



# **Knowledge Of Occupational Hazards And Safety Measures Among Carpenters In Rivers East Senatorial District, Rivers State, Nigeria**

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## **ABSTRACT**

This study investigated the knowledge of occupational hazards and safety among carpenters in Rivers East Senatorial District, Rivers State. The descriptive survey design was adopted with a population consisting of 8,000 carpenters in Rivers East. The sample size for the study was 848, which was selected using a multi-stage sampling procedure. The instrument for data collection was a structured questionnaire titled, “knowledge of occupational hazards and safety questionnaire” with a reliability coefficient of 0.815. Data collected was analyzed using percentage, and Chi-square, at 0.05 level of significance. The finding of this study showed that majority 716(90.9%) of the respondents had good knowledge. Good knowledge of occupational hazards was found more among those who had <5 years of work experience (94.1%), and male (92.0%). The tested hypothesis showed that, there is a statistically significant relationship between knowledge of occupational hazards and gender ( $\chi^2 = 6.95$ ,  $df = 1$ ,  $p < 0.05$ ). It was concluded that carpenters had good knowledge of both occupational hazards and safety measures which was expressed in their satisfactory practice of safety measures. It was recommended that, safety personnel should organize safety training for carpenters in Rivers State from time to time to keep them updated about current safety practices in their profession, this will help to sustain a good knowledge of safety and occupational hazards among them.

**Keywords:** Carpenters, Hazards, Knowledge, Rivers East, Safety

## **INTRODUCTION**

In contemporary society, there is hardly any occupation or human activity that is not associated with occupational hazards which could adversely affect the health of workers. This is why companies and industries have been advised by regulatory authorities to prioritize safety measures to protect the health of workers at workplace. Exposure to workplace hazards increases workers' susceptibility to infection, disease, injury or accidents (Inah et al., 2019) but, injuries in carpentry could be prevented by establishing proper safety practices. In the view of Sambo et al. (2012), in spite of the progress made so far, in occupational health and safety in Nigeria, it is reported that the level of mechanism' knowledge of the hazards of their occupation or of the existing legislation which should contribute to improving occupational health and safety practice is still low and thus predispose them to various types of occupational hazards.

More specifically, Ponsoby (2017) noted that, the burden of occupational hazards is particularly heavy in low-and-middle income countries, where the health and safety law and its applications is often not so well implemented. Ozumba (2019) reported that, In Africa, occupational fatality per 100,000 workers in sub-

Saharan Africa is 21 and the accident rate is 16,000; about 54,000 workers die each year and about 42 million work-related accidents take place that leads to at least 3 days absence from work". Similarly, Nigeria has recorded 238 fatalities across different scores of the economy. In Nigeria, Balogun et al. (2016) revealed that, cuts and lacerations were the commonest injuries mostly among carpenters (96.7%). Carpentry hazards cannot be overlooked in Nigeria.

Carpenters face their own unique set of occupational hazards which may include; injuries from the use of various machinery and tools, exposure to fungi toxic molds and bacteria; cancer from exposure to solvents as well as formaldehyde in pressed wood and wood dust; performing repetitive tasks and lifting which could lead to musculoskeletal pains; exposure to extreme temperatures; working outdoors with heat stress and frostbite risks; risk of eye injury from flying particles; risk of falling from working at heights, stress and increases risk of injury from shift, work and extended work days (Canadian Centre for Occupational Health & Safety, 2014).

Knowledge of both safety and hazards is vital. Peter-Kio et al. (2019) stated that knowledge is the fact or condition of being aware of something or knowing something with familiarity gained through experience or association. Rick (2020) stated that knowledge and skill are two ingredients that largely determine how competent someone is in a certain field. Knowledge of hazards is relevant for safety practices. Safety knowledge predicts safety practices because, it is not possible to remove or mitigate something you are not aware of; once hazards have been identified they can be handled properly, reducing or eliminating the risk of injury or death by the use of safety measures (Aaron, 2018). Also, Neumann (2019) defined workplace safety as the control of recognized hazards in the workplace in order to achieve an acceptable level of risk.

Hazards are inherent in every occupation including carpentry and, if not controlled could lead to accident, injury or even death. The carpentry work is sometimes strenuous due to prolonged standing, climbing, bending, and kneeling which are often the major task. This makes the workers vulnerable to a number of work injuries and illnesses. They are also exposed to injuries using their work equipment such as sharp or rough materials, using sharp tools and power equipment, and working in situations where they may slip or fall; and report has shown that workers in this occupation experience a very high incidence of injuries and illnesses. Though most of such injuries go unreported, their magnitude and impact on the occupation is enormous ranging from economic loss, poor productivity, deformity, disability and death in extreme cases. Carpenters constitute a substantial proportion of the construction industry which is fast growing in Rivers East Senatorial district due to industrial activities in the region as the District hosts the three government owned universities, different hospitals and other essential infrastructures in the State. This increases their work in magnitude and coverage. Yet, they are one of the neglected group in occupational health and safety research, and it worth nothing the lack of data about carpentry hazards and safety practices. Therefore, it becomes necessary to carry out this study to provide an empirical evidence of their level of knowledge and attitude towards hazards and safety measures. Hence, this study examined the knowledge of occupational safety among carpenters in Rivers East Senatorial District, Rivers State. The study provided answers to the following research questions:

1. What is the level of knowledge on occupational hazards among carpenters in Rivers East Senatorial District, Rivers State?
2. What is the knowledge of occupational hazards among carpenters in Rivers East Senatorial District, Rivers State based on years of work experience?
3. What is the knowledge of occupational hazards among carpenters in Rivers East Senatorial District, Rivers State based on gender?
4. What is the level of knowledge on safety measures among carpenters in Rivers East Senatorial District, Rivers State?
5. What is the knowledge of safety measures among carpenters in Rivers East Senatorial District, Rivers State based on years of work experience?
6. What is the knowledge of safety measures among carpenters in Rivers East Senatorial District, Rivers State based on gender?

**Hypotheses**

The following hypotheses were stated to guide the study:

1. There is no significant relationship between years of work experience and knowledge of occupational hazards among carpenters in Rivers East Senatorial District, Rivers State.
2. There is no significant relationship between gender and knowledge of occupational hazards among carpenters in Rivers East Senatorial District, Rivers State.
3. There is no significant relationship between years of work experience and knowledge of safety measures among carpenters in Rivers East Senatorial District, Rivers State.
4. There is no significant relationship between gender and knowledge of safety measures among carpenters in Rivers East Senatorial District, Rivers State.

**METHODOLOGY**

The descriptive survey design was adopted with a population consisting of 8,000 carpenters in Rivers East. The sample size for the study was 848. The Sample size was determined using the Cochran formula for calculating sample size for a non-finite population  $n = z^2pq / d^2$ . Where, n = sample size, p (proportion) = 50% = 0.5, z = confidence level 95% (1.96)<sup>2</sup>, q = 1-p = 0.5, d<sup>2</sup> = confidence interval = 5% = 0.05<sup>2</sup> = 0.0025. After adjusting for a non-compliance rate of 10%. The total = 424. This minimum sample size was doubled, making the sample size 848, to enable the researcher have a better representation of the respondents from each of the selected Local Government Areas. The sample was selected using a simple random sampling technique. The instrument for data collection was a structured questionnaire titled, “knowledge of occupational hazards and safety questionnaire” with a reliability coefficient of 0.815. The instrument contained items which elicited responses on the knowledge of both hazards and safety on a dichotomous response of ‘Yes or No’. Data collected was analyzed using descriptive statistics of percentage, and inferential statistics of Chi-square at 0.05 level of significance.

**RESULTS**

The results of the study are shown below:

**Table 1: Percentage distribution on level of knowledge on occupational hazards**

SN	Items	Yes F(%)	No F(%)	Decision
1	Exposure to heat in the workplace	787(100.0)	0(0.00)	Good
2	Sharp objects which cause cut or injury	787(100.0)	0(0.00)	Good
3	Sharp objects or wood particles flying to hit someone	653(83.0)	134(17.0)	Good
4	Woods kept in such a way that lead to trip/fall hazards	697(88.6)	90(11.4)	Good
5	Working under a hot sun or rainy whether	758(96.3)	29(3.7)	Good
6	Hiting harmer on the finger	751(95.4)	36(4.6)	Good
7	Mold and fungi which grow on the wood	712(90.5)	75(9.5)	Good
8	Contact with other disease causing agents	767(97.5)	20(2.5)	Good
9	Poor working condition leading to sickness	633(80.4)	154(19.6)	Good
10	Working at a construction near sewage spills	680(86.4)	107(13.6)	Good
11	Contact with raw sewage or sewage-contaminated areas	753(95.7)	34(4.3)	Good
12	Exposure to wood dust	745(94.7)	42(5.3)	Good
13	Exposure to asbestos	745(94.7)	42(5.3)	Good
14	Working with glues	759(96.4)	28(3.6)	Good
15	Working with alkalis and concrete form oil	697(88.6)	90(11.4)	Good
16	Exposure to coatings	671(85.3)	116(14.7)	Good
17	Exposure to adhesives	773(98.2)	14(1.8)	Good
18	Using lacquers and paints, often the acid-curing type	694(88.2)	93(11.8)	Good
19	Lifting heavy materials	711(90.3)	76(9.7)	Good
20	Standing for a long time to do work	726(92.2)	61(7.8)	Good

21	Doing work that makes one have prolonged raising of arm	767(97.5)	20(2.5)	Good
22	Having a posture that makes one have back pain	706(89.7)	81(10.3)	Good
23	Working for a long time, without break	691(87.8)	96(12.2)	Good
24	Working with a heavy hammer that, requires strenght	678(86.1)	109(13.9)	Good
25	Quarrels from customers	711(90.3)	76(9.7)	Good
26	Poor relationship with colleagues or co-workers	714(90.7)	73(9.3)	Good
27	Harrassment from customers	787(100.0)	0(0.00)	Good
28	Poor and delayed payment for job done	686(87.2)	101(12.8)	Good
29	Work overload that increases stress	773(98.2)	14(1.8)	Good
30	Working with tools that are bad	630(80.1)	157(19.9)	Good
31	Using improper tool for a particular work	691(87.8)	96(12.2)	Good
32	Using blunt knife or saw for cutting	625(79.4)	162(20.6)	Good
33	Fixing a material with bent nails	683(86.8)	104(13.2)	Good
34	Doing works manually rather than using modern equipment/machines	681(86.5)	106(13.5)	Good
<b>Overall</b>		<b>716(90.9)</b>	<b>71(9.1)</b>	<b>Good</b>

Guide: <50% = poor knowledge, ≥50 = good knowledge

Table 1 presents the percentage distribution on level of knowledge on occupational hazards among carpenters. The result showed that majority 716(90.9%) of the respondents had good knowledge while few 71(9.1%) had poor knowledge of occupational hazards. Thus, the level of knowledge about occupational hazards among carpenters in Rivers East Senatorial District was.

**Table 2: Percentage distribution on level of knowledge on safety measures**

SN	Items	Yes F(%)	No F(%)	Decision
1	Going for training is necessary to ensure occupational safety	727(92.4)	60(7.6)	Good
2	Maintaining a routine medical check-up is a safety measure	707(89.8)	80(10.2)	Good
3	Placing warning signs during work or at the workshop is a safety measure in carpentry	725(92.1)	62(7.9)	Good
4	Providing first aid box or carrying first aid materials to work is an important safety measure	781(99.2)	6(0.8)	Good
5	All types of gloves provide same level of protection	632(80.3)	155(19.7)	Good
6	Incident investigation is a safety measure	751(95.4)	36(4.6)	Good
7	Workplace inspection ensure safety in carpentry	694(88.2)	93(11.8)	Good
8	Lifting a log of wood wrongly is an unsafe act	775(98.5)	12(1.5)	Good
9	Use of PPE is also a safety measure	704(89.5)	83(10.5)	Good
<b>Overall</b>		<b>722(91.7)</b>	<b>65(8.3)</b>	<b>Good</b>

Table 2 presents the percentage distribution on level of knowledge on safety measures among carpenters. The result showed that majority 722(91.7%) of the respondents had good knowledge of safety measures while few 65(8.3%) had poor knowledge of safety measures. Thus, the level of knowledge of safety measures among carpenters in Rivers East Senatorial District was good.

**Table 3: Chi-square test of significant relationship between years of work experience and knowledge of occupational hazards among carpenters in Rivers East Senatorial District**

Years of work experience	Knowledge		Total	Df	$\chi^2$	p-value	Decision
	Poor F(%)	Good F(%)					
<5yrs	4(5.9)	64(94.1)	68(100)	3	1.15	0.76*	H <sub>0</sub> Not Rejected
5-10yrs	21(8.7)	220(91.3)	241(100)				
11-14yrs	29(10.0)	261(90.0)	290(100)				
≥15yrs	18(9.7)	168(90.3)	186(100)				
<b>Total</b>	<b>71(9.1)</b>	<b>716(90.9)</b>	<b>787(100)</b>				

\*Not Significant,  $p > 0.05$

Table 3 presented the Chi-square test of relationship between years of work experience and knowledge of occupational hazards. The result showed that there is no significant relationship between years of work experience and knowledge of occupational hazards ( $\chi^2 = 1.15$ ,  $df = 3$ ,  $p > 0.05$ ). Thus, the null hypotheses which stated that there is no significant relationship between years of work experience and knowledge of occupational hazards among carpenters in Rivers East Senatorial District, Rivers State was not rejected.

**Table 4: Chi-square test showing relationship between gender and knowledge of occupational hazards among carpenters in Rivers East Senatorial District**

Gender	Knowledge		Total	Df	$\chi^2$	p-value	Decision
	Poor F(%)	Good F(%)					
Female	22(15.0)	125(85.0)	147(100)	1	6.95	0.01*	H <sub>0</sub> Rejected
Male	51(8.0)	589(92.0)	640(100)				
Total	73(9.3)	714(90.6)	787(100)				

\*Significant,  $p > 0.05$

Table 4 presented the Chi-square test of relationship between gender and knowledge of occupational hazards. The result showed that there is a significant relationship ( $\chi^2 = 6.95$ ,  $df = 1$ ,  $p < 0.05$ ). Thus, the null hypotheses which stated that there is no significant relationship between gender and knowledge of occupational hazards among carpenters in Rivers East Senatorial District, Rivers State was rejected

**Table 5: Chi-square test of significant relationship between years of work experience and knowledge of safety measures among carpenters in Rivers East Senatorial District**

Years of work experience	Knowledge		Total	Df	$\chi^2$	p-value	Decision
	Poor F(%)	Good F(%)					
<5yrs	9(13.2)	59(86.8)	68(100)	3	2.68	0.44*	H <sub>0</sub> Not Rejected
5-10yrs	19(7.9)	222(92.1)	241(100)				
11-14yrs	21(7.2)	269(92.8)	290(100)				
≥15yrs	16(8.6)	170(91.4)	186(100)				
<b>Total</b>	<b>65(9.1)</b>	<b>720(90.9)</b>	<b>787(100)</b>				

\*Not Significant,  $p > 0.05$

Table 5 presented the Chi-square test of relationship between years of work experience and knowledge of safety measures. The result showed that there is no significant relationship between the two variables ( $\chi^2 = 2.68$ ,  $df = 3$ ,  $p > 0.05$ ). Thus, the null hypotheses which stated that there is no significant relationship between years of work experience and knowledge of occupational safety among carpenters in Rivers East Senatorial District, Rivers State was not rejected.

**Table 6: Chi-square test showing relationship between gender and knowledge of occupational hazards among carpenters in Rivers East Senatorial District**

Gender	Knowledge		Total	Df	$\chi^2$	p-value	Decision
	Poor F(%)	Good F(%)					
Female	19(12.9)	128(87.1)	147(100)	1	5.19	0.02*	H <sub>0</sub> Rejected
Male	46(7.2)	594(92.8)	640(100)				
Total	65(8.3)	722(91.7)	787(100)				

\*Significant,  $p < 0.05$

Table 6 presented the Chi-square test of relationship between gender and knowledge of safety measures. The result showed that there is a significant relationship gender and knowledge of occupational safety ( $\chi^2 = 6.95$ ,  $df = 1$ ,  $p < 0.05$ ). Thus, the null hypotheses which stated that there is no significant

relationship between gender and knowledge of occupational safety measures among carpenters in Rivers East Senatorial District, Rivers State was rejected.

## **DISCUSSION OF FINDINGS**

The findings of the study were discussed below under the following sub-headings:

### **Knowledge of occupational hazards**

The result in Table 4.2 revealed that majority 716(90.9%) of the respondents had good knowledge while few 71(9.1%) had poor knowledge of occupational hazards. The finding of this study is consistent with an earlier finding by Awosan et al. (2017) research on knowledge and safety practices in Sokoto Nigeria, who found out that the respondents used in their study had a good knowledge. The finding of this study is also in line with that of Tagurum, et al. (2018) study on awareness of occupational hazards and utilization of personal protective devices in Jos metropolis Nigeria, which showed that majority had very good knowledge. Also the finding of this study is also in line with that of Thangaraj and Shireen (2017) whose work in an urban area of Bangalore, indicated that majority of the respondent knew about occupational hazards associated with their occupation. Also this agreed with the findings of Fasunloro and Owotode (2004) study on perceived occupational hazards among dental staff in Osun State, who indicated that all of the staff had good occupational hazards perception and aware of the occupational exposure to hazards. This is to say that knowledge of people may play an important role in minimizing the impact of occupational hazards associated with various jobs. However, the finding of this study is at variance with that of Elenwo (2018) who carried out a study among in Port Harcourt Metropolis, Rivers State, showed that most of the respondents 75.4% in his study were not aware of their job hazards. This variation found between the present study and that of Elenwo could be attributed to the variation in the sample size and study location.

### **Years of work experience and knowledge of occupational hazards among the respondents**

The finding of this study showed that knowledge of occupational hazards was found more among carpenters which has longer years of work experience, though the tested hypotheses showed no significant relationship between years of work experience and knowledge of occupational hazards among the respondents. The result of this study is in credence with studies of Nkporbu et al, (2016) that workers with over 5 years of experience are less likely to be exposed by implication knowledgeable about occupational injury. It could be plausible that as carpenters advance in the job so as they gather more experience, they become more familiar with the inherent hazards in their work. Studies of Mdejjo et al (2015) buttressed that respondents were aware of occupational hazards they are exposed to. Work experience help one to have full understanding and awareness about the activities and the nature of the service to render. Aluko et al (2016) affirmed that the median duration of work experience was 5 years, though over half (52.8 %) had worked for between 1 and 5 years. It is possible workers who have been working for at least five years are likely to be safe from hazards or things that are injuries to health. There was no previous studies that showed contraindications against the current findings but the difference between the previous one and current study were based on study area, design of the study, sample, duration of the study among others.

### **Gender and knowledge of occupational hazards among carpenters**

The finding of this study showed that good knowledge of occupational hazards was found more among the male respondents though the tested hypotheses showed no statistically significant relationship between gender and knowledge of occupational hazards among carpenters. The result of this study is in corroboration with studies of Ofonime and Edward (2016) that the that the workers had good knowledge of occupational hazards which they have The result of this study is also in line with studies of Walleet al, (2013) revealed that 216 (65.1%) of female workers recruited were exposed to occupational hazards which affect job delivery. Idungafa et al, (2019) buttressed that occupational hazard was significantly associated with sex ( $p < 0.05$ ). It is plausible that both male and female workers may be exposed to occupational hazards so, they have first hand awareness about occupational hazards which affects them directly. Dathini et al, (2014) affirmed that occupational hazards based on gender, that 92 (52.9%) were

male and 82 (47.1%) female. It could be crystal clear that male workers are mostly exposed to occupational hazards. In the light of this, no previous studies were found contrary to the outcome of the current study on the exposure to occupational hazards on regards to gender. The similarity between the present study and the previous ones might be due to the fact that they all used a similar research design, descriptive research design.

#### **Knowledge of occupational safety**

The finding of this study showed a good knowledge of occupational safety among the respondents. This finding is not surprising as there is the expectation that the safety and health of the carpenters is prioritized among them and are active in carrying out their duty to ensure occupational safety. Also, the finding of this study could be the carpenters are more serious with searching for information about the occupational health hazards inherent in their job. The finding of this study is similar to that of Albert et al. (2014) where knowledge on safety practices was found to be good. The finding of this study also corroborates that of Ulang et al. (2014) where more of the respondents were found to have good knowledge on occupational safety. The commitment of the mass media in disseminating information on health and general well-being might be implicated for the similarity found in the previous studies and the present one. The finding of this study is in agreement with that of Sah et al. (2015) where it was reported that, all the workers had some basic knowledge about occupational safety. The contribution of various knowledge promoting materials in the society today may be implicated for the similarities found in the previous and present study. To buttress this, it has been observed that, the society is fast growing in the aspect of knowledge and there is the expectation that more workers in the carpentry industries are taking advantage of the technological innovations to access occupational safety related information. As seen from the findings of this study, the good knowledge found in the study was translated to good safety practices among the respondents of the study. The finding of this study is different from that of Peter and Olasumbo (2014) where the knowledge of safety practices was found to be poor. The variation in the sample size and the study design might be implicated for the difference found in the two studies. The finding of this study is different from that of Adewale and Adhuze (2017) which showed that majority of the respondents have poor knowledge of occupational safety practices. This difference found between the present study and the previous one might be due to the difference in the study area, and the sample size. The findings of this study also differ from that of Vitharam et al. (2015) where poor knowledge of occupational safety was recorded. The fact that the previous study analysed data qualitatively whereas the present study analyzed the data generated quantitatively might be implicated for the variations found between the two studies. Also, the variation found between the previous studies and the present one might be explained by the fact that, the previous studies were carried out in a different location from where the present study was carried out.

#### **CONCLUSION**

The study concluded based on the findings that carpenters in Rivers East Senatorial District are proactive concerning their health and safety hence, the good knowledge found among them which is indicative of the fact that they took time to search for related information about the hazards and safety measures peculiar to their occupation, carpentry.

#### **RECOMMENDATIONS**

The following recommendations were made based on the findings of the study:

1. Safety personnel should organize safety training for carpenters in Rivers State from time to time to keep them updated about current safety practices in their profession, this will help to sustain a good knowledge of safety and occupational hazards among them.
2. Carpenters should continue to ensure safe workplace for themselves and those under them by always monitoring every activity in the workshop and emphasizing adequate compliance.
3. Professional organizations such as the National Industrial Safety Council of Nigeria (NISCN), the Institute of Safety Professionals of Nigeria (ISPON) and trade unions should organize periodic

workshops and training programmes on occupational hazards and safety to sustain the awareness of occupational safety among the carpenters.

4. Employees working in carpentry industries need to take reasonable care of their own safety and that of their colleagues, comply with safety instructions and procedures given by management and use all safety equipment properly.

## REFERENCES

- Aaron, I. (2018). Identifying hazards in the workplace and why it's important. <https://converse.com.au/identifying-hazards-in-the-w>
- Albert, A., Hallowell, M. R., & Kleiner, B. (2014). Emerging strategies for construction safety and health hazard recognition. *Journal of Safety, Health and Environmental Research*, 10(2), 152- 160.
- Aluko, O. O., Adebayo, A. E., Adebisi, T. F., Ewegbemi, M. K., Abidoye, A.T., & Popoola, B. F. (2016). *Knowledge, attitudes and perception of occupational hazard and safety practices in Nigeria healthcare workers. BioMedical Central Research Notes*, 9, 71 – 79.
- Awosan, M. T. O., Ibrahim, E. U., Yunusa, B. A., Isah, U. M., Ango, A., & Michael, A. (2018). Knowledge of workplace hazards, safety practices and prevalence of workplace related health problem among sawmill workers in Sokoto, Nigeria *International Journal of Contemporary Medical Research*, 5(10), J5-J12.
- Balogun, M. O., Obiagwu, A. E., & Omokhodion, F.O. (2016). Health problems, workplace hazards and health needs of artisans in Ibadan, Nigeria. *African Journal of Medicine and Medical Sciences*, 45, 341-348.
- Canadian Center for Occupational Health and Safety (2018). *Work related musculoskeletal Disorder (WMSDs)*. CCOHS
- Canadian Centre for Occupational Health and Safety (2014). *Occupational health and safety answers fact sheets*. <http://www.CCOhs>
- Edward, W. A. (2015). *Analysis of occupational health and safety, accident and safety, safety measures and disease prevention*, <http://doi.org/10.131401RG.2.2.36203.13602>.
- Elenwo, E.I. (2018). Occupational hazards and risks of automobile mechanics in Port Harcourt Metropolis, Rivers State. *International Journal of Health, Safety and Environments (IJHSE)*, 4(01), 156-167.
- Fasoranti, A. J. (2015). *Occupational risk assessment as a tool for minimizing workplace accidents in Nigeria industries*. <https://ir.unilag.edu.ng/handle/123456789/7801>
- Fasunloro, A., & Owotade, F.J. (2004). Perceived occupational hazards among dental staff in Osun State. *Journal of Contemporary Dental Practice*, 5(2), 134-152.
- Idungafa, D. E., & Tobin-West, C., (2019). Socio-demographic factors associated with knowledge of occupational hazard and safety measures among workers in selected downstream petroleum companies in Port Harcourt, Rivers State, Nigeria. *Journal of Advances in Medicine and Medical Research*. 29(11): 1-12.
- Inah, S. A., Eko, J. E., Nwachukwu, E. J., Out, F. T., Obot, N., & Archibong, B. (2019). Knowledge, Risk Perception of Occupational Hazards and Safety Practices amongst Carpenters in Southern Nigeria: A Cross-sectional Study. *Asian Journal of Advanced Research and Reports*, 6(2), 1-9.
- Labreche, F., Duguay, P., Ostiguy, C., Boucher, A., Roberge, B., & Peters, C. E. (2018). Estimating occupational exposure to carcinogens in Quebec. *American Journal of Industrial Medicine*, 56(9), 1040–1050.
- Neumann, A. (2019). Going to extremes. *Harper's Magazine*. <https://en.org/wiki/Safety>.
- Nigerian Institute of Safety Professionals (2018). *Occupational hazards*. NISP.
- Nwankwo, M.C., Karanja, S., & Vasanthakalam, H. (2018). The occurrence of occupational health hazards in districts health facilities in Kigali, Rwanda. *International Journal of Community Medicine and Public Health*, 5(1), 21 - 29.



- Occupational Safety and Health Administration (2015). *OHSAS 18001 Manual: How to identify and classify occupational health & safety hazards*. OSHA
- Odibo, A. A. K. Nwagazie, I. L. Achalu, E. L., & Ugbebo, J. N., (2018). Assessment of occupational hazards in sawmills: a case study
- Ogundipe, K. E. (2017). *Safety practices and workers performance on construction sites in Lagos state, Nigeria*. Covenant university Ota.
- Ozumba, B. C. (2019). *Occupation and risk for injuries*. National Institute of Health.
- Peter-Kio, O. B., ThankGod, A., & Ene-bougilli, G. (2019). Hazard control, needs of building construction workers in Obio/Akpor Local Government Area of Rivers State. *Nigerian Journal of the Institute of Industrial Health, Safety and Environmental Technology Teachers*, 4, 62-70.
- Ponsoby, W. (2017). Global occupational health. *Occupational Medicine*, 67(5), 331-333
- Sah, J. P., Shah, S. K., Yadav, D. K. Salahuddin, M., Yadav, C. K., Razin, M. S., Rashid, M. & Dhita, S. R. (2015). Knowledge and practice related to Occupational Hazards among Maruti cement factory workers in Mirchaiya, Siraha, Nepal. *Microbes and Health*, 2(2): 11-18.
- Sambo, M. N., Idris, S. H., & Shamang, A. (2012). Investigated determinants of occupational health hazards among roadside automobile mechanics in Zaria, North western Nigeria. *Borno Medical Journal*, 9(1), 5-9.
- Segun, O. O., Adesanya, A. R., & Bakare, A. A. (2017). Ergonomics awareness and employee performance: An exploratory study. *Economic & Environmental Studies*, 17(4), 813-829.
- Siziya, S., Rudatsikira, E., & Mweemba, A. (2013). Exposure to Occupational Health Hazards among Zambian Workers. *Occupational Medicine*, 63, 109-115.  
<http://dx.doi.org/10.1093/occmed/kqs201>
- Tagurum, Y., Gwomson, M. A., Yakubu, P. M., & Igbita, J. A. (2018). Awareness of occupational hazards and utilization of PPE amongst welders in Jos metropolis, Nigeria. *International Journal of Research in Medical Sciences*, 6(7), 22-27.
- Thangaraj, S., & Shireen, N. (2017). Occupational health hazards among automobile mechanics working in an urban area of Bangalore. *International Journal of Medical Science and Public Health*, 6(1), DOI:10.5455/ijmsph.2016.31052016540