Aid Box. The non-availability of First Aid Box could be related to the lack of formal training on health and safety. This was similar to the findings of a study conducted among garment manufacturing workers in India in which none of the industries had a First Aid Box.[24]Only 5% of the SSIs claimed to have a Fire Extinguisher. Hence, emergency preparedness was very poor in the small scale industries studied.

CONCLUSION

This study revealed that awareness of workplace hazards was optimal but the work environment, occupational health and safety conditions in all the small-scale industries surveyed were poor and unsafe. Regular sensitization seminars on Occupational Health and safety should be put in place. Furthermore, the provision of Occupational Health and Safety services for the SSIs should be integrated into the Primary Health Care services.

Limitations of the study

Non-registration of each SSI with the local government affected the non-availability of a sampling frame of the SSIs. However, the minimum sample size used was based on the respondents' availability and willingness to participate in the study.

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Statement of compelling interests

There is no compelling interest before and during the course of the study

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