

Knowledge, Attitude and Use of Personal Protective Equipment among Timber Factory Workers in Okada, Edo-State, Nigeria

BY

ADIBE UCHECHUKWU JUSTUS,
ABDULQUADRI AMINAT,
ADEGBITE OMOLARA,
ADENIRAN BLESSING

THE DEPARTMENT OF COMMUNITY MEDICINE COLLEGE OF HEALTH SCIENCES
IGBINEDION UNIVERSITY OKADA, EDO-STATE NIGERIA

DEDICATION

This work is dedicated to the God Almighty for His Courage, Grace and Support towards the successful completion of this project and to our beloved families for making available the platform on which we stand on to attain greater heights.

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ABSTRACT

This study discusses the possible hazards prevailing in the timber factory in Okada Edo state Nigeria. It further ponders upon the safety measures that could be taken in order to keep the labor safe. It aims upon the key factors including knowledge, attitude and the use of personal protective equipment required for the safe working environment of the labor. The past studies show that the much needed importance has not been given to this alarming and harmful working condition at work place. This study further investigates that what are the factors that affect the safety of workers. The purpose of this study is to enable the government to be aware of the precaution that it can take to keep the working environment safe, as the workers of timber factory will be at high risks of occupation if this equipment is not managed well.

CHAPTER ONE

INTRODUCTION

A. BACKGROUND TO STUDY

Timber factory also known as sawmill is a facility designed mainly for the purpose of cutting logs into lumber. The existence of timber factory has been dated back to the 3rd century AD, the first being Hierapolis Saw mill, a Roman water-powered stone mill at Hierapolis, Asia Minor(Asian Turkey)¹.

A lot of occupational hazards have been associated with working in the timber factory and this has warranted the use of personal protective equipment in an attempt to curb the occurrence of work related hazards like physical, chemical electrical, heat and biohazards to its barest minimum.

The use of personal protective equipment provides safety which is an integral component of occupational health. “Properly protected and trained workers have better work habits, better attitudes, and produce greater outputs at lower cost”(Vickie Hoffart)².

All personal protective equipment should be provided, utilized and maintained in a sanitary and reliable condition whenever deemed necessary by reason of hazards, processes or environment. This policy applies to all employees who by nature of their job function have the potential to be exposed to physical, chemical or biological hazards which can cause illnesses, injuries or impairment to any part of the body through absorption, inhalation or physical contact.

B. RESEARCH PROBLEM

The awareness and utilization of the use of safety device is of immense benefit to both the employer (improved output and efficiency of workers due to decreased incidence of health hazards) and the employee (improved fitness and economic satisfaction). According to a research on the awareness of occupational health hazards among sawmill workers in the North Central done by the department of epidemiology, University of Ilorin in the year 2010, about 62.3%(which represents 160 timber factory worker) were aware of the need for safety and 37.7%(which represents 97 timber factory workers) were not aware of the need of safety during work. Out of the 160 timber factory workers that are aware of safety device, about 49.4% (79 factory timber workers) actually makes use of safety devices³.

Health related hazards have continued to be a burden on the economy of Nigeria and the world at large and has become a significant public health concern which needs to be checked and reduced to its barest minimum by the various health governing bodies. The factory Act of Nigeria was introduced to protect the labour force as the legislative arm of the government makes provision for the safety and welfare of workers.

According to the International labour organization (ILO) (2008) there has been an estimate of about 270million accidents and at least 335 000 fatal injuries annually³. Minor accidents (falls, bruise, cuts) most commonly occur in the timber factory (40.5%), followed by stress and exhaustion (25.7%), eye irritation especially from dust (14%) and major accidents (fracture, head trauma)(11.7%). Other health problems include skin irritation, stress and exhaustion and difficulty in breathing⁴.

C. JUSTIFICATION OF STUDY

The rationale behind this is due to the fact that currently; there have been few studies and investigation bordering on the awareness and utilization of personal protective equipment among timber factory workers in Okada, Edo-state. The result obtained from this study will keep the government better informed on the magnitude of problem faced by the factory workers and will aid the health governing bodies in taking the necessary steps required to curb health related hazards due to poor awareness and underutilization of personal protective equipment. This would be of immense benefit to the factory workers (improved health), the employer (improved efficiency of the worker leading to reduced cost) and to the general public due (improved output and availability of processed wood).

D. OBJECTIVES

Knowledge, attitude and use of personal protective equipment among timber workers in Okada, Edo-State, Nigeria.

a) SPECIFIC OBJECTIVES

- To determine the knowledge of personal protective equipment among factory workers.
- To determine the attitude towards the use of personal protective equipment among factory workers.
- To determine the level of utilization of personal protective equipment among factory workers.

E. RESEARCH QUESTION

- What is the knowledge of PPE among timbre workers in Okada?
- What is the attitude of Okada Timbre workers towards the use of PPE?
- What is the level of utilization of PPE among Okada timbre workers?

CHAPTER TWO

LITERATURE REVIEW

A. POLICES GOVERNING THE USE OF PPE

Personal protective equipment (PPE) is one component of the continuums of safety efforts to prevent occupational hazards alongside change of process, elimination, enclosure etc. PPE includes barrier protection to prevent skin, mucous membrane and respiratory exposures such as gloves, gowns, goggles, mask and respirators worn to reduce the exposure to variety of hazards.

Sometimes PPE is considered the most boring of all the facet of health and safety, but PPE while it should be the last resort in the safety controls put in place by an employer, is on the other hand the employees' first personal line of defence against hazards they come across at work. This is especially true in many developing countries where PPE might often be the only line of defence against hazards in place of work.

According to O. N. Aneziris, I. A. Papazoglou and O. Doudakmani, occupational safety and health is a major concern to many countries. Traditional ways in which occupational health safety can be checked are through legislation, regulation, standard and safety guidelines, accident investigations and safety inspections which provide data on causes of accidents amongst particular groups of employees⁵.

Although the legislation differs in each state and territory, employers are required to provide, so far as it is reasonable, a safe work environment, safe systems of work, equipment and materials in safe condition and with adequate facilities. Employers are also required to provide information, instruction, training and supervision to enable work to be performed safely and without harm.

Health and safety in the work environment can be measured by achieving improved performance of safe work practices and the degree to which the risks (hazards) are reduced or eliminated. Each state and territory is empowered to legislate for occupational health and safety. These Acts create a legal administrative framework and allows for the development of regulations for specific work environments and workplace hazards.

According to the work done by Catlin (1993), in *Health and Safety at Work*, outlines the current national moves towards greater accountability in the selection and use of personal protective equipment and the role of the supplier of this equipment. Government authorities with the development of various Codes of Practice, for example, Queensland's Code of Practice, published April 1993 and the WorkCover Authority of North South Wales publication of the draft Occupational Health and Safety regulation (Hazardous Substances) makes the suppliers of personal protective equipment accountable for both correct supply and training of the user in its use. Standards Australia personal protective equipment publications also pays particular attention ensuring the suppliers and users of equipment are adequately informed of the selection criteria, use and care of the equipment.

Generally, personal protective equipment literature falls in line with U.S. Occupational Safety & Health Administration (OSHA) standards and National institute for occupational safety and health (NIOSH). Johnstone(1993) at the recent Australian Institute of Occupational Hygienists Annual Conference, explained the OSHA standard on OSHA protection (29CFR 1910.134). Johnstone outlined in the introduction to respirator protection, a standard description about when the use of respiratory protection should be considered.

The standard states:

"In the control of those occupational diseases caused by breathing air contaminated with potentially harmful dusts, fumes, spray, mists ..., the primary objective shall be to minimise workplace contamination. This shall be accomplished as far as feasible by accepted engineering control measures...when effective engineering controls are not feasible, or while they are being implemented or evaluated, appropriate respirators shall be used pursuant to the following requirements".

The American Industrial Hygiene Association published a booklet on Respiratory Protection - A Manual and a Guideline (1991). The publication highlights the necessity for respirators to be properly selected, fitted, worn, maintained and presented to the workplace in a well-designed personal protective equipment program. Then the provision of personal protective equipment for workers will provide effective protection.

The following factors should be considered when selecting PPE; chemical hazards, physical hazards, task requirement, potential for PPE failure, maintenance, requirements, interferences, PPE durability, Duration of use, certification, users size and user acceptance⁶.

B. KNOWLEDGE OF PPE

Despite the fact majority of worker have an idea of PPE, very few actually have adequate training on the use of PPE and also putting into consideration that majority of factory workers have a primary or secondary level of education. According to a report on the assessment of knowledge, attitude and practice of personal protective equipment by WarasanAichaiWitthayasatKanphaet. 2009; which involved about 403 participants, most of the attained the secondary school level (66.8%) while about 1.2% had no school or literacy classes⁷.

Regarding the knowledge, participants answered a total of 16 questions with each question carrying a point. The average knowledge score from the respondents was 7.2 (SD=3.2) out of a possible 16 point. Only 5 participants answered all questions correctly. The distribution of the knowledge on PPE of the respondents revealed that majority had a low knowledge on PPE (78%), 18.1% had moderate knowledge, while only 3.7% had a high knowledge⁷.

C. ATTITUDE AND UTILIZATION OF PPE

The utilization of PPE so far haven't been popular among factory workers particularly those of the developing countries. According to a study carried out to access the utilization of PPE among wood factory workers in Calabar municipal, it showed that the use of PPE by wood factory workers has become inoperative. Although studies in Nigeria on PPE use among industrial workers are rarely carried out, few studies have highlighted that PPE availability, access and use still suffers setback especially in the developing countries. In the same study carried out in Calabar which involved 400 respondents (363 males and 37females), 316 respondents (79%) indicated the availability of PPE at workplace while 84(21%) had no form of PPE at workplace and 12(3%) had no idea of a PPE. Among those who reported to have PPE, about 273(68.2%) had used a PPE before while 43(10.7%) has never used a PPE¹². The reasons for non-usage of PPE as reported by the respondents includes; no provision by the employer (31.1%), couldn't afford to acquire PPE personally (10.2%), inconvenience (18%), while some regarded the usage of PPE as unnecessary (19.9%)⁸.

In another study done by Elizabeth Adwoakwankye in 2011, Accra Ghana, the study in which 150 subjects was used. Of these 150 subjects, 0.7%(1) strongly disagree the use of PPE and that PPE doesn't prevent accident at work, 1.3%(2) agreed on the use of PPE and that PPE prevent accident at work, while 98%(147) strongly agreed on the use of PPE and its prevention of accident at work⁹.

CHAPTER THREE

MATERIALS AND METHOD

A. *STUDY AREA*

The study was carried out in Okada community in Ovia North-East LGA, Edo State. It is bounded on the North by Owan LGA, on the South by Delta state, on the east by Egor LGA and on the West by Ondo state.

Ovia North east LGA lies within the forest belt of Nigeria and has a tropical climate. The topography is flat and it has a total land area of 1805km². The Ovia North East LGA has a population of 153,849 with 81090 males and 72759 females according to 2006 census.

The people of Okada are mainly Christians, a few are Muslims and Traditional worshipers. Majority of the people are Bini, with significant numbers of Urhobo and Yoruba. Other tribes are also represented (Hausa, Igbo, etc.). The predominant occupation is timbering, farming and trading.

The major landmarks in Okada include Igbinedion University (permanent and temporary sites and Crown Estate), Okada Grammar School, The Nigerian Police Station, Okada Town Hall, The Magistrate and High Court, The NYSC Orientation Camp, Okada Market, The Local Government Secretariat, Primary health Care Centre and Banks.

B. *STUDY DESIGN*

This was a cross-sectional descriptive study

C. *STUDY POPULATION*

The study was carried out on the workers of timber factories in Okada Community in Ovia North East LGA. Ovia North East LGA has a total of 45 sawmills.

The factories comprise of administrative workers and machine operators. The study was done on workers of both sections. The total number of workers was about 40.

a) *INCLUSION CRITERIA*

- Workers between 18 to 65yrs
- Workers who has spent at least one year in continuous employment.

b) *EXCLUSION CRITERIA*

- Workers who meet the inclusion criteria but opted not to participate in the study.

D. *STUDY DURATION*

The study was carried out from February 2016 to September 2016.

E. *SAMPLE SIZE DETERMINATION*

We estimated a sample size of 60 for the study using a prevalence of 0.041 (P) (obtained from a study) in the Cochran formula below;

$$N = Z^2pq/d^2$$

Where N = Sample size

Z = Standard normal deviation = 1.96

P = prevalence of 0.041

q = 1 – p = 0.959

d = error margin at 5% which is 0.05

$$\therefore N = 60.4$$

F. SAMPLING METHOD

Simple random sampling method was used involving random selection of workers from the sawmills in Okada, using balloting.

G. DATA COLLECTION

This was by a self-structured and administered questionnaire containing close-ended questions. It included a section of bio-data, knowledge, attitude and use of PPE.

H. DATA ANALYSIS

The questionnaires were screened for completeness, coded and entered into Statistical package for social Science (SPSS) version 16.0 software for analysis. Continuous variables such as ages, gender alongside qualitative data were presented as tables and bar chart.

I. ETHICAL CONSIDERATIONS

- Informed consent was obtained from each respondent before the administration of questionnaires.
- Confidentiality and privacy was respected during the process of filling questionnaires, and respondent's serial numbers rather than name were used to identify each respondent.
- Respondents were informed of their right to decline participation if they wished to do so.
- Respondents were also informed that there will be no penalties or loss of benefit for refusal to participate in the study or withdrawal from it.
- All data generated from the study were kept secure and made available only to the researcher alone.

J. LIMITATIONS

- Distance barrier between the place of schooling and the location of the lumber factory.
- The timber factory workers had little interest in responding to the study leading to a low level of respondents.
- Financial limitation as there was a lot of money of needed for of printing of questionnaires.
- Majority of the respondents were of primary and secondary levels of education and found it difficult filling the questionnaires.

CHAPTER FOUR**RESULT**

| Variable | Frequency (N=100) | Percent (%) |
|--------------------------------|--------------------------|--------------------|
| Age (years) | | |
| 20 – 29 | 33 | 33.0 |
| 30 – 39 | 34 | 34.0 |
| 40 – 49 | 23 | 23.0 |
| 50 – 59 | 8 | 8.0 |
| 60 – 69 | 2 | 2.0 |
| Mean \pm SD = 34.93 (10.22) | | |
| Sex | | |
| Male | 90 | 90.0 |
| Female | 10 | 10.0 |
| Level of Education | | |
| None | 7 | 7.0 |
| Primary | 17 | 17.0 |
| Secondary | 62 | 62.0 |
| Tertiary | 14 | 14.0 |
| Marital Status | | |
| Married | 62 | 62.0 |
| Single | 31 | 31.0 |
| Divorced | 3 | 3.0 |
| Separated | 4 | 4.0 |
| Religion of Respondents | | |
| Christian | 92 | 92.0 |
| Muslim | 8 | 8.0 |

Table 1: Socio-demographic Characteristics of Respondents

Respondents ages ranges from 20-69years. The mean age of the wood factory workers was 34.93 ± 10.22 years. Majority (34.0%) of them were in the age group of 30-39 years while only 2 (2%) were in the age group of 60-69 years. Majority (90.0%) of the respondents were males while only 10.0% were females.

A greater proportion (92.0%) of the respondents was Christians. This was followed by ATR (8.0%). A greater proportion 62 (62.0%) of respondents were married, 31(31.0%) of them were single while 4(4.0) and 3(3.0%) were separated and divorce respectively.

Majority of the respondent had completed one form of formal education or the other with the highest proportion in the secondary education 62(62.0%). This was closely followed by primary education 17(17.0%) and tertiary education 14 (14.0%). About 7 (7.0%) of the respondent had no formal education.

The proportion of respondents who did not complete any form of formal education were 7(7.0%), primary 17(17.0%), secondary 62(62.0%), and tertiary education 14(14.0%) respectively.

| Variable | frequency (N=100) | percent (%) |
|--|-------------------|-------------|
| Respondents that have heard of PPE | | |
| Yes | 90 | 90.0 |
| No | 9 | 9.0 |
| No response | 1 | 1.0 |
| How PPE was first known by respondents | | |
| Media | 64 | 64.0 |
| Colleague | 8 | 8.0 |
| Employer | 5 | 5.0 |
| Other | 12 | 12.0 |
| No response | 11 | 11.0 |
| Respondents who were educated on the use of PPE | | |
| Yes | 22 | 22.0 |
| No | 77 | 77.0 |
| No response | 1 | 1.0 |
| Respondents who were trained to use PPE | | |
| Yes | 30 | 30.0 |
| No | 69 | 69.0 |
| No response | 1 | 1.0 |

Table 2: Knowledge of PPE Among Respondents

A large proportion 90(90.0%) of the respondents have heard of PPE, while 9(9.0%) of the respondent haven't heard of PPE and 1(1.0%) didn't respond to the question concerning the knowledge of PPE.

Majority of the respondents 64(64.0%) knew about PPE through the media, 12(12.0%) knew about it through other means, 11(11.0%) didn't respond to the question, 8(8.0%) knew about it through their colleague while 5(5.0%) knew through their employers.

A greater proportion 77(77.0%) were not educated on the use of PPE. 22(22.0%) of the respondents were educated on the use of PPE while 1(1.0%) didn't respond to the question.

A larger proportion 69(69.0%) of the respondents were not trained on how to use PPE. 30(30.0%) of the respondents were trained on the use of PPE while 1(1.0%) didn't respond.

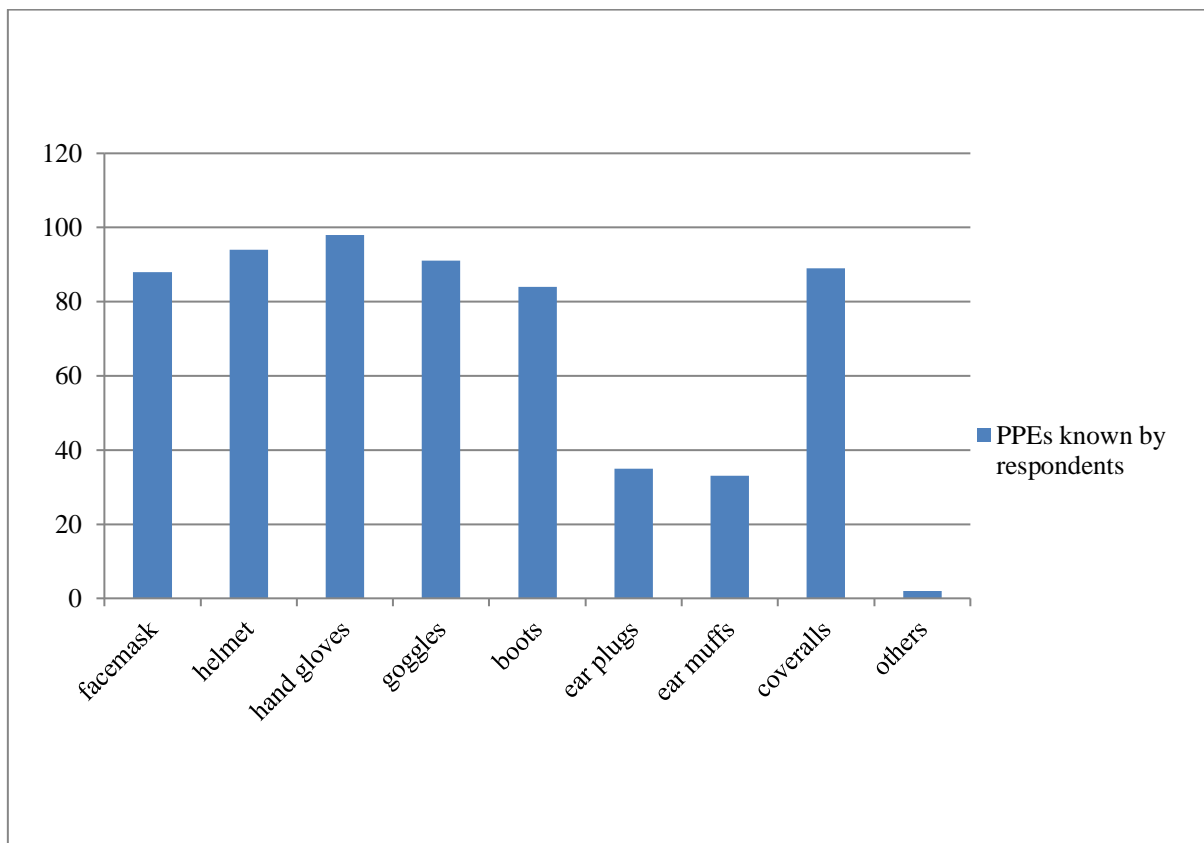


Fig. 1: PPEs Known by Respondents

88% of the respondents knew facemask and coveralls as types of PPEs that are used in the workplace to prevent occupational hazards.

99% of the respondents were aware of hand gloves and 95% knew helmets as forms PPEs.

90% knew about goggles while 85% know about boots as PPEs.

Ear muffs and Ear plugs are known to 35% of respondents while other forms of PPE are known to about 3% of the respondents.

| Variable | frequency (N=100) | percent (%) |
|--|-------------------|-------------|
| Respondents that believe PPEs have improved their work efficiency | | |
| Yes | 75 | 75.0 |
| No | 22 | 22.0 |
| No response | 3 | 3.0 |
| Respondents that believe PPE can reduce work hazards | | |
| Yes | 89 | 89.0 |
| No | 9 | 9.0 |
| No response | 2 | 2.0 |
| Respondents that will be willing to buy PPE | | |
| Yes | 62 | 62.0 |
| No | 38 | 38.0 |
| Importance of PPE in workplace | | |
| Not important | 21 | 21.0 |
| Important | 35 | 35.0 |
| Respondents that feel comfortable while using PPE | | |
| Yes | 55 | 55.0 |
| No | 34 | 34.0 |
| No response | 11 | 11.0 |

TABLE 3: Attitude of PPE Among Respondents

A higher proportion 75(75.0%) of the respondent believed that PPE improved their work efficiency while 22(22.0%) of the respondents didn't believe that PPE improved their work efficiency and 3(3.0%) didn't respond to the question.

Majority of the respondents 89(89.0%) believed that PPE can reduce work hazards, 9(9.0%) of the respondents doesn't believe that PPE can reduce work hazards while 2(2.0%) of the respondents didn't respond to the question.

A greater proportion 62(62.0%) of the respondents would be willing to buy PPE with their money while 38(38.0%) of the respondents won't use their money to buy PPE.

A higher proportion 35(35.0%) of the respondents know the importance of PPE in their place of work while 21(21.0%) of the respondents doesn't.

Majority of the respondents 55(55.0%) feel comfortable using PPE, 34(34.0%) of the respondents doesn't feel comfortable and 11(11.0%) of the respondents didn't respond to the question.

| Variable | frequency (N=100) | percent (%) |
|---|--------------------------|--------------------|
| Respondents that have ever used PPE | | |
| Yes | 78 | 78.0 |
| No | 22 | 22.0 |
| Frequency of PPE | | |
| Rarely | 31 | 31.0 |
| Often | 25 | 25.0 |
| Always | 28 | 28.0 |
| No response | 16 | 16.0 |
| Respondents in which PPE use has averted hazard(s) | | |
| Yes | 75 | 75.0 |
| No | 11 | 11.0 |
| Respondents that clean their PPE after use | | |
| Yes | 69 | 69.0 |
| No | 12 | 12.0 |
| Availability of PPE for workers | | |
| Yes | 22 | 22.0 |
| No | 77 | 77.0 |

TABLE 4: Use of PPE Among Respondents

A larger proportion 78(78.0%) of the respondents have used PPE while 22(22.0%) of the respondents have never used PPE.

Majority of the respondents 31(31.0%) rarely use PPE while 25(25.0%) often used PPE, 28(28.0%) always use PPE and 16(16.0%) didn't respond to the question.

A higher proportion 75(75.0%) of the respondents agreed that PPE used has averted hazards while 11(11.0%) of the respondents didn't agree that PPE use has averted hazards.

A greater proportion 69(69.0%) of the respondents clean their PPE after use while 12(12.0%) of the respondents doesn't clean their PPE after use.

A higher proportion 77 (77.0%) of the respondents agreed that the PPE were not available for use while 22(22.0%) of the respondent agreed that the PPE were available for workers.

CHAPTER FIVE

A. *DISCUSSION*

The mean age of the respondents were similar to that found in a previous study conducted in Ghana. The 30 – 39 year age category had the highest number of respondents in the study which was similar to studies conducted in Calabar. This age range constitutes a relatively young and economically viable workforce. Accounting for this observation may be the fact that lumbering is a laborious endeavour requiring people who are still young and active. Relatively older people would likely be able to cope with the demand of carrying and or cutting timbers in large quantities.

The factory workers were predominantly males. Similar trends were observed in previous studies. In Nigeria, men are known to be predominantly involved in timber work as they tend to balance the income-generating opportunities as majority of the population are dependent on them.

Christianity was the predominant religion of the respondents and constitutes about 92% of the religion of the lumbers. This could be due to the study being carried out in the south-south geopolitical zone of Nigeria where Christians dominate.

There were more married than single respondents and the timber factory workers.

Among the respondents, those who attained secondary level of education constituted the largest population (62.0%), an earlier study among 403 timber workers in Ghana documented a similar thing.

Majority of the respondents (69%) had no training in the use of PPE. Lack of basic training for these timber workers is likely to reduce the effectiveness and put the workers at risk of industrial hazards.

About 90% of the respondents have heard of PPE and 64% first knew about it through the media. About 77% of those that have heard of PPE were educated on its use.

The commonest known PPEs were the hand gloves, coveralls and the facemask, while the least known PPEs were the ear muffs and ear plugs.

In this study, most of the respondents had knowledge of the term “Occupational Hazards”. Despite the fact that majority of the respondents knew about occupational hazards, few of them used PPEs due to its poor availability. A similar study was carried out in Illorin Nigeria which also showed that majority 62.3% of the workers were aware of the need of safety measures in their workplace.

A sizeable proportion of respondents in this study believe that PPEs have improved their work efficiency. This result is similar to the findings of Elizabeth kwankye, who reported that 149 respondents (99.3%) in Kumasi Ghana saw PPEs as preventive measure to accidents at work. This is a sign of positive attitude towards PPE and occupational health safety.

It was also found that 78% of respondents have used PPEs despite its relative unavailability. This finding was at variance with what was found in a study carried out in Illorin where respondents (43.1%) used PPE despite its relative unavailability.

Majority of the respondents (69%) practiced washing and proper storage of their PPEs after use as compared to a study done in Calabar where most (94.2%) of the respondents also practiced regular cleaning and proper storage of their PPEs.

Surprisingly, the study revealed that timber workers who completed a formal education were aware of the importance of PPEs but rarely used PPEs due to inconvenience and unavailability. This shows that formal education alone is not enough to encourage the use of PPEs. This calls for proper training on the use of PPE irrespective of the level of education.

B. CONCLUSION

This Study shows that timber factory workers in Okada lacked proper knowledge of PPE use and safety. Although, there was a receptive attitude towards the use of PPE, however the level of utilization of PPE was not impressive.

C. RECOMMENDATIONS

This study has re-emphasized the need to encourage training and availability of PPEs to enhance its use so as to improve work effectiveness.

- PPE training should be given serious governmental attention since most timber factory workers in developing countries like Nigeria are not properly trained and are not ready to take responsibilities of their own training.
- Timber factory workers should be adequately educated on the role of PPEs in preventing occupational hazards.
- The government should invest in timber industry by making available to them PPEs for proper utilization.

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- 20) How important is the use of PPE in your workplace? Not Important Important Very Important
- 21) Do you think the use of PPE should be encouraged? Yes No
- 22) Would you be able to purchase PPE with your money? Yes No

SECTION D – USE OF PERSONAL PROTECTIVE EQUIPMENT

- 23) Have you used a PPE before? Yes No
- 24) How often do you use a PPE? Rare Often Always
- 25) Were you forced to use it? Yes No
- 26) Has it improved your work efficiency? Yes No
- 27) Has it prevented you from any work hazard?
- 28) Do you keep it clean after use? Yes No
- 29) If the answer to the previous question is yes, please specify
-
- 30) Are the PPE available for all workers? Yes No