

Occupational Health Hazards and Safety Measures Practiced among Dental Health Care Workers in Federal College of Dental Technology and Therapy Enugu State, Nigeria

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Abstract

The study determined occupational health hazards and safety measures practiced among dental health care workers in Federal College of Dental Technology and Therapy Enugu state. Four specific purposes with four corresponding research questions and two null hypotheses guided the study. The descriptive survey research design was used for the study. The population for the study consisted of 400 dental health care workers in Federal College of Dental Technology and Therapy Enugu. The entire population was used and therefore there was no sampling. A validated occupational health hazard for dental health care workers and safety measures questionnaire served as the instrument for data collection. Descriptive statistics of frequencies and percentages and chi-square statistics were used to analyze and answer the research questions and hypotheses respectively. While ANOVA was used to test the hypotheses at 0.05 level of significance, the result of the study showed that Dentists encountered high occupation health hazards (26%), Dental nursing and Dental Assistants encountered average occupational health Hazards (13.26%) and 16.44%, less than 10 years working experience had low safety measure practiced (29.8%), and 11-15 years and 16 years above years of working experience had overall safety measures practiced (48.34% and 44.1%) and 44.1% respectively. There was no significant difference in the occupational health hazards encountered by dental health care workers according to cadre ($p > .05$) while there was a significant difference in the safety measures adopted by dental health care workers according to years of working experience ($p < .05$). Based on the findings of the study, it was recommended that management should improve the working conditions of workers and organize seminars, education programmes and ergonomic interventions to ensure that workers remain healthy.

Keywords: Occupational Health Hazards, Safety, Health Promotion, Dental Workers, Diseases

Introduction

Occupational health is aimed at the promotion and maintenance of the highest degree of physical, mental, and social well being of workers in all occupation. The prevention of deviation from health among dental health care workers caused by their working condition their protection from risks resulting from factors adverse to health (Winter 2017). Occupational hazards refer to risk or dangers as a consequence of the nature of the working conditions of a particular work. It can also refer to a work, material, substances, process, or situation that predisposes, or causes accidents or diseases at a workplace. (Smith & Kdjaruna, 2014) assert that the history of occupational hazard can be traced back to the 18th century when Bernadino Ramazzini, who is referred to as the father of occupational medicine, recognized the role of occupation in the dynamic of health and diseases. Some study across the world has shown that dental care workers have compared to workers in other health professions reported more frequent and serious health problems. These problems include increased psychological stress, muscular-skeletal disorders and allergic reactions, (Moen & Bjorvatn, 2017). Dental health care workers on daily basis are in contact with tissues, saliva and blood directly or indirectly, this predisposes them to a large number of transmitted infectious diseases, (Adei, 2017). According to Achalu (2017), the source of these hazards is the working environment which can include physical, chemical, biological, psychological, ergonomic, mechanical and social aspects.

The dental health care workers are at risk of physical injuries during many dental procedures. GramhirSingh (2013), sources of physical injury can include debris from the oral cavity striking the eyes, cuts from sharp instruments or puncture would from needles or other sharp instruments. Such injury can result in the transmission of serious infectious diseases to the dental worker. Needlestick injuries and cuts from sharp objects and instrument (percutaneous injuries) have been reported in 1-15 suturing in the united states more than 800,000 needle stick injuries occur each year despite continuing education and efforts to prevent them (Alphonso, 2018). Fasunloro and Owotade (2015) opined that eye injuries may occur from projectiles such as bits of calculus during

scaling procedures and splitters from body fluids (bacterial and viral aerosols) while using high-speed pieces. Another potential source of eye injuries is the intense dental curing light, users of dental curing light should be advised to employ protective eyewear during use the most common injuries reportedly experienced by the dental hygienist are musculoskeletal. Adedeoyin (2010), the need to work in a fixed working position using a continuous repetitive motion can predispose the clinical dental health worker to wrist ache, lower backache and neck ache.

The chemical environment is one of the most rapidly expanding components of the work environment because new chemicals and solutions are being introduced regularly, many of these chemicals are among those whose health effects may not be known and may pose health problem taking years to manifest. According to the World Health Organization (WHO) (2017) reported that many biomaterials and auxiliary products used in dentistry are chemically reactive. Hazardous and elastomeric impression materials have been described and are the focus of intensive research. Although N₂O was for many years believed to have no toxicity other than that associated with its anaesthetic actions, the neurological abnormalities in health care workers chronically exposed to No₂ have disproved this notion. Retrospective surveys of dental and medical personal have linked occupational exposure to N₂O with several health problems and reproductive derangements.

Psychological Hazards is any hazard that affects the mental well-being or mental health of the worker by overwhelming individual coping mechanisms and impacting the worker's ability to work healthily and safely. Psychological hazards are aspects of the work environment and the ways that work are organized that are associated with mental disorders or physical injury or illness. According to Ogunbodede (2018), the causes of psychological hazards among dental health care workers were work-related stress. International Labour Organization (ILO) (2016) opined that 4% of the world annual gross domestic profit (GDP) is lost as a result of psychological hazards as employers are faced with a loss of skilled staff, migration, and early retirement in their works place. Ergonomic Hazard in the workplace is any condition which has the potential to cause harm to a workers musculoskeletal system. An ergonomic hazard may be caused by the physical condition of the workplace when there is a poor fit, a worker may suffer injuries or trauma, Sometimes referred to as ergonomic disorder or musculoskeletal disorder (MSDS) (Jacobson & Hensten, 2016). Ergonomic hazard may also be referred to as ergonomic risk factors or biomechanical stressors (Nwachukwu, 2014). According to Johnson (2017) opined that to reduce the chance of injury work tasks should be designed to limit exposure to an ergonomic risk factor. Dental health care workers are direct or indirect contact with traumatized tissues, saliva, and blood daily (McDonald & Walsh, 2017). Exposure to biological hazards may occur to any dental workers in contact with patients. Musculoskeletal disorders during dentistry procedure, the dentist posture is strained while standing and sitting or close to a patient who remains a sitting or lying positions, which induce stress injury on the musculoskeletal system (Okonofua, 2017). Musculoskeletal complications among dental workers are prevalent like other health care workers; low back pain is the most prevalent musculoskeletal complaint among dentists.

Occupational safety is the control of hazards in the workplace to achieve an acceptable level of risk, while workplace safety generally refers to the process of protecting the health and safety of workers while at the job. Occupational health and safety is an important issue because of the high rates of associated morbidity and mortality of exposed workers. In the modern dental practice, safety concern must be paramount to avoid injury and litigation the principle of "do no harm" must also apply to patients for injury prevention. Similarly, dentists must be vigilant in wearing personal safety and remain healthy and active in their professions because the majority of dental procedures are accomplished with aerosols and chemicals frequently nearby, both patients and dentist should wear eye protection. Mehta and Pilla (2016) Stated that protective wear use reduces the risk from blood-borne pathogens during procedures in which splatter or the use of aerosols might occur. Dentists are at risk for noise-induced hearing loss, although hearing loss may not be symptomatic. The first Complication and the reason for seeking a hearing evaluation may be tinnitus. The sources of dental sound induce hearing loss that can be diminished high-speed turbine headpiece, high-velocity suction, ultrasonic instruments and cleaners, vibrators. Personal protective equipment such as gloves, respiratory protection and eye protection should be used based on the risk assessment (Adeola, 2014). Equipment is often used in conjunction with other controls to provide additional protection to workers. The primary aim of personal protective equipment is to protect the workers from infections disease by breaking the chain of infection at the portal of entry or exit of the microorganisms gloves, gowns and other protective clothing reduce exposure through the dermal (skiny) contact route and help contain the microorganism to the work environment. According to Nworgu,(2017) gloves are the most common types Of personal protective equipment (PPE) used for dental tasks. Gloves are made from a variety of materials including latex, nitrile, neoprene, and polyethylene and available in various levels of thickness when dealing with infectious materials. Gloves must waterproof, Latex gloves should be avoided due to the risk of latex allergy unless there is a demonstrated safety requirement for latex to used personal protective equipment (PPE) is required when there is

potential for exposure of the face to splashes or sprays of infectious material, (Igbende, 2016). Okafor (2015) asserted that the selection of eyewear depends upon the task being conducted. Types of eye protection include safety glasses, goggles, visors, face shields and table modulated barrier shields. Masks are commonly used to contain droplets at the source for example the dental worker or patient with a cough Hassan, (2018). Rahman (2016) stated that fully cover the nose and mouth masks worn by patients reduce exposure through droplet containment at the source. This study is necessary so that adequate preventing can be taken to reduce occupational health hazards. The social-demographic factors of years of working experience and cadre were investigated. The study will determine the occupational health hazard and safety measures among dental health care workers in federal college of dental technology and therapy Enugu state.

Purpose of the Study

The purpose of this study was to determine the occupation hazards and safety measures practiced among dental health care workers in federal college of dental technology and Therapy Enugu. Specifically, the study determined:

1. Occupational health hazards among dental health care workers in Federal College of Dental Technology and Therapy Enugu.
2. Safety measures practiced among dental health care workers in Federal College of Dental Technology and Therapy Enugu State.
3. Occupational health hazards encountered by dental health care workers in Federal College of Dental Technology and Therapy Enugu according to staff cadre.
4. Safety measures practiced adopted by dental health care workers in Federal College of Dental Technology and Therapy Enugu State according to years of working experience.

Research Questions

The following research questions guided the study

1. What are the occupational health hazards among the dental health care workers in Federal College of Dental Technology and Therapy Enugu?
2. What are the safety measures practiced among dental health care workers in Federal College of Dental Technology and Therapy Enugu State?
3. What are the occupational health hazards encountered by dental health care workers in Federal College of Dental Technology and Therapy Enugu according to staff cadre?
4. What are the safety measures practiced among dental health care workers in Federal College of Dental Technology and Therapy Enugu State according to years of experience?

Hypotheses

The following null hypotheses were postulated to guide the study and they were tested at .05 level of significance:

1. There is no significant difference in the occupational health hazards encountered by dental health care workers in federal college of dental technology and therapy Enugu according to staff cadre.
2. There is no significant difference in safety measures practices adopted by dental health care workers in federal college of dental technology and therapy Enugu according to years of working experience.

Methods

Design of the study: The study adopted the descriptive survey design.

Area of the Study: The study was conducted in Federal Collage of Dental Technology and Therapy Enugu State, Nigeria.

Population for the Study: population for the study consisted of 400 dental health care workers drawn from the Federal College of Dental Technology and Therapy Enugu state, Nigeria. Dental health care workers are dentists, dental nursing, dental assistants, laboratory technicians. Those will be used for the study are dentists and dental nursing because they are directly involved in the treatment of dental problem.

Sample and Sampling Techniques: The entire population was used and therefore there was sampling as the number was manageable. Instrument for data collection: the instrument used for data collection was a structured questionnaire tagged "occupational health hazards for dental health care workers and safety measures questionnaire" (OHFHDHCWSMQ). The instrument was validated by three experts from the department of

human kinetics and health education, Enugu State University of Science and Technology, Enugu State, suggestions of the experts were incorporated to produce the final draft of the instrument.

Method of Data Collection: Data were collected from the respondents in federal college of dental technology and therapy Enugu State. Respondents filled and returned the completed questionnaire on the spot to avoid loss.

Data Analysis: Data were analyzed using frequencies and percentages to answer research questions while hypotheses were tested using chi-square statistic at 0.05 level of significance.

Results

Table 1: Responses on Occupational Health Hazards among Dental Health Care Workers

| S/N | Items | Workers Exposed | n (%) | Workers not Exposed | n (%) |
|-----|-----------------------|-----------------|-------------|---------------------|-------------|
| 1. | Psychological hazards | 290 | 72.5 | 110 | 27.5 |
| 2. | Chemical hazards | 280 | 70 | 120 | 30 |
| 3. | Biological hazards | 298 | 74.5 | 102 | 25.5 |
| 4. | Ergonomic hazards | 360 | 90.0 | 40 | 10 |
| 5. | Physical hazards | 265 | 66.2 | 135 | 33.8 |
| | Overall | | 74.8 | | 25.2 |

Data in table 1 shows that overall dental health care workers reported being exposed to occupational hazards in their workplace(74.8%) especially, the workers were exposed to Psychological hazards (72.5%), while (27.5%) of dental health care workers were not exposed to Psychological hazards. Also (70%) of the dental health care workers were exposed to Chemical hazards while (30%) of the dental health care workers were not exposed to Chemical hazards. Also, (74.5%) of dental health care workers were exposed to Biological hazards but (25.5%) were not exposed to Biological hazards. (90%) of dental health care workers were reported to have been exposed to disease while (10%) were not exposed to Ergonomic hazards in their workplace. Furthermore, (66.2%) of dental health care workers were revealed to being exposed to Physical hazards while (33.8%) were not exposed to Physical hazards in their working place.

Table 2: Responses on Safety Measure Practiced Among Dental Health Care Workers

| S/N | Items | Workers Exposed | n (%) | Workers not Exposed | n (%) |
|-----|----------------------------------|-----------------|--------------|---------------------|--------------|
| 1. | Regular hand washing | 280 | 70 | 120 | 30 |
| 2. | Use of Gloves | 287 | 71.75 | 113 | 28.25 |
| 3. | Use of mask | 278 | 69.5 | 122 | 30.5 |
| 4. | Use of Apron | 350 | 87.5 | 50 | 12.5 |
| 5. | Proper Disposal of sharp objects | 269 | 73.73 | 105 | 26.27 |
| | Overall (%) | | 73.75 | | 26.27 |

Table 2 shows that the overall responses on safety measures practiced among dental health care worker in federal college of dental technology and therapy Enugu Nigeria, was (73.8%) while the overall of dental health care workers that did not practice safety measures were (26.27%). Therefore (70%) of Dental health care workers were reported being practiced regular hand washing in their workplace, while (30%) have not practiced regular handwashing among the dental health care workers. Also, (71.6%) do practice use of gloves among dental health care workers. While (28.3%) were not practicing use of gloves. More so, (69.5%) of dental health care workers practiced use of mask while (30.5%) were not practicing use of mask. Furthermore, (87.5%) practiced use of apron among dental health care workers while (12.5%) were reported not practicing use of apron in their workplace. Lastly, (73.7%) were also practicing proper disposal of sharps objects while (26.3%) of dental health care workers were not practicing proper disposal of sharp objects.

Table 3: The Occupational Health Hazards Encountered By Dental Health Care Workers According To cadre

| S/N | Occupational Health Hazards | Dentists N=60 F% D | Dental Nursing N=160 F% D | Dental Assistants N=180 F% D |
|-----|-----------------------------|--------------------------|---------------------------------|------------------------------------|
| 1. | Psychological hazard | 21(25) | 11(6.9) | 20(11.1) |
| 2. | Chemical hazard | 13(21.7) | 23(14.4) | 35(19.4) |
| 3. | Biological hazard | 17(28.3) | 21(13.1) | 28(15.6) |
| 4. | Ergonomic hazard | 6(10) | 15(9.4) | 16(8.9) |
| 5. | Physical hazards | 21(35) | 36(22.5) | 49(27.2) |
| | Overall % | 26 | 13.26 | 16.44 |

Table 3 showed that dentists had high occupational health hazard of (26%). The table also indicated that dental nursing and dental assistants had an average of occupational health hazards (13.26) and (16.44%) respectively.

Table 4: The Safety Measures Practiced Adopted By Dental Health Care Workers According To Years Of Working Experience

| S/N | Safety Measures Practiced | <10 years N=100 F% D | 11-15 Years N=120 F% D | Above 16 years N=180 F% D |
|-----|----------------------------------|----------------------------|------------------------------|---------------------------------|
| 1. | Regular hand washing | 43(43) | 53(44.2) | 67(37.2) |
| 2. | Use of gloves | 60(60) | 94(78.3) | 94(52.2) |
| 3. | Use of masks | 18(18) | 82(68.3) | 110(61.1) |
| 4. | Use of eye wear | 20(20) | 41(34.2) | 73(40.6) |
| 5. | Proper disposal of sharp objects | 8(8) | 20(16.7) | 53(29.4) |
| | Overall % | 29.8 | 48.34 | 44.1 |

Table 4 indicates that dental health care workers with less than 10 years working experience had low safety measures practice (29.8). The table also showed that dental health care workers with 11-15 years and 16 years and above working experience had overall safety measure practice of (48.3% and 44.1 %) respectively. The table also showed that all the respondents had low safety measure practice on items 4,5 irrespective of the years of their working experiences. Also, respondents of less than 10 years working has low safety measures practice on all the items except items 1 and 2 where they have average safety measures practice. The table further indicated that those who have worked for 16 years and above had high safety measures practice except for item 5.

Table 5: Summary of chi-square analysis of No significance difference in the occupational health hazards among dental care health workers in federal college of dental technology and therapy Enugu according to Cadre (n=400)

| Variable | N | Correct O(E) | Incorrect O(E) | χ^2 -value | df | Sig |
|-------------------|-----|-----------------|-------------------|-----------------|--------|-----|
| Dentists | 60 | | 38(32.1) | 22(27.9) | | |
| Dental Nursing | 160 | | 81(85.6) | 79(74.4) | 2.9005 | 2 |
| Dental Assistants | 180 | | 95(96.3) | 85(83.7) | | |

Key = Observed frequency; E= Expected frequency; df= Degree of freedom; Sig= Significance

The chi-square test for independence shows no significant difference ($\chi^2=2.9005$, $df=2$, $Sig=5.991>.05$) in the level of exposure to occupational hazards among dental health care workers. Since the Significance value was greater than 0.05 level of significance at 2 degrees of freedom, the null hypothesis of no significant difference was therefore not rejected. This implies that there is no difference in occupational health hazards among dental care workers.

Table 6: Summary of chi-square analysis of No significant difference in safety measures practice adopted by dental health care workers according to years of working experience

| S/N | Years of working experience | N | Correct O(E) | Incorrect O(E) | x ² -value | df | Sig. |
|-----|-----------------------------|-----|--------------|----------------|-----------------------|----|-------|
| 1 | < less than 10 years | 100 | 65(67.5) | 35(32.5) | 1.5067 | 2 | 5.991 |
| 2 | 11-15 years | 120 | 83(81) | 37(39) | | | |
| 3 | Above 16 years | 180 | 115(121.5) | 65(58.5) | | | |

Key o = observed frequency, E= expected frequency, df= degree of freedom sig. significance.

The chi-square test for independence shows no significant difference ($\chi^2=1.507$, $df=2$, $sig. =5.9991 > .05$) in the safety measure practices adopted by dental health care workers according to years of working experience. Since the sig was greater than 0.05 level of significance at 2 degree of freedom, the null hypotheses of no significant difference was therefore not rejected. This implies that dental health care workers did not differ in safety measure practices adopted according to years of working experience.

Discussion

Findings in Table 1 shows that only 72.5 per cent of dental health care workers were exposed to psychological hazards such as work-related stress while (27.5%) of dental health care workers were not exposed to psychological hazards. The finding is expected and not surprising. This is because of the many real consequences of occupational hazards among dental health care workers. The finding is in line with the report of Ogunbodede, (2017) stated that the causes of psychological hazards among the dental health care workers were work-related stress. Also, international labour organization (ILO, 2017), reported that 4% of the world annual Gross domestic profit (GD.P) is lost as a result of psychological hazards employers are faced with the loss of skilled staff, migration, early retirements in their workplace. However, the table reveals that (66.2%) dental health care workers were exposed with various physical hazards such as prinks by sharp objects while (33.8%) of dental health care workers were not exposed to physical hazards in their workplace. Gamhir, Singh (2013) stated that the source of physical injury can puncture wound from needles or other sharp instruments. The findings also showed that 74.5 per cent of dental health care workers were exposed to Biological hazards while 25.5 per cent of the dental care workers were not exposed to Biological hazards. This is in line with the report of Alphonso (2018) who opined that dental health care workers are in direct or indirect contact with traumatized tissues, saliva, and blood daily. Also, the table reveals that 70 per cent of the respondents were exposed to chemicals hazards in their workplace while 30 per cent of the respondents were not exposed to chemical hazards in their workplace. The finding is in line with the report of the World Health Organization (WHO) (2017), that many biomaterials and auxiliary products used in dentistry are chemically reactive. Moreso, 90 per cent of the dental health care workers were exposed to the ergonomic hazard while 10 per cent of the dental health care workers were not exposed to ergonomic hazards in their workplace. This is in line with the report of Nwachukwu (2014) stated that to reduce the chance of injury, work tasks should be designed to limit exposure to ergonomic risk factors. The table revealed that overall of dental health care workers that exposes to occupational hazards in federal college of dental technology and therapy was 74.8 per cent while the overall of dental workers who did not expose to occupational hazards was 25.2 per cent, this shows that the percentage of workers that exposed to occupational hazards were more than the percentage of workers who did not expose to an occupational hazard.

Finding in Table 2 Revealed that the majority of the dental health care workers practiced safety measures since 73.75% of respondents confirms with the safety measures while 26.27 per cent was not in conformity. This indicated that majority of dental care health workers practiced safety preventive measures such as regular hand washing 70 per cent, use of gloves 71.75 per cent, use of mask 69.5 per cent, use of apron 87.5, proper disposal of sharp objects 73.73 per cent. The findings aligned with the finding of Donald, and Waish, (2017) who reported that the barrier utility such as gloves, masks, power suction, and good ventilation to reduce aerosols and vapour hazards were the occupational health dental safety measure practices among the dental care workers.

Finding in Table 3 revealed that dentist result encountered high occupational hazard (26%) dental nursing and dental assistants encountered average occupational health hazards of (13.26%) and (16.44%). Musculoskeletal disorder during dentistry procedure, the dentist posture is strained while standing and sitting or close to a patient who remains in a sitting or lying positions which induce stress injury on the musculoskeletal system (Okonofua, 2017). The finding was expected and therefore not a surprise. This was because dentists are mostly involved in the treatment of dental problems.

Finding in Table 4 showed that dental health care workers with less than 10 years of working experience had an overall safety measure practice (29.8). The table also showed that dental health care workers with 11-15 and above working experience had overall safety measure practice of (48.34% and 44.1%) respectively. The table also showed that all the respondents had low safety measure practiced on item 4 and 5 irrespective of the years of working experience. The table further showed that those who have worked for 16 years and above had high safety measures practiced only on item 5. This implies that dental health care workers with different years of working experience also differed in their knowledge of practice safety measures. The primary aim of personal protective equipment are to protect the workers from infectious disease by breaking the chain of infection at the portal of entry or exit of the microorganisms (Johnson 2017).

Finding in Table 5 showed that there was no significant difference in occupational health hazard encountered by dental health care workers. In the United States, more than 800,000 needle stick injuries occur each year despite continuing education and effort to prevent them (Fasunloro and Owotade, 2015).

Finding in Table 6 showed that there was a significant difference in the safety measures adopted by dental health care workers according to years of working experience. The finding was expected and therefore not a surprise. This is because one expects dental health care workers with more years of working experience gather more knowledge in the course of practice than those with fewer years of working experience. This finding is in conformity with the study Adelola (2015) asserted that protective eyewear use to reduce the risk from bloodborne pathogens during procedures in which splatter or the use of aerosols might occur.

Conclusion

Based on the findings and discussion of the study, the following conclusions were reached overall, dental health care workers that had been exposed to occupational hazards in their workplace (74.8%) while the overall adopted on safety measure practices among dental health care workers in Federal College of Dental Technology and therapy Enugu were (73.8%). Dentists had high occupational health hazard(26%), Dental Nursing and Dental Assistants had average occupational health hazards (13.26% and 16.44%), dental health care workers with less than 10 years working experience on safety measure practices (29.8%) while dental health care workers with 11 – 15 years and 16 years and above working experience had an average on safety measure practices of (48.34% and 44.1%) among dental health care workers. Also, dental health care workers according to cadre had no significant difference in the occupational health hazard ($p > 0.05$) among dental health care workers and dental health care workers had a significant difference on safety measures according to years of experience ($p < 0.05$) among dental health care workers. There is a need to further clarify the specific procedures and to improve employee training to alleviate the occurrence of musculoskeletal health problem.

Recommendations

Based on the findings and conclusion of the study, the following recommendations were made;

1. Regular workshops and seminars on occupational health hazards should be organized for all dental health care workers periodically to update their knowledge and, hopefully, influence their work practices.
2. More effort should be made by management officials to educate the dental health care workers about the importance of Hepatitis B Vaccination.
3. Personal protective equipment (PPE) should be made accessible to dental health care workers with a written plan on how and when to use it to avoid contacting infectious diseases that may arise during dental procedures.

References

- Achalu, E. I. (2017). A Guide to Occupational Health and Safety. Lagos, Splendid
- Adebola, F.A. & Owatade, F.J. (2015). Occupational hazards among clinical dental staff. *J Contemp Dental Practice* 5.134-52.
- Adedoyin, E. (2010) Occupational exposure and percussion. *Hazards and Safety* 2:6- 18
- Ademola S.A., & Damona, B.(2015) Assessment of occupational hazards and safety and related biomedical waste Delhi. *International scholarly Research Notice*. (1):1-5.
- Adeola J. (2014) Work-related noise hazards in the dental surgery. *Ann Agric Environm. Med*-2014:4:67:70
- Adie, D. (2017) Occupational health safety policy in the wood processing industries in Kumasi, Ghana *Journal of Science and Technology* 27:1515-171
- Alphonso, T. (2018.) Decent work and Global strategy occasional safety and Health practice 15:7-13.



- Areemo, BT. occupational hazards among Nurses of OAUTHC Ile-Ife. MB. Ch.B community Health Dissertation Obafemi Awolowo University Ile-Ife Feb. 2001.
- Asogwa SE (2017).A Guide to Occupational Health Practice in Developing countries. Enugu, Snap Press Limited.
- Fasunloro A, & Owotade F, J (2015). Occupational health hazards among clinical dental staff. *J Contempt Dent Practice*. 5:134-152
- Gamhir, R.S, Singh, G. (2013). Occupational health hazards in current dental profession: A review. *Open Occupational Health Safety J*. 3,57-64.
- Hassan E.O, (2018) Occupational health hazards among clinical and gynaecology unit of a Nigerian teaching hospital .*J. Obstet Gynaecol* .22:73-78.
- Igbende M. (2016) The prevalence of latex allergy among dental care workers in Bolu(Turkey). *Dermatol Nurs* 15:543-547.
- Igbende, B. (2016) Mechanisms leading to musculoskeletal disorders in dentistry. *J. AM Dent Assoc*. 2016, 134:1344-50
- International Labour Organization (2016). International labour standard on occupational safety and health. The Author.
- Jacobson, N. & Hensten P . A. (2016).Occupational health problem among hygienist. *Oral Epidemic*, 23, 177-81.
- Johnson .L, (2017) The prevalence of latex gloves related complications among dental students *J of IMAB*. 2011; 17:91-2
- Mc. Donaid, K.I, & Walsh, I. J (2017). Analysis of workplace injury in a dental school environment. *Austene J*, 42:109-13.
- Mehta D, Pilla. (2016) Prevalence and risk factors of hand problems and carpal tunnel syndrome among dental hygienists. *J. Dent Hyg*.20016: 75:130-4. Pub.med
- Moen, B. & Bjorvatn, K. (2017). Musculoskeletal symptoms among dentists in a dental school. *Occup. Med*, 46, 45-66
- Nwachukwu, OB. (2014). Occupational health and industries safety. Concepts and principles. Owerri concave publishers National institute of Occupational Health and Safety (1999). National occupation Research Agenda Washington DC.
- Nworgu L. (2017). Causes of needle stick injuries in three healthcare settings: analysis of accident notifications registered six months after the implementation of EU directive 2010/32/EU in Germany *Journal of Hospital infections* 95 (3):306-311
- Ogunbodede, E.O .(2019). Occupational hazards and safety in dental practice. *Nigerian j med*. 5:11-15
- Okafor R.O. (2015). How to reduce the stress of general dental practice: The need for research into the effectiveness of multifaceted interventions. *Br Dent J*. 2015; 200:437-40
- Okonofua, k. (2017).Health hazards associated with curing light in the dental clinic. *Clin oral investing*. 2017:8:113-7.
- Rahman J. (2016) Occupational health. *International Journal of Hygiene and Environmental Health* 2016:303-313
- Smith, D. R. & Kedjaruna U. (2014). Occupational health problem in modern: a review. *J. Indus Health*. 45:611-21.
- Winter, P. A. (2014). Influence of practice and personal characteristics and dental job satisfaction. *Dent. Ed*.
- World Health Organization. (2017). Occupational health and safety: Nigeria public health training initiative. The Author pp 234-238.