OCCUPATIONAL HAZARD PERCEPTION AND SAFETY PRACTICES AMONG WORKERS OF SMALL-SCALE INDUSTRIES IN KANO, NIGERIA

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ABSTRACT

Background: Work-related injuries present a major public health problem resulting in serious social and economic consequences that could be prevented by adopting appropriate occupational health and safety measures.
Objective: This study assessed occupational hazard perception, safety practices and associated factors among workers of small scale industries in Kano.
Method: A descriptive cross-sectional design was used to study 187 randomly selected workers of Small Scale Industries. Data was collected using interviewer administered semi-structured questionnaire and analyzed with IBM SPSS Statistics for Windows, version 22.
Results: The mean age of the workers was 24.41 ± 6.20 years with a range of 15 to 52 years. A third of the workers (35.3%) had at least secondary school education and most (88.3%) had worked for 10 years or less. Overall, 95.7% of the workers have good perception about occupational hazards and safety and 92.0% believed that exposure to hazards of work may affect their health. Up to 67.9% of the respondents reported being caught-up in at least one form of occupational accident, most common were dislocation (39.4%) and burns (19.7%). Most of the workers (97.3%) reported that their industries do not have any policy on health and safety and 73.8% had never been trained or advised on safety procedures. Only 49(26.2%) reported having safety measure(s) against specific accidents in their workplaces.
Conclusion: Most SSIs in Kano do not have policy on health and safety. Factory inspectors should ensure effective compliance monitoring and enforcement of safety guidelines in these industries.

Keywords: Occupational Hazard, Perception, Safety Practices, Small-Scale Industries

INTRODUCTION

Virtually, no work is free from hazard but while many are obvious, others are insidious and manifest over time. However, as resources become scarcer from global economic meltdown, expanding population and rapid urbanization, people are becoming more desperate for any form of employment that will provide them subsistence, especially in the developing world where labour laws and policies for social protection are either deficient or non functional. These vulnerable populations often end up in unskilled jobs with varying degrees of risk at informal small and medium scale industries. It is this group of people that are at greater risk of work related injuries, chronic illness, stress, and disability or death because of low educational and literacy rates, unfamiliarity with work process and exposures, and inadequate training.[1]

Global estimates from the World Health Organization (WHO) and International Labour Organization (ILO) suggest that about 271 million people suffer work-related injuries and 2 million

die annually as a consequence of these injuries. Furthermore, the estimated economic loss caused by work-related injuries and disease was equivalent to 4 % of the world's gross national product.[2] The impact is 10 to 20 times higher in developing countries where the greatest concentration of the world's workforce is located.[3] Work-related injuries present a major public health problem resulting in serious social and economic consequences that could be prevented if appropriate occupational health and safety measures are taken.[4] However, only 5% to 10% of workforce in developing countries and 20% to 50% of workforce in developed countries have access to some kind of occupational health services.[1]

Awareness of potential hazards and proper use of safety measures by workers is an important way of preventing and/or reducing a variety of health hazards that they are exposed to at work. Therefore, it is necessary to anticipate, recognize, evaluate and control such hazards.[5,6] Empirical evidence from other parts of Nigeria and Africa showed that workers are unaware of the occupational hazards to which they are exposed.[7-9] This study assessed occupational hazard perception, safety practices and associated factors among workers of small scale industries in Kano. Findings from this study will be useful to policy makers, programme managers and researchers working on occupational health safety for packaging strategies for improving health and safety in the workplace.

MATERIALS AND METHOD

Study Area/ Setting

The study was carried out in Sharada Small-scale industrial layout in Kano metropolis. Kano state is located in north western Nigeria and is one of the oldest and largest states in the country. According to the 2006 National census, Kano had a population of 9,383,682 people and the metropolitan LGAs contributed 2,828,861 (30.1%) of this figure.[10] Kano state is the commercial hub of Northern Nigeria, with trading as well as both formal and informal small and medium scale enterprises as the major business ventures.

The Sharada small-scale industrial (SSIs) layout is essentially an estate provided by the state government to settle small scale entrepreneurs in the state. This has provided space for a hundred (100) registered small entrepreneurs engaged in plastic processing and/or recycling, food processing, oil milling, large scale electrification and maintenance of heavy electrical equipment, and cold room business among others. There are also scattered settlements of unregistered squatter entrepreneurs within and outside the estate that in addition to the common businesses also engage in metal works, woodworks and scavenging businesses. Although the industries are registered under the state ministry of commerce and industry, they are not provided technical or financial support, neither are they regulated by the government. Majority of the small industries/ businesses do not maintain permanent staff but employ familiar faces on monthly or daily basis.

Study design

A descriptive cross-sectional design was used for the study.

Study population/Inclusion criteria

This was comprised of both temporary and permanent workers employed in only the registered industries of Sharada SSIs.

Sample size determination

A sample of 187 workers was determined using an appropriate formula for estimating minimum sample size for descriptive studies [$n = z^2pq/d^2$],[11] based on a standard normal deviate (z) 1.96 at 95% confidence interval; margin of error (d) 0.05 and a 90% (0.90) prevalence of occupational injuries obtained from a past study.[12]

Sampling technique

A 3 - stage sampling technique was used for selection of the study subjects. At first stage a list of the 100 registered small scale industries were compiled and 25 (25%) were randomly selected by simple balloting. At the second stage, the lists of workers in each of the selected industries were used as the sampling frame and probability proportionate to size (PPS) based on the numbers of the workers in the industries was used to allocate the required numbers of the workers selected from each facility. Finally, the required numbers of samples were systematically selected using sampling intervals obtained by dividing the

number of workers in each facility by the required sample from that facility. This resulted in the selection of the 187 respondents.

Instrument description and method of data collection

An interviewer administered semi-structured questionnaire with mostly open ended questions was used for data collection. The questionnaire has 4 sections that elicited information on the respondents' bio-data, perception of hazards and safety in workplace, common occupational accidents and safety practices against these accidents.

Pre-testing of the questionnaire was done on twenty (20) workers in another area of small entrepreneurs in Kano. The questionnaires were administered by six trained Hausa speaking research assistants, and the interviews were conducted in the local language (Hausa).

Data management and analysis

Data was analyzed using IBM SPSS Statistics for Windows, version 22. Armonk, NY: IBM Corp. Quantitative variables were summarized using appropriate measures of location and variability, whereas categorical variables were presented as frequencies and percentages. Pearson's chi-square and Fisher's exact tests were used to test for significant association between categorical variables. Logistic regression was used to adjust for confounders and to determine predictors of the workers' perceptions about occupational hazards and safety. A p value 0.05 was considered significant. The criteria for inclusion of variable into the logistic regression model were 'apriori variable', variables significant on bi-variate analysis, and a set p 0.2 for variables that were not significant in bi-variate analysis.

Ethical considerations

Informed consent was obtained from prospective respondents before questionnaire administration. The consent form was in the local language (Hausa), and literate respondents indicated acceptance by signing the consent form while the non-literate ones affixed their thumbprints. Permission and ethical clearance for the study were obtained from the local branch of the Association of the small scale businesses in the estate and Institutional Review Board of Aminu Kano Teaching Hospital respectively. Data was collected in April/ May, 2015.

RESULTS

Socio-demographic characteristics of the workers

The mean age of the workers was 24.41 ± 6.20 years with a range of 15 to 52 years. About two-thirds (62.0%) were between 20 to 29 years of age. Most of them were males (97.9%) and Hausa/Fulani by tribe (94.1%), and two-thirds (61.5%) were single. Only about a third of the workers (35.3%) had at least secondary school level of education. Most of the respondent (88.3%) had worked for 10 years or less, the minimum and maximum monthly income were NGN9,000 and NGN250,000 respectively, and about half (50.8%) was earning less than NGN20,000 per month.

The workers' perception of hazards and safety in the workplace

The parameters used to assess the workers perception of occupational hazards and safety are as summarized in Table 2. Except for the believe that menial workers in small scale business should always wear personal protection equipments (PPEs) before engaging in work that was reported by half (51.3%) of the workers, most of them positively responded to the questions that were used to assess their perceptions. Specifically, 82.4% of the workers believed that health concern is an integral part of running an industry, and 92.0% believed that exposure to hazards of work may affect the health of the workers. Overall, 95.7% of the workers were assessed to have good perception about occupational hazards and safety as shown in Table 2. The workers' perceptions about occupational hazard and safety was significantly associated with their educational status (Fisher's exact p = 0.0006) and their previous experience of accident in the workplace (X^2=12.6, p = 0.0001). On the other hand, the respondents' ages (Fisher's exact p = 0.10), marital status (Fisher's exact p = 0.14), monthly income (Fisher's exact p = 0.17) or duration of work experience (Fisher's exact p = 0.64) were not found to be statistically associated with the workers' perceptions as shown in Table 3. On multivariate analysis using a model consisting of age as the 'apriori variable', educational status as the statistically significant variable on bi-variate

analysis, and marital status and monthly income (included based on a set p value 0.2), none of them was found to predict the workers perception of hazards and safety in the workplace (Table 3).

Common occupational accidents and safety practices of workers of small scale industries

One hundred and twenty seven respondents (67.9%) reported being caught-up in at least one form of occupational accident within the last one year. The most common accidents reported were dislocation (39.4%), chest infection (29.1%) and burns (19.7%) as shown in Table 4.

Most of the workers (97.3%) reported that the industries they worked in do not have any policy on health and safety. About three-quarters (73.8%) had never been trained or talked to on safety industrial procedures. Out of the 49 (26.2%) workers that reported having safety measure(s) against specific accidents in their workplaces, 31 (16.6%) reported having safety practices against eye injury/ infection, 32 (17.1%) against burns, and 48 (25.7%) against abrasion, cut or loss of body parts. Furthermore, all the workers that reported safety practices in their workplaces had specific practices laid down for the prevention of workers against chest injury/ infection.

Use of face mask was the most reported practice for the prevention of chest injury/ infection among the workers (84.7%) while the use of hand gloves was the most common safety practice against abrasion, cut or loss of body parts (70.8%). Furthermore, isolation of flammable substances (62.5%) and use of protective eye glasses (61.3%) were the most reported safety practices for the protection of workers against burns or eye injury/ infection respectively (Table 4).

Table 1: Socio-demographic characteristics

Characteristics	Frequency (n=187)	Percentage (%)
Age	39	20.8
10-19	117	62.6
20-29	23	12.2
30-39	7	3.7
40-49	1	0.5
50-59		
Marital status	68	36.4
Married	115	61.5
Single	1	0.5
Separated	2	1.1
Widow	1	0.5
Divorced		
Ethnicity	176	94.1
Hausa/ Fulani	9	4.8
Yoruba	2	1.1
Igbo		
Level of education	81	43.3
Qur'anic only	39	20.9
Primary	52	27.8
Secondary	14	8
Tertiary	1	0.5
No any form of education		
Type of work	24	12.8
Food processing and packaging	51	27.3
Material/plastic crushing and recycling	43	23
Oil milling	34	18.2
Cold room/ ice block making	35	18.7
Metal works/ Welding		
Monthly income(NGN)	95	50.8
<20,000	92	49.2
>20,000	NGN 26,010 ± 25,761	
Mean ± S.D		
Duration of work experience(years)	165	88.3
1-10	19	10.2
11-20	3	1.6
>20		

Table 2: Perception of workers on occupational hazards and safety

Workers' perception of occupational hazard and safety	**Frequency (n=187)**	**Percentage (%)**
Believed that exposure to hazard(s) in the workplace may have an effect on health of the workers	172	92.0
Opined that there is need for special precaution for menial workers engaged in small scale business	164	87.7
Believed that work is associated with hazard(s)	161	86.1
Believed that health concern is an integral part of running an industry	154	82.4
Believed that menial workers in small scale business should always use PPEs before engaging in work	96	51.3
Perception grade	179	95.7
Good	8	4.3
Wrong		

Table 3: Factors associated with workers' perception of occupational hazard

			Perception		Logistic regression	
Variables	**Good (n=179) Freq (%)**	**Wrong (n=8) Freq (%)**	**Statistical test (p value)**	**Crude OR (95%CI)**	**Z-test (p value)**	**Adjusted OR (95%CI)**
Age (Years)						
< 24	105(58.7)	7(87.5)	Fisher's	0.20 (0.02; 1.68)	1.09	4.57 (0.30; 70.43)
⩾24	74 (41.3)	1(12.5)	(0.10)		(0.28)	
Educational status						
At least Secondary	63(35.2)	3(37.5)	Fisher's	9.55(1.99; 45.80)	1.42	0.29 (0.05; 1.62)
No secondary education	116(64.8)	5(62.5)	(0.006)*		(0.16)	
Marital status						
Currently married	67(37.4)	1(12.5)	Fisher's	1.88 (1.24; 12.15)	0.06	1.09 (0.06; 18.53)
Not married	112(62.6)	7(87.5)	(0.14)		(0.95)	
Monthly income (NGN)						
< 18,000	79(44.1)	6(75.0)	Fisher's	0.26 (0.05; 1.32)	1.17	3.51 (0.43; 28.71)
⩾18,000	100(55.9)	2(25.0)	(0.08)		(0.24)	
Duration of working experience†						
1-10 years	158(88.3)	7(87.5)	Fisher's	1.07 (0.13; 9.17)	-	-
>10 years	21(11.7)	1(12.5)	(0.64)			
Previous experience of accident in the workplace††						
Yes	127(70.9)	0 (0.00)	Fisher's	-	-	-
No	52 (29.1)	8 (100.0)	(0.0001)*			

**Statistically significant*
†Not included in logistic regression (Passed the p>0.2 criteria)
††Not included in logistic regression (crude OR could not be calculated)

Table 4: Common occupational accidents and safety practices against specific hazards of the workplace

Common occupational accidents	**Frequency (n=127)**	**%**
Chest infection	37	29.1
Cut/loss of body part	1	0.8
Head injury	3	2.4
Fracture	11	8.7
Burns	25	19.7
Dislocation	50	39.4
Safety practices against abrasion, cut or loss of body parts	**(n = 48)**	
Hand gloves	34	70.8
Hanging or pasting warning signs in dangerous places	3	6.8
Use of protective clothing/apron	5	10.4
Safety slogan and notices on hazards associated with work	3	6.8
Safety practices against fall from height	**(n=7)**	
Use of body belt	2	28.6
Resting a ladder against a hard wall	4	57.1
Loading a ladder with minimum weight	1	14.3
Safety practices against burns	**(n=32)**	
Isolation of flammable substances	20	62.5
Use of fire alarm in buildings	1	3.1
Keeping fire extinguisher in strategic places	3	9.4
Providing escape route(s) in buildings	1	3.1
Environmental sanitation	7	21.9
Safety practices against chest injury/ infection	**(n=49)**	
Periodic medical examination of employees	2	4.1
Use of face mask	41	83.7
Avoiding cigarette smoking	2	4.1
Isolating sick employees	2	4.1
Sanitation and personal hygiene	3	6.1
Safety practices against eye injury/ infection	**(n=31)**	
Visual examination	5	16.1
Use of safety glasses	19	61.3
Face shield	7	22.6

DISCUSSION

Hazards of small scale workplaces are diverse. While some are obvious as in jobs involved with cutting, crushing, grinding, lifting or climbing, others are not easily noticed and silently cause damage to the body as in lead poisoning from local paint making, rubber or battery works among others. Thus, the protection of workers by promoting a 'safety climate' at work is key to the success of occupational health. Safety climate refers to the perceptions and expectations that workers have regarding safety in their organizations.[13,14] It denotes the shared perceptions about safety principles, values, norms, beliefs, and practices of workers in their work environments.[15] When workers are aware of the health risks in their places of work, they can address health and safety concerns and follow safe work practices.

This study observed that more than three-quarters of the workers had perceived health as an integral part of running an industry (82.4%), and 86.1% appreciate that the work they do is associated with a number of hazards which if exposed to may have effect on their health (92.0%). Overall 95.7% of the workers studied were assessed to have good perception of health hazards and safety. This proportion was higher than the 77.9% awareness of workplace hazards among welders reported by Sabitu et al,[16] from Nigeria but at par with the 90.7% reported by Budhathoki and colleagues from eastern Nepal.[6]

Probst and Brubaker assert that workers that report high perceptions of job insecurity tend to exhibit decreased safety motivation and compliance with safety procedures, and workers who express more anxiety and stress in the workplace also tend to take fewer precautions and get involved in more injuries and accidents.[17] The scenario observed in this study suggest that workers of SSI in Kano had good perception and are expectedly positively motivated towards safety. However, despite their good perception, 67.9% of the workers reported being caught up in an accident in the workplace in the preceding year, although the prevalence is lower than the 85.3% reported among welders from a neighboring state in northern Nigeria.[16]

The most common accidents observed in this study were dislocation, chest infection and burns, while cut, sprain and fracture were reported from a similar study among small scale saw millers in Ghana.[18] Lack of protective equipment and/or laid safety procedures are perhaps common explanations for the high prevalence of occupational accidents. This is corroborated by the observation that only a quarter (26.2%) of the 187 workers assessed believed that their employers were concerned about their safety against specific accidents in their workplaces. Furthermore, most of the workers (97.3%) reported that the industries where they worked do not have any policy on health and safety, and up to 73.8% claimed that they had never been trained or talked to on any safety industrial procedure. Similar study from the wood-working industry in Zimbabwe reported that occupational health, safety and hygiene are not perceived as an urgent priority as there is not much attention given to the safety of processing machines, equipments, tools as well as their link to health requirements.[19] The study from Ghana however, contrarily reported that non-use of PPE were the number one cause of injury among their participants, followed by over confidence/ negligence, although it also showed that 95% of the respondents had no training on occupational health and safety.[18] Other workers pointed out in addition that poor economic condition may have played a major role in the availability and affordability of PPEs in the workplaces where they are most needed.[16]

CONCLUSION AND RECOMMENDATIONS

Exposure to occupational hazard is common and most small scale industries have no policy on health and safety. Factory inspectors should ensure effective compliance monitoring and enforcement of safety guidelines in these industries. It is hope that such measures will reduce fatal and non-fatal accident rates among workers of small scale industries, and contribute to the universal health coverage in Nigeria and the world over.

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