

OCCUPATIONAL HAZARD AWARENESS AND SAFETY PRACTICES AMONG NIGERIAN SAWMILL WORKERS

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ABSTRACT

Background: There is high prevalence of occupational injuries among blue-collar workers in the construction and other industry sectors whose jobs require high level risk in physical tasks.

Aims & Objectives: The objective of this study was to assess the awareness of occupational hazards and safety practices among Nigerian sawmill workers.

Materials and Methods: This cross-sectional survey recruited 94 sawmill workers comprising machine operators, planks pushers/carriers and planks vendors at Ile-Ife, Nigeria. A structured questionnaire developed from related studies was used as the survey instrument. Data were analyzed using descriptive statistics.

Results: The mean age and the number of years at saw mill were 38.28±11.67 and 7.66±6.55 years respectively. More than half of the respondents were aware of occupational hazards. Sawmill dust (95.7%), noise pollution (81.8%) and crush injury from machine (75.5%) were the most implicated risks to health hazards. Occasional hazards were largely difficulty with breathing (56.4%) and hearing (35.1%). Occasional and constant back pain was reported by 45.7% and 38.3% of the respondents respectively. 59.7% of the respondents agreed that safety devices were necessary for safety at workplace. Face masks (78.7%), protective goggle (40.4%) and hand gloves (18.1%) were implicated as necessary devices. Only 34.0% of the respondents use face mask regularly as a safety device. However, 72.3% to 79.8% of the respondents never utilized safety devices.

Conclusion: There was high level of awareness but incorrect conceptualizations of occupational hazards among Nigerian sawmill workers. The workers were exposed to various occupational injuries but showed poor compliance with safety devices utilization.

Key Words: Saw Mill; Workers; Labourer; Occupational Hazard; Safety Practices

Introduction

Work is essential to people's lives and it is a sine qua non to the survival of the family and society. Workplace environmental hazards or occupational hazards are a globally major cause of disability and mortality among working population.^[1,2] The World Health Organization (WHO) places occupational risks as the 10th leading cause of morbidity and mortality.^[3] Also, WHO (1994) estimated the burden of diseases from selected occupational risk factors to be approximately 1.5% of the global burden in terms of Disability-Adjusted Life Years (DALYs).^[4] Furthermore, the WHO (1997) reported that approximately 75% of current global labor force is in the developing countries, and about 50- 70% of these population may be exposed to a heavy physical workload or poor working conditions, involving much lifting and moving of heavy items, or repetitive manual tasks.^[1]

Several studies have investigated the burden of occupational injuries among various occupational groups ranging from white collar professionals to blue collar workers.^[5-7] Most studies reported higher prevalence of

occupational injuries among blue-collar workers in the construction and industry sectors, whose jobs require high level of physical tasks.^[5-8] These blue collar occupation groups have been described to include laborers, machinery operators and drivers, technicians and trades workers.^[9]

The job demands of some of the industries have been reported to be hazardous to the health and safety of workers.^[10-14] Although, some industries have evolved high-tech approaches to minimize workers exposure to heavy physical workloads, empirical evidence still shows that sawmill workers in the developing countries still seem to be at high risk of developing occupational hazards.^[4,15,16] A catalogue of hazards and injuries resulting from sawmill works is diverse and includes exposure to noxious or toxic substances, dust, noise pollution, being trapped in or struck by machinery falling from a height, heavy lifting or repetitive movements among others.^[16-18] With an increase in advocacy on the right to health and safety at work as part of basic human rights, education on preventive activities is warranted. Unfortunately, some previous studies among industry

workers in Nigeria reported lack of safety education training programs, protective measures or accident prevention for workers.^[10,19] The objective of this study was to assess the awareness of occupational hazards and safety practices among Nigerian sawmill workers.

Materials and Methods

This cross-sectional survey recruited saw-mill workers at Opa, Ile-Ife, Nigeria. Ile-Ife has a large expanse of forest reserve with thriving timber business and consequently, there are many sawmill industries. Opa saw-mill was purposively selected for survey as it is one of the top sawmills in Ile-Ife with a sizeable number of workers. The sampled workers comprised of machine operators, planks pushers/carriers and planks vendors. 70% of the total number of workers (n=100) in the sawmill was considered as the minimum sample to be recruited. A structured questionnaire, developed from previous studies on awareness of occupational hazard and the utilization of safety measures among the sawmill workers^[13] was used as the survey instrument. The questionnaire was subjected to expert review. The test-retest reliability of the questionnaire was confirmed in a pilot study. Permission to conduct this study was obtained from the director of the sawmill and the executives of the sawmill workers association respectively. Informed consent of the workers was sought for participation in the study.

Data Analysis

Data collected were analyzed using descriptive statistics of mean, standard deviation, frequency and percentages. The data analyses were carried out using SPSS 15.0 version software (SPSS Inc., Chicago, Illinois, USA).

Results

A total of 94 respondents participated in the study yielding a response rate of 94.0%. The socio-demographic characteristics of the respondents are presented in table 1. The mean age and the number of years at saw mill work was 38.28 ± 11.67 and 7.66 ± 6.55 years respectively. A majority of the respondents were married (67%) and were predominantly males (64.9%). About half of the respondents (41.5%) were machine operators. Only 43.6% of the respondents had formal training for the job. Awareness of respondents about occupational hazards was as presented in the table 2. More than half (58.5%) of the respondents were aware of occupational hazards.

Table-1: Socio-demographic and work characteristics of the respondents (N=94)

Characteristics		N	%
Marital Status	Married	63	67.0
	Single	27	28.7
	Divorced	2	2.1
	Separated	2	2.1
Religion	Christianity	61	64.9
	Muslim	31	33.0
	Traditional	2	2.1
Ethnicity	Yoruba	81	86.2
	Igbo	13	13.8
Sex	Male	61	64.9
	Female	33	35.1
Educational Qualification	No formal education	2	2.1
	Primary	21	22.3
	Secondary	49	52.1
	Tertiary	22	23.4
Job Specification	Machine operator	39	41.5
	Wood pusher/carrier	33	35.1
	Wood trader	22	23.4
Formal training for the job	Yes	41	43.6
	No	53	56.4
Age	Mean	38.28	
	Std. Deviation	11.67	
Year of experience on the job	Mean	7.66	
	Std. Deviation	6.55	

Table-2: Awareness of respondents of occupational hazards (N=94)

Awareness	Variable	N	%
Occupational Hazard Awareness	Yes	55	58.5
	No	33	35.1
Source of Information	Don't know	6	6.4
	Seminar	21	22.3
	Employer	7	7.4
	Friends/colleague	17	18.1
	Mass media	7	7.4
Conceptualization of Occupational Hazard	Family/relatives	4	4.3
	Not applicable	38	40.4
	Correct	43	45.7
	Incorrect	51	54.3

Table-3: Respondent's response about risks associated with their job

Risk	Yes	No	Unsure
Dust	90 (95.7)	0 (0.0)	4 (4.3)
Heat	39 (41.5)	40 (42.6)	15 (16.0)
Noise	77 (81.9)	10 (10.6)	7 (7.4)
Fungi/moulds infection	34 (36.2)	31 (33.0)	29 (30.9)
Crush injury from machine	71 (75.5)	17 (18.1)	6 (6.4)
Chemical accident	27 (28.7)	45 (47.9)	22 (23.4)
Fall	71 (75.5)	15 (16.0)	8 (8.5)

Percentages are presented in the parenthesis.

Information regarding occupational hazards was obtained from seminars (22.3%). Respondents' perception on risks associated with their job was as presented in table 3. A majority of the respondents (95.7%) agreed that dust from saw mill constitutes a risk to their hazard. Other implicated risks associated with sawmill industry included noise pollution (81.8%) and crush injury from machine (75.5%). Table 4 shows the frequency distribution of work-related hazards suffered by the respondents. Difficulty in breathing was reported as an occasional hazard by 56.4% of the respondents

while 35.1% reported occasional difficulty in hearing. 61.7% of the respondents reported a positive history of occasional minor accident on the job, while 42.6% had work-related crush injury. Occasional and constant back pain was reported by 45.7% and 38.3% of the respondents respectively.

Table-4: Frequency distribution of work-related hazards

Hazard	Always	Occasionally	Rarely	Seldom	Not Applicable
Difficulties in Breathing	16 (17.0)	53 (56.4)	15 (16.0)	9 (9.6)	1 (1.1)
Difficulties in Hearing	6 (6.4)	33 (35.1)	30 (31.9)	23 (24.5)	2 (2.1)
Ear irritation	9 (9.6)	7 (7.4)	37 (39.4)	36 (38.3)	5 (5.3)
Eye irritation	17 (18.1)	13 (13.8)	31 (33.0)	28 (29.8)	5 (5.3)
Skin irritation	8 (8.5)	11 (11.7)	20 (21.3)	40 (42.6)	15 (16.0)
Minor accident	16 (17.0)	58 (61.7)	5 (5.3)	12 (12.8)	3 (3.2)
Major accident	3 (3.2)	11 (11.7)	20 (21.3)	50 (53.2)	10 (10.6)
Stress and Exhaustion	17 (18.1)	27 (28.7)	12 (12.8)	33 (35.1)	5 (5.3)
Crush injury	7 (7.4)	19 (20.2)	21 (22.3)	40 (42.6)	7 (7.4)
Electrocution	1 (1.1)	5 (5.3)	17 (18.1)	64 (68.1)	7 (7.4)
Back pain	36 (38.3)	43 (45.7)	3 (3.2)	9 (9.6)	3 (3.2)
Fatigue	34 (36.2)	35 (37.2)	4 (4.3)	16 (17.0)	5 (5.3)

Percentages are presented in the parenthesis.

Table-5: Respondents' awareness of utilization of safety measure

Awareness	N		%	
	Yes	No	Yes	No
Safety measure should be of necessity	56	15	59.6	16.0
	23	24.5		
	No idea	23	24.5	
Safety devices needed for the job	Face mask	74	78.7	
	Apron	5	5.3	
	Boot	9	9.6	
	Hand glove	17	18.1	
	Ear plug	6	6.4	
	Helmet	7	7.4	
	Mouth gad	1	1.1	
	Lifter	2	2.1	
	Goggle	38	40.4	
	Scarf	1	1.1	

Table-6: Distribution of use safety device among the respondents

Safety Device	Regularly	Occasionally	Rarely	Never	No Response
Face mask	32 (34.0)	35 (37.2)	7 (7.4)	18 (19.1)	2 (2.1)
Hand glove	4 (4.3)	6 (6.4)	9 (9.6)	68 (72.3)	7 (7.4)
Apron	4 (4.3)	2 (2.1)	8 (8.5)	74 (78.7)	6 (6.4)
Ear muffler	0 (0.0)	6 (6.4)	6 (6.4)	75 (79.8)	7 (7.4)
Lifter	4 (4.3)	2 (2.1)	9 (9.6)	71 (75.5)	8 (8.5)
Boot	3 (3.2)	7 (7.4)	7 (7.4)	70 (74.5)	7 (7.4)
Helmet	4 (4.3)	2 (2.1)	8 (8.5)	72 (76.6)	8 (8.5)
Goggle	14 (14.9)	21 (22.3)	8 (8.5)	48 (51.1)	3 (3.2)

Percentages are presented in the parenthesis.

Table-7: Reasons for non-utilization of safety devices among the respondents

Safety	Not Necessary	Not Convenient	Often Forget	Not Available	Not Applicable
Face mask	17 (18.1)	7 (7.4)	9 (9.6)	10 (10.6)	51 (54.3)
Hand glove	53 (56.4)	12 (12.8)	7 (7.4)	18 (19.1)	4 (4.3)
Apron	55 (58.5)	8 (8.5)	13 (13.8)	15 (16.0)	3 (3.2)
Ear muffler	46 (48.9)	5 (5.3)	5 (5.3)	35 (37.2)	3 (3.2)
Lifter	46 (48.9)	5 (5.3)	4 (4.3)	35 (37.2)	4 (4.3)
Boot	54 (57.4)	10 (10.6)	7 (7.4)	20 (21.3)	3 (3.2)
Helmet	56 (59.6)	5 (5.3)	8 (8.5)	21 (22.3)	4 (4.3)
Goggle	48 (51.1)	12 (12.8)	11 (11.7)	11 (11.7)	12 (12.8)

Percentages are presented in the parenthesis.

Table 5 shows respondents' awareness of utilization of safety measure. More than half (59.7%) of the respondents agreed that safety devices were necessary for safety at workplace. Face masks (78.7%), protective goggles (40.4%), hand gloves (18.1%), boots (9.6%) were implicated as necessary devices. Table 6 shows the frequency distribution of use safety device among the respondents. Only 34.0% of the respondents used face mask regularly as a safety device. Most of the respondents never utilized hand gloves (72.3%), aprons (78.7%), ear mufflers (79.8%) and lifters (75.5%) respectively. Reasons for non-utilization of safety devices among the respondents are shown in table 7. 56.4% of the respondents believed that the use of hand gloves were not necessary, while 12.8% of the respondents felt it was not convenient. 58.5% believed the use of aprons was not necessary, while 13.8% often forgot to use it. Also, a significant association was found between respondents' level of education and awareness of occupational hazard ($\chi^2= 20.480$; $p = 0.002$).

Discussion

This study assessed awareness of occupational hazards and safety practices among sawmill workers in Nigeria. The respondents were predominantly young (38.28 ± 11.67 years) male adults with about 10 years of workplace experience. More than 40% of the respondents in this study were male machine operators. Other studies have shown a high predominance of male workers in the sawmill industry.^[16,18,20] This may be attributed to the high level of physical manual labor required in operating heavy machines and moving timbers in the sawmill industry. The work specifications at Nigeria's sawmills often include machine operators, timber wheeler, plank lifters, plank carriers and plank vendors. The female population in this study was largely plank vendors and carriers.

From this study, a majority of the respondents had an awareness (58.5%) of occupational hazard. However, incorrect concept of occupational hazard as shown by more than 50% of the respondents can be attributed to the high rate of lack of post primary education and low rate of formal training for sawmill work among the respondents. A majority of the respondents admitted that dust, noise pollution and crush injury from saw mill were risks associated with sawmill industry. These finding are in line with empirical reports that workers in sawmills and other lumber industries have a high risk of occupational injuries resulting from a high risk of wood-

dust exposure, high noise levels, serious injuries resulting from being struck by mobile equipment, respiratory hazards and risk of cancers.^[21-23]

The result on the pattern of occupational injuries among the respondents in this study revealed that difficulty in breathing, hearing and occasional minor accidents was reported by 56.4%, 35.1% and 61.7% of the respondents respectively. 42.6% of the respondents had work-related crush injury while occasional and constant back pain was reported by 45.7% and 38.3% of the respondents respectively. The outcome of this study revealed that a majority of the respondents had minor accident in the course of their work. This finding is consistent with previous reports that show that workers in sawmill industries environment have high risk exposure to occupational hazards.^[13,18,24] The result of this study also revealed the respondents' awareness of utilization of safety measure. The respondents agreed that face masks, protective goggle, hand gloves and boots were safety devices necessary for safety at workplace. However, face mask was sparsely used by the respondents. Furthermore, the rate of non-use of hand gloves, aprons, ear mufflers and lifters ranged from 72.3% - 79.8% among the respondents. The non-use of safety devices among the sawmill workers was largely due to forgetfulness or believes that they were not convenient or necessary. In line with this study, previous findings have found poor compliance and lack of regularity in utilization of safety measures among different categories of blue collar workers, especially in the developing countries owing to lack of firm policies on occupational health and safety.^[13,18,24] The observed failure on compliance with safety devices' utilization among sawmill workers in this study revealed an important area for occupation and safety intervention and advocates for a policy that would facilitate periodic monitoring and supervision of both small scale and large scale industries regarding compliance with occupation health and hygiene.

Conclusion

There is high level of awareness but incorrect conceptualizations of occupational hazards among Nigerian sawmill workers. The sawmill workers were exposed to various occupational injuries and hazards but showed poor compliance with safety devices utilization.

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