

Awareness of Occupational Hazards and Safety and Health Practices Among Wood Artisans in Imo State

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Abstract

Background

Wood occupation is a gainful job, and has contributed immensely to socioeconomic development of many developed and developing countries of the world, including Nigeria. However, activities involved in wood processing often expose artisans to various occupational hazards.

Objective: This study is aimed at assessing awareness of occupational hazards, safety and health practices among wood artisans in Imo State, Nigeria.

Methodology: A descriptive cross-sectional design was adopted for the study. Two hundred and sixteen (216) wood artisans (saw millers, wood carvers and carpenters), who consented and met inclusion criteria participated in the study. Their selection was via multi-stage random sampling technique comprising 30% of wood artisans from selected local government areas and communities in the three senatorial zones of Imo State. A semi-structured interviewer administered questionnaire and workplace environment air quality tools were employed to collect data from respondents aged 20 years and above, who have lived for not less than two years in Imo State, and had been actively involved in artisanal activities, with all ethical requirements obtained. The study lasted for a period of six months (October 2022 to April 2023). Data obtained was analyzed with SPSS version 23 and presented in tables using descriptive statistics for preliminary analysis while Chi square test, *t* - test and logistic regression were other analytical methods utilized.

Results: The result obtained showed that wood occupation is male dominated (92.6%), with majority being married (72.2%), aged between 30-39 years (29.6% + 29.2%), and have secondary education (56.9%). Greater proportion of them have worked for 8 years and above (35.6%), with work schedule of 8 - 10 hours daily (89.8%) and income of above ₦4,000 daily (36.6%). Occupational hazards detected included physical - (wood particles (96.3%), noise (71.8%), heat (61.1%), vibration (43.5%), fire (40.7%) and electric fault (34.3%); chemical - (wood dust (91.7%), organic fumes (63.9%), smoke (24.1%); biological - (insect bite (58.5%); ergonomic - (manual lifting of heavy objects (60.2%), awkward posture (63.3%), repetitive work (54.2%), fixed posture (53.7%) and psycho-social - (stress (60.2%) & fatigue (58.8%). Other hazard included environment air pollution which was found to be far above the permissible limits - (Pm_{2.5} (35.5 mg/m³), Pm_{1.0} (78.33 mg/m³), PM₁₀ (75.00 mg/m³), NO (6.533 ppm), CO (21.0 mg/m³), CO₂ (66.17 mg/m³), and SO (15.50 mg/m³). Awareness towards hazards was quite high (93.8%), but safety and health practices were quite poor. Only few respondents attended medical checks (35; 16.2%), had safety training (56; 25.9%) and use of appropriate personal protective equipment (54; 25.0%). Their personal hygiene and sanitation practices were also found to be poor (89; 41.2%).

Conclusion: Wood artisans constitute substantial proportion of labour force in Imo State, Nigeria, but they are particularly vulnerable to hazard exposures due to their non-compliance to safety and health practices/habits. Increased sensitization, safety training and education towards occupational hazards and their protection as well as provision of functional occupational safety and health services are therefore recommended for these economically viable group of workers in Imo State.

Keywords: Wood Artisans, Occupational Hazards, Workplace Air Quality, Safety & Health Practices, Imo State.

Introduction

Wood occupation is a gainful job, and has contributed immensely to socioeconomic development of many developed and developing countries of the world, including Nigeria. Great number of craftsmen, workmen and tradesmen are directly employed in wood industries where timbers are processed and converted to wood products, partly or completely with hands. However, activities involved in this occupation often expose artisans to numerous hazards, which affect their health, even years after retirement.

Occupational hazards often emanate from work materials, substances, processes or conditions of work (Canadian Center of Occupational Health and Safety, 2020). They contribute to global disease burden and economic loss of about 4 – 6% Gross Domestic Product for most countries of the world [19,1]. But these factors of work can either be minimized or prevented when workers are aware of them and if appropriate safety and health measures are adhered to by workers [2].

Hazards of physical, chemical, psycho-social, ergonomic and organizational factors are common with artisans especially in low and middle-income countries of the world including Nigeria and have greatly affected the well-being of workers¹⁸. In Nigeria, wood artisans form the substantial proportion of the labour force, but there is little or no occupational services involving regulatory enforcement for occupational health and safety standard for them¹¹. Interaction between work hazards and negligence of safety and health practices often increase their vulnerability to occupational morbidity and mortality^{20,24}. Occupational health and safety (OHS) issues have not been accorded the necessary and adequate attention by workers, safety professionals and the government. Although Nigeria signed the 1981 ILO's Geneva

Convention on occupational safety and health (OSH), but it is still struggling with the implementation and enforcement of OSH policies and regulations.

Most wood activities have failed to meet decent work criteria as evident in the way artisans in these enterprises earn their livelihood under hazardous environment and outright neglect of safety and health standard. Like other low and middle-income countries of the world, there is lack of occupational safety and health regulation and enforcement in Nigeria [3]. Findings of several studies among wood artisans in Nigeria and other Sub-Saharan African countries, have implicated poor awareness towards hazards and knowledge of interactions between work and health among the causes of negligence towards safety and health practices. Reports showed that majority of artisans never had training on occupational safety, and were either unaware, or become aware of their work-related hazards after experiencing some health issues associated with them [4-6]. study among sawmill workers in Nakuru County, Kenya, has it that most (80%) of the wood respondents had no occupational health and safety training. in Nigeria, all pointed towards low compliance towards safety and health standards among artisans [7,8]. Some of these studies, revealed poor usage of personal protective equipment (PPE) as being instrumental to self - reported health problems among artisans. This has led to increased lost-work days and low productivity among these workers [3].

There is therefore need for functional occupational health and safety services that will involve proper safety training and health education on occupational hazards, appropriate use of personal protective devices in order to to promote sustainable development goals 8 and 3 of decent work and economic growth, well-being promotion and good health to all.

Results

Table 1: Socio-Demographic Characteristics of Wood Respondents

Socio-Demographics	Wood Artisans Freq	Percentage (%)
Age		
20 – 29	33	15.3
30 – 39	64	29.6
40 – 49	48	22.2
50 – 59	63	29.2
60 +	8	3.7
Total	216	100.0
Gender		
Male	200	92.6
Female	16	7.4
Total	216	100.0
Marital Status		

Married	156	72.2
Single	48	22.2
Others	12	5.6
Total	216	100.0
Educational Level		
Primary	51	23.6
Secondary	123	56.9
Tertiary	14	6.5
Non-formal	28	13.0
Total	216	100.0
Daily Income (#)		
< 2,000	13	6.0
2,000 - 3,000	44	20.4
4,000 - 5,000	79	36.6
Above 5,000	80	37.0
Total	216	100.0
Work Duration		
2 - 4 years	27	12.5
5 - 7 years	51	23.6
8 - 10 years	77	35.6
Above 10 years	61	28.2
Total	216	100.0
Work Schedule		
2 - 4 hours	8	3.7
5 - 6 hours	14	6.5
8 - 10 hours	194	89.8
Total	216	100.0

Table 2: Physical Hazard Exposures Among Respondents

Physical Hazard Exposures	Frequency (N)	Percentage (%)
Do you encounter the following physical hazards in your workplace?		
Noise		
Yes	155	71.8
No	61	28.2
Total	216	100.0
Heat		
Yes	132	61.1
No	84	38.9
Total	216	100.0
Wood particles		
Yes	208	96.3
No	8	3.7
Total	216	100.0
Vibration		
Yes	94	43.5
No	122	56.5
Total	216	100.0
Fire		
Yes	88	40.7

No	128	59.3
Total	216	100.0

Table 3: Chemical Hazard Exposures Among Respondents

Chemical Hazard Exposure	Frequency (N)	Percentage (%)
Do you encounter the following chemical hazards in your workplace?		
Wood dust		
Yes	198	91.7
No	18	8.3
Total	216	100.0
Organic fumes		
Yes	138	63.9
No	78	36.1
Total	216	100.0
Smoke		
Yes	52	24.1
No	164	75.9
Total	216	100.0

Table 4: Ergonomic Hazards Exposures Among Respondents

Ergonomic Hazard Exposures	Frequency (N)	Percentage (%)
Do you encounter the following ergonomic hazards in your workplace?		
Repetitive work		
Yes	117	54.2
No	99	45.8
Total	216	100.0
Fixed posture		
Yes	116	53.7
No	100	46.3
Total	216	100.0
Awkward posture		
Yes	128	59.3
No	88	40.7
Total	216	100.0
Manual lifting of Objects		
Yes	130	60.2
No	86	39.8
Total	216	100.0

Table 5: Biological Hazard Exposures Among Respondents

Biological Hazard Exposures	Frequency (N)	Percentage (%)
Do you encounter the following biological hazards in your workplace?		
Insect Bite		
Yes	132	61.1
No	84	38.9
Total	216	100.0
Snake Bite		
Yes	9	4.2

No	207	95.8
Total	216	100.0

Table 6: Psycho-social Hazard Exposures Among Respondents

Psycho-social Hazard Exposures	Frequency (N)	Percentage (%)
Do you encounter the following psycho-social hazards in your workplace?		
Stress		
Yes	130	60.2
No	86	39.8
Total	216	100.0
Fatigue		
Yes	127	58.8
No	89	41.2
Total	216	100.0
Exhaustion		
Yes	38	17.6
No	178	82.4
Total	216	100.0

Table 7: Workplace Environment Air Quality Among Wood Respondents

Parameter	NOISE (db)	PM2.5	PM1.0	PM10	NO	CO	CO2	SO
Permissible Limit	85	25 mg/m3	50 mg/m3	50 mg/m3	5ppm	10 mg/m3	50mg/m3	5ppm
Mean	104.00	35.5	78.33	75.00	15.40	21.0	66.17	15.50
St.dev	12.52	13.00	8.525	20.21	4.96	4.60	8.91	3.987
t- test	10.759	17.047	8.142	3.029	5.140	5.852	4.445	6.450
P-value	0.0001	0.0001	0.0001	0.029	0.004	0.002	0.007	0.001

Table 8: Awareness Towards Hazards and Their Sources Among Respondents

Awareness of Hazards & Sources	Frequency (N)	Percentage (%)
Are you aware that you are exposed to various hazard(s) in your work place?		
Yes	199	92.1
No	17	7.9
Total	216	100.0
What is your source of awareness?		
Work safety books		
Yes	30	15.1
No	186	84.9
Total	216	100.0
Radio/ TV media		
Yes	32	16.1
No	184	83.9
Total	216	100.0
Colleagues/friends		
Yes	35	17.6
No	181	82.4
Total	216	100.0
Social media		
Yes	28	14.1

No	188	85.9
Total	216	100.0
Personal experience		
Yes	142	62.8
No	74	37.2
Total	216	100.0

Table 9: Adherence Towards Safety Practices Among Respondents

Adherence Towards Safety Practices	Artisans (n=216) Freq	Percentage (%)
Attending Medical check up		
Monthly	0	0
Bimonthly	6	2.8
Quarterly	10	4.6
Yearly	19	8.8
Not at all	181	83.8
Total	216	100.0
Safety & Health Training		
Yes	56	25.9
No	160	74.1
Total	216	100.0
Usage of PPE		
Yes	83	38.4
No	133	61.6
Total	216	100.0
Frequency of Usage of PPE		
Everytime	14	16.9
sometimes	30	36.1
Once in a while	19	22.9
Rarely	20	24.1
Total	83	100.0

Table 10: Personal Hygiene Practices/Habits Among Respondents

Personal Hygiene Practices/Habits	Wood Artisans (n=216) Freq	%
Do you have separate accommodation apart from the workshop?		
Yes	190	88.0
No	26	12.0
Total	216	100.0
Do you brush your teeth daily?		
Yes	100	46.3
No	116	53.7
Total	216	100.0
How often do you bath after work?		
Every time	87	40.3
Sometimes	111	51.4
Once in a while	11	5.1
Rarely	7	3.2
Never	0	0.0
Total	216	100.0

How often do you wash hands before eating at work?		
Every time	69	31.9
Sometimes	119	55.1
Once in a while	23	10.6
Rarely	5	2.3
Never	0	0.0
Total	216	100.0
Do you wash hands with chemical substances at work?		
Yes	162	75.0
No	54	25.0
Total	216	100.0
Do you treat wound with chemical substances at work?		
Yes	150	69.4
No	66	30.6
Total	216	100.0

Table 11: Refuse Collection & Disposal Practices Among Respondents

Refuse Collection & Disposal Practices	Wood Artisans (n=216) Freq	%
How do you collect refuse in your workplace?		
Any Container	110	50.9
Without container	64	29.6
Wheel barrows	8	3.7
Bin bags	34	15.7
Total	216	100.0
Are trash bins available in your workplace?		
Yes	20	9.3
No	196	90.7
Total	216	100.0
How do you dispose refuse in your workplace?		
Open dumping	44	20.4
Incineration (burning)	154	71.3
Dumping in the river	8	3.7
Dumping anywhere	10	4.6
Total	216	100.0
How often do you remove refuse generated in your workplace?		
Daily	66	30.6
Weekly	60	27.8
Forth nightly	60	27.8
Every three weeks	0	0.0
Monthly	30	13.9
Total	216	100.0

Table 12: Sanitation Practices Among Respondents

Sanitation Practices	Wood Artisans (n=216) Freq	%
Do you have hand washing facility in your workplace?		
Yes	0	0.0
No	216	100.0
Do you have urinal facility in your workplace?		

Yes	20	9.3
No	196	90.7
Tota	216	100.0
Do you have water supply in your workplace?		
Yes	216	100.0
No	0	0.0
Total	216	100.0
What is the source of your water supply in your workplace?		
Tap water	0	0.0
Tanks	52	24.1
Borehole	164	75.9
Total	216	100.0
Do you have access to toilet facility in your work place?		
Yes	89	41.2
No	127	58.8
Total	216	100.0
What type of toilet is available in your work place?		
Water closet	21	23.6
Flush pour	195	76.4
Bucket toilet	0	0.0
Total	216	100.0
Is the toilet in your work place functional?		
Yes	104	48.1
No	112	51.9
Total	216	100.0
Is the toilet cleaned from time to time?		
Yes	158	73.1
No	58	26.9
Total	216	100.0
How frequent is the toilet cleaned?		
Once daily	59	37.3
Weekly	12	7.6
Don't know	79	50.0
None	8	5.1
Total	158	100.0

Discussion

Craftsmen, workmen and tradesmen in wood industries constitute the substantial proportion of the nation's labour force, but they are particularly vulnerable to occupational hazard exposures due to their non-compliance to safety and health practices.

Socio-demographically, most wood artisans were found to be between the ages of 30 – 39 years ((29.6%). This agreed with similar studies by in Ifo, Kwara State & Nwafor (2019) in Port Harcourt Metropolis Nigeria [9]. Sex distribution showed that wood occupation is male dominated (99.5%), supporting similar studies by in Kwara State, in Abakaliki, Ebonyi State [8,10]. In Ojo local government, Lagos State, Nigeria. Greater number of wood workers had attained secondary school (56.9%), which corroborated the study of. Majority of them earned between

#4,000 & above #5,000 daily (37.0%), showing that their activities were in high demand in Imo State.

Majority of these artisans had worked at least 8 years and above (35.6 %), lending credence to the saying that perfection comes with years of practice. Since most of them learn by experience as the study revealed, hence high duration at work among these artisans. Greater proportion of them work between 8 - 10 hours daily (98.8%), which corroborated similar studies by in in Abakaliki. Activities of wood artisans fall outside the purview of government regulation; no wonder they work as they like especially for long hours [11].

Wood particles (96.3%), Noise (71.8%) and heat (61.1%) were the most encountered physical hazards, while wood dust

(91.7%) and organic fumes (63.1%) were the most detected chemical hazards. Manual lifting of heavy work materials (60.2%) and awkward postures (59.3%) were the frequent ergonomic hazards. However, greater proportion of these workers also encountered repetitive work (54.2%) and fixed posture hazards (53.7%). Insect bites (61.1%) was the biological hazard, while psycho-socially, majority of wood workers (60.2%) encountered hazard of stress. The findings agreed with similar studies by Johnson & Basse [11-7].

Workplace environment air quality was highly polluted with mean parameters of noise, particulate matters (PM₁, 2.5 & 10), CO, CO₂, SO & NO, occurring far above the permissible limits, thereby making the wood artisans at risk of occupational respiratory health issues and noise-induced hearing loss (NIHL). The findings were in tandem with similar studies by at Ogbosisi Naze and Mbieri Timber and Allied Market in Owerri, Imo State, Nigeria, which also revealed that wood workers were at risk of hearing loss due to noise pollution level found to be higher than the accepted limits [12, 13].

Safety and health practices/habits as concerns medical check-ups (16.2%), safety and health trainings (25.9%) and use of personal protective equipments (25.0%) were all found poor among wood respondents. The findings agreed with similar studies by in Lideta Sub-city Ethiopia, study in Nakuru County, Kenya & in Ile-Ife, Nigeria [6, 4].

Personal hygiene, refuse collection/disposal and sanitation practices were also found to be poor among the wood respondents. The findings lend credence to studies of in Ile-Ife, Nigeriain South Eastern State in Nigeria, which revealed poor hygiene and sanitation practices observed among the respondents which was below the standard set for adequate safety and health protection [4, 14].

Conclusion

Wood occupation is a gainful job, and has contributed immensely to socioeconomic development of many developed and developing countries of the world, including Nigeria. However, activities involved in this occupation expose workers to numerous hazards. Physical hazards of heat, noise, vibration, wood particles, metal and fire; chemical hazards of wood dust and smoke; biological hazards of insect bites; ergonomic hazards of repetitive work, fixed and awkward postures, and manual lifting of heavy objects; and psycho-social hazards of stress and fatigue are encountered by wood artisans in Imo State. Their workplace environment air pollution level is far above the permissible limit, while their safety and health practices including medical check-up, safety training and use of personal protective equipment are all poor. Awareness towards occupational hazards though quite high among wood artisans, yet their attitude towards safety and health protection especially in the use of appropriate personal protective equipment is abysmally low, thereby making them vulnerable to occupational hazard exposures.

Increased sensitization, safety training and education of wood artisans towards occupational hazards and their protections, workplace environment air quality monitoring as well as provision of functional occupational safety and health services are therefore needed these artisans in Imo State [19-21].

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