



**Original Article:**

**Knowledge of Occupational Hazards, Attitude and Practice of Occupational Safety Measures Among Construction Workers in Different Building Sites Located in Ibeju-Lekki Local Government Area of Lagos State, Nigeria.**

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**Abstract:** This is a descriptive cross sectional study aimed at studying the knowledge of occupational hazards, attitude to and practice of occupational safety measures and prevalence of occupational injuries among construction workers in different building sites located at Ibeju-Lekki Local Government in Lagos State. A structured interviewer-administered questionnaire was used for construction workers present at the sampled building sites with active ongoing construction activities for six weeks duration. Multistage Clustering sampling was used and a total of 420 respondents participated in the study. Most of the respondents were between 25 to 34 years of age with a mean value of  $29.46 \pm 7.08$  years. The mean knowledge of occupation hazards of respondents was  $51.9 \pm 17.3$  with the majority of respondent (61.9%) having good knowledge of construction occupational hazards. Poor attitude to occupational safety measures with mean value of  $45.4 \pm 12.8$  and poor practice of occupational safety measures with mean value of  $31.9 \pm 10.4$  was observed. A higher proportion of respondents reported cases of injuries ranging from puncturing of feet by sharp objects (95.2%), falling on ground level (89.5%) and injury while handling, lifting or carrying loads (87.4%). Respondents' knowledge of occupational hazards was found to be statistically associated with their attitude to and practice of occupational measures while their attitude to safety measure is statistically associated with their practice. Hence, the need to provide adequate information on construction hazards and improve the attitude to occupational safety measures for high practice of safety measures especially the utilization of personal protective equipment.

**Key Words:** Occupational hazard, occupational health, safety measures, public infrastructure

**Introduction:**

'Work' is an essential part of human's life. Its importance is seen as a basic approach to surviving and sustainability. We mostly spend at least six hours daily working either in the office, factory, and work sites or outside on the street, this account for the need to have a healthy and productive work life [1]. Occupational Health and Safety (OHS) is generally defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general environment [1,2]. This domain which encompass large numbers of disciplines, numerous workplace and environmental hazards thus require wide range of structures, skills, knowledge and analytical capacities to coordinate and implement all the "building blocks" that make up national Occupational health and Safety systems so that protection is extended to especially the workers and the environment [1,2]. However, it's been known for some time that certain occupations are more dangerous than others due to the exposed variety of occupational health hazards and risk. Among these occupations, construction industry workforce suffers a significant number of serious injuries and its one of the most dangerous industries, International Labour Organization (ILO) estimated that at least 108 thousand workers are killed on site every year which accounts for about 30 per cent of all

occupational fatal injuries. Construction workers of industrialized countries are 3 to 4 times more likely to die from accidents at work than other workers. The risks among construction workers are 3 to 6 times greater than other workers for developing countries. A large number of workers suffer and die from occupational diseases as a result of past exposure to dangerous substances and hazards [3-7]. Nigeria also falls within the categories of countries where few cases of occupational casualties and health problems have been documented. It has been reported that there is little and unreliable data on accidents and injuries at construction sites due to poor reporting and recording system as well as poor health and safety performance by organisation and contractors [8-10]. It is however reported that at least 5% of the construction workforce are lost annually to injuries and fatalities [9]. The case is more of occurrence in Lagos state recording the highest in accident cases, when Anthony (2010) conducted a research on the number of casualties in the building construction sector of Lagos, Abuja and Port Harcourt between the year 2000-2010, it was revealed that Lagos state led in the casualty figures with 178 casualties within the period, followed by Abuja with 65 casualties while Port Harcourt recorded 30 casualties [10]. It is of public health importance to assess the knowledge, attitude and practice of construction workers and promote their protection against work related hazards such as falls, slips and trips; manual handling/lifting of materials; working at height; hazardous substances; noise, heat, etc and varying work related diseases such as respiratory disease, dermatitis, musculoskeletal disorder, ergonomic issues, among others, therefore this study aims at assessing the Knowledge of Occupational Hazards, Attitude and Practice of Occupational Safety Measures Among Construction Workers In Different Building Sites Located In Lagos State .

## Materials and Methods

### The study area

The study area is Ibeju-Lekki Local Government Area which is a semi-urban settlements of about 120,000 inhabitants, located on Latitude 6° 27' 16.2" (6.4545°) north and Longitude 3° 56' 35.4" (3.9432°) east of Lagos, Southwest Nigeria, Nigeria, West Africa, Africa. It has a total land area of about 700 square per kilometres 653Sqkm with a land mass of 643sqkm and water mass of about 10sqkm. The local government is bounded to the South by the Atlantic Ocean, to the North by Lekki LCDA, to the East by Epe LG and the west Eti-Osa LG. It has about 50 communities which are characterised by vast number of residential and industrial estates amounting to different infrastructural and geographical developments such as real estates, construction of roads, recreation centres and industrial sites [11-12].

### Subjects and Sampling method

The cross sectional survey recruited voluntary 420 construction workers at different construction sites within the selected communities of the local government area. Multistage sampling method was used for the study. One (1) community was selected from each of the seven (7) wards in the LGA, followed by selection of ten (10) streets from each selected community, then two (2) building sites with active construction work was selected from the numbered list of all active building sites in the selected streets. On the selected building sites, 5 willing respondents were then sampled and interviewed for the study. All selection at each stage was done by simple sampling method. The respondents comprised both skilled and unskilled workers. The interviewers were trained and a pretested structured questionnaire was used as survey instrument. Permission to conduct the study was obtained from the Lagos University Teaching Hospital ethical committee, Local government authority and building site managers respectively. Informed consent of the workers was also sought

for participation in the study. Only child or under-aged construction workers were excluded in the study.

### Data analysis

Data collected were analyzed using descriptive statistics of mean, standard deviation, frequency and percentages. The data analysis was carried out using Social package for statistical software (SPSS) version 20.0

### Results

A total of 420 respondents participated in the study yielding a response rate of 100%. The socio-demographic characteristics of the respondents are presented in Table 1. The mean age and modal age group was 29.46 ± 7.08 and 25-34 years respectively. A majority of the respondents were single (61.4%) and were predominantly males (97.9%), Nigerian (80%), Christian (68.3%) and bricklayers (67.9%) and 53.3% have been working as construction workers at most 5 years and 61.7% had education to secondary level.

**Table 1: Socio-demographic and work characteristics of the respondents (N=420)**

Characteristics		N	%
Age	Mean	29.46	
	Std deviation	7.08	
Marital status	Single	258	61.4
	Married	140	33.3
	Separated	17	4.0
	Window	5	1.2
Gender	Female	9	2.1
	Male	411	97.9
Job specification	Bricklayer	285	67.9
	Laborer	82	19.5
	POP/Tiller	53	12.6
Religion	Christianity	287	68.3
	Islamic	112	26.7
	Traditional	16	3.8
	Others	5	1.2
Educational qualification	Primary	75	17.9
	Secondary	259	61.7
	Tertiary	65	15.5
	No formal education	21	5.0
Average daily income (#)	=1000	181	43.1
	1001-2000	164	39.0
	2001-3000	58	13.8
	>3000	17	4.0
Years of experience as a construction worker (years)	0 – 5	224	53.3
	6 – 10	120	28.6
	Above 10	76	18.1
Alcohol intake at work	Yes	80	19.0
	No	340	81.0
Smoking at work	Yes	64	15.2
	No	356	84.8
Average daily working hours (hrs)	0 – 7	14	3.3
	8 and above	406	96.7

Mean respondents' knowledge on occupational hazard and safety measures awareness was 51.9 ± 17.3 and presented in Table 2. A majority of the respondents agreed that exposure to occupational hazards can result in injuries or work related diseases/illness (64.3%). Of them, 57.1% knew that wearing of personal protective equipment protects workers from occupational hazards and 52.6% of the respondents agreed that strict compliance with occupational safety rules and regulation protects workers from occupational injuries. However, among

the occupational health hazards exposed to respondents at construction sites, 17.9%, 16.7% and 19.5% of respondents respectively do not see extreme cold, fire and electricity and snake bite as construction site health hazards but agreed that dust (71.7%), extreme heat (51.7%), manual handling (64.5%), excessive noise (56.4%), prolonged work under the sunlight (66.9%), mosquito bite (53.8%) and stress (70.7%) are construction work health hazards.

Information	Freq. n=420 (%)
Exposure to occupational hazards can result in work related injuries or disease	270 (64.3)
Wearing of personal protective equipment protects workers from occupational hazards	240 (57.1)
Strict compliance with occupational safety rules and regulation protects workers from occupational injuries	221 (52.6)
<b>Awareness of the following as occupational health hazards</b>	
Dust	301 (71.7)
Extreme heat	217 (51.7)
Extreme cold	75 (17.9)
Manual handling (lifting and carrying)	271 (64.5)
Excessive noise	237 (56.4)
Prolonged work under sunlight	281 (66.9)
Mosquito bites	226 (53.8)
Snake bites	82 (19.5)
Stress	297 (70.7)
Fire and electricity	70 (16.7)

Table 3 shows that information regarding construction work health hazards and safety was obtained mostly by respondents from personal experience (62.9%) and on-the-job training (60.2%). However, mass media/social network (9.5%), handbook/manual (20.0%), health worker (27.1%) and employer (33.8%) do not serve as information source for most respondents.

Sources	Frequency n = 420 (%)
Employer	142 (33.8)
On –the –job training	253 (60.2)
Personal experience	264 (62.9)
Co-workers experience	208 (49.5)
Handbook / manual	84 (20.0)
Mass media/social network	40 (9.5)
Health worker	114 (27.1)

Respondents' attitude to occupational safety measures were presented in Table 4 with a mean attitude score of 45.4.± 12.8. A majority of the respondents agreed they have responsibility to comply with safety rule and regulations at all times (75.7%), to wear their personal protective equipment at all times when working in construction site (73.1%) and also to think of safety at all times and always for themselves and co-workers (73.6%). Of respondents, 53.6% also agreed that alcohol consumption during work hour can affect safety while working.

Attitude	Agrees Freq (%)	Disagrees	Don't know
Have a responsibility to comply with safety rule and regulations at all times.	318 (75.7)	11(2.6)	91(21.7)
Have a responsibility to wear my personal protective equipment at all times when working in construction site	307 (73.1)	22(5.2)	91(21.7)
Alcohol consumption during work hour can affect my safety while working?	249 (59.3)	85(20.2)	86(20.5)
Think of safety at all times and always for myself and co-workers	309 (73.6)	11(2.6)	100(23.8)
Willing to motivate my co-workers to use personal protective equipment and obey safety rules and regulation	289 (68.8)	39(9.3)	92(21.9)
Employer should make provision for appropriate and adequate personal protective equipment when needed at all times.	248 (59.0)	31(7.4)	98(23.3)
Willing to purchase personal protective equipment?	244 (58.1)	86(20.5)	90(21.4)
Employer should provide training on the use of personal protective equipment?	223 (53.1)	95(22.6)	102(24.3)
Employers should enforce mandatory rules of using personal protective equipment when working at any site all times as a safety plan.	135 (32.1)	191(45.5)	94(22.4)
Supervisor or site manager should ensure the use of personal protective equipment while working on site at all times	228 (54.3)	96(22.9)	96(22.9)

Table 5 shows the respondents' practice of occupational safety measures. A very low proportion of the respondents reported that they wear gloves when mixing cements (19.8%), wear protective cap or helmet when working on site (16.9%), 10.0% of respondents reported they wear face mask while mixing cement, 10.2% reported they use earplugs to protect from loud sound or noise at construction sites. Majority of respondents take rest in between work (85.2%). The mean reported practice among respondents was 31.9.± 10.4.

Practice	YES Freq (%)	NO Freq (%)
Use gloves while mixing cement	83 (19.8)	337 (80.2)
Wear protective cap (helmet) when working on site	71 (16.9)	349 (83.1)
Put face mask while mixing cement	42 (10.0)	378 (90.0)
Wear long boots/canvas while working on sites	180 (42.9)	240 (57.1)
Work more than 8 hours a day	292 (69.5)	128 (30.5)
Use earplugs when exposed to loud sound or noise	43 (10.2)	377 (89.8)
Use elevating work platform (ladder, step ladders, scarf holding) or safety belts while working at higher level	55 (13.1)	365 (86.9)
Take rest in between work	358 (85.2)	62 (14.8)
Use repellent while working on site to prevent insect bites	82 (19.5)	338 (80.5)

Table 6 shows respondents' level of knowledge, attitude and practice. Respondents' score of above 50.0% were graded as good while score of <50% were graded as poor or low. Most respondents (61.9%) have good knowledge of occupational hazards in construction work. A high level of knowledge was seen among 22.9% of respondents, while medium and low level of knowledge was seen among 39.0% and 38.1% of respondents respectively. Although knowledge was good among majority of respondents, there was poor attitude towards occupational safety measures among majority of respondents (53.8%) while 46.2% have good attitude towards occupational safety measures (with 31.7% and 14.5% of respondents having high and medium level respectively). Also, majority of respondents (85.7%) reported poor practice of occupational safety measures while 14.3% of respondents reported good practice of occupational safety measures.

Grade Frequency (n = 420)	
<b>Knowledge</b>	
High	96 (22.9)
Medium	164 (39.0)
Poor/low	160 (38.1)
<b>Attitude</b>	
High	133 (31.7%)
Medium	61 (14.5%)
Poor/low	226 (53.8%)
<b>Practice</b>	
High	49 (11.7%)
Medium	11 (2.6%)
Poor/low	360(85.7%)

The observed utilization of personal protective equipment (PPE) was also assessed with a mean of 7.45± 11.10 and presented in Table 7. Of the respondents, 3.8% wore a head protector/helmet, 5.5% wore hand gloves, 38.6% wore leg boot/canvas, 1.9% had nose mask to prevent dust, 1.4% on safety cloth and 0.2% had ear plugs to prevent excessive or loud noise.

PPE	Freq. n = 420(%)
Head protector/helmet	16 (3.8)
Hand gloves	23 (5.5)
Leg boot /canvas	162 (38.6)
Nose mask	8 (1.9)
Safety glasses	2 (0.5)
Ear plugs	1 (0.2)
Safety clothing	6 (1.4)

Table 8 presents the Respondents' reported occupational health problems and accidents while working as a construction worker. More than half of the respondents reported cases of skin rashes (70.2%), muscle pain (71.4%), headache (81.0%), back pain (88.6%), and chest pain (58.8%). Majority of the respondents reported having accidents from puncturing by sharp objects (95.2%), falling on ground level (89.5%) and while handling, lifting or carrying loads.

	Frequency n = 420(%)
<b>Reported Health Problem</b>	
Skin rashes	295 (70.2)
Chest pain	247 (58.8)
Difficulty with breathing	87 (20.7)
Abdominal/stomach pain	66 (15.7)
Back pain	372 (88.6)
Muscle pain	300 (71.4)
Eye problem	145 (34.5)
Headache	340 (81.0)
Problem with nose	152 (36.2)
Problem with throat	41 (9.8)
Problem with ears	45 (10.7)
<b>Occupational accidents</b>	
Fall from heights	104 (24.8)
Struck by a moving, flying or falling objects	199 (47.4)
Puncture wound on the feet by sharp objects	400 (95.2)
Being injured while handling, lifting or carrying loads	367 (87.4)
Falling on ground level	376 (89.5)

However, the respondents' level of knowledge of occupational hazards and safety measures was found to have a significant association between age, nature of work and years of work experience respectively. Also there is an association between their knowledge and attitude to hazards and safety measures. Of the respondents, 55.8% have good knowledge of occupational hazards and good attitude to occupational safety measures. While 69.4% of respondents have poor knowledge of occupational hazards and poor attitude to occupation safety measure

The statistical association between knowledge and practice of occupational safety measure shows also that 18.8% of respondents have good knowledge of occupational hazards and good practice of occupational safety measures. Poor knowledge of occupational hazards and poor practice of occupation safety measure was found in 93.1% of respondents. Attitude and practice of occupational safety measure show also a significant association with 97.8% of respondents have poor attitude to occupational hazards and poor practice to occupation safety measure. While 28.4% of the respondents

have good attitude of occupational hazards and good practice to occupational safety measures.

#### Discussion

This study assessed the knowledge of occupational hazards, attitude and practice of occupational safety measures among construction workers in some selected building sites in Lagos, Nigeria. The respondents were predominantly young (29.46 + 7.08 years) male adults with about 5 years of work duration. More than 60% of the respondents in this study had secondary education as the highest education level and are bricklayers. Majority of the respondents (96.7%) work averagely more than 8 hours daily with about 43% of the respondents earning about #1,000 as average daily income. Other studies have shown a high predominance of young male workers and with similar work experience in the construction work [13-17]. This may be attributed to the high level of physical labor required in construction industry. A large proportion of respondents does not smoke (84.8%) or drink alcohol (81%) at work leaving a few respondents smoking or drinking while working. Studies have shown the detection of ethanol in the blood of construction workers that had fatal occupational injuries as well as smoking habits [18,19].

From this study, a majority of the respondents had good knowledge (61.9%) of occupational hazard. The level of awareness of occupational hazards, injuries, work-related illness and safety measures seen among respondents may be attributed to their experience on occupational hazards from personal or co-worker exposure to injuries/accidents and also on-the-job training since majority of the respondents have their source of information on occupational hazards from personal experience (62.9%), on-the-job training (60.2%), co-worker experience (49.5%). Knowledge and awareness of occupational hazards or work related illness have been established in studies done among construction workers [14-15, 17, 20]. A majority of the respondents admitted that dust, heat, noise, stress, prolonged work under the sun and manual handling or lifting were risks associated with construction industry. These is in line with empirical reports that workers in construction industry have a high risk of occupational injuries or work related illness resulting from high risk of exposure to different levels of hazards [14-18, 20].

However, less than half of the respondents have good attitude (46.2%) to occupational safety measures. Similar attitude have been reported among workers in construction industries [19-21]. Despite the level of knowledge of occupational hazards and injuries, majority of respondents had poor reported (85.7%) and observed practice (99.3%) of occupational safety measures. The reported practice and observed practice are in agreement in the use of personal protective equipment which was poor. In line with this study, previous findings have found poor compliance and lack of regularity in utilization of safety measures among construction workers especially in the developing countries owing to lack of firm policies on occupational health and safety [13, 20-23]. The non-use of safety devices among workers can be attributed to forgetfulness or believes that they were not convenient or necessary. This revealed an important area for occupation and safety intervention and advocates for a policy that would facilitate periodic monitoring and supervision of both local and multinational construction companies regarding compliance with occupation health and safety.

The study revealed that the common occupational injuries or work-related illness among the respondents were skin rashes, back pain, muscle pain, headache and chest pain by 70.2%, 88.6%, 71.4%, 81.0% and 58.8% of the respondents respectively. 20.7% of respondents reported cases of difficulty in breathing and 36.2% and 34.5% having problem with nose and eye respectively. The high numbers of respondents (81.0%) who reported cases of headache may also be attributed to the fact that majority of the respondents (69.5%)

work more than 8 hours a day and 83.1% of respondents do not wear protective cap when working on site, this may account to increased stress and exposure to sunlight. Different occupational accidents were reported and majority of the respondents had minor accident in the course of their work. 95.2% of respondents reported accident case of puncture wound on the feet by sharp objects, this may be attributed to the fact that majority of respondents does not at all times put on leg protective wear (canvas/leg boot) as 57.1% of respondents reported they wear long boots/canvas while working on sites while it was observed that only 38.6% wore protective leg wear. This finding is consistent with previous reports that show that workers in construction industries environment have high risk exposure to occupational hazards [13, 16-18, 23-26].

#### Conclusion

This study has shown that among building sites construction workers in Nigeria, there is high knowledge of occupational hazards but poor attitude and poor practice of occupational safety measures. This is evident in the non compliance attitude to the utilization of personal protective equipment related to their different nature of work. Strict policies and standard regulation and monitoring is thus recommended so as to ensure and improve health and safety management at organizational level and among local building contractors. There is also increase need for health promotion and campaign so as to sensitize and enlighten workers on health risks (work-related injuries and diseases) attributed to poor utilization of personal protective equipment.

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