

**INVESTIGATION INTO THE LEVEL OF AWARENESS AND IMPLEMENTATION
OF OCCUPATIONAL HEALTH AND SAFETY HAZARDS IN AUTOMOBILE
WORKSHOPS IN ABUJA.**

BY

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CERTIFICATION

I, Ihezie Amarachi Chigozie with matric number 2007/1/27281BT an undergraduate student of the Department of Industrial and Technology Education certify that the work embodied in this project is original and has not been submitted in part or in full for any diploma or degree of this or any other university.

Name

Sign/Date

APPROVAL PAGE

This project has been read and approved as meeting the requirement for the award of B.Tech degree in the department of Industrial and Technology Education, School of Science and Science Education, Federal University of Technology, Minna.

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DEDICATION

I dedicate this project first to the Almighty God my best friend; then to my wonderful parents (Mr. Ihezie Ambrose and Mrs. Ihezie Obiageri) and my siblings (Ihezie Chibuchi, Ihezie Chiamaka, Ihezie Chinomnso).

ACKNOWLEDGEMENTS

I want to acknowledge and give God all the praise for His grace over my life and for seeing me through another phase of my educational pursuit. I sincerely appreciate my project supervisor Mallam Mohammed Abdulkadir for his guidance and corrections towards the success of my research work. I am most grateful to all the lecturers of Industrial and Technology Education Department, Federal University of Technology, Minna. I want to appreciate my family members for their encouragement and support; especially my parents Mr. Ihezie Ambrose and Mrs Ihezie Obiageri. Finally my profound appreciation and gratitude goes to my friends and colleagues especially Adeyemi David and Obari Magaret who were a source of great support. I also want to appreciate the members of His Dwelling Place FCS, FUT, Minna, I wouldn't have been fulfilled without serving in His vine yard.

ABSTRACT

The study investigated the level of awareness and implementation of occupational health and safety hazards in automobile workshops in Abuja. The research design used for the study was the survey research design. The targeted population for the study consisted of 50 respondents comprising of 20 managerial staff and 30 technical staff. A 61 items questionnaire was validated and used to collect data from the respondents. The data was analysed using frequency count, mean, standard deviation and t-test statistical tools. The null hypotheses were tested at 0.05 level of significance. The findings revealed that workers do not report defective tools, test equipment to the supervisors. Findings further revealed that workers do not wear proper clothing when working in the workshop. Based on the findings, it was recommended that workers should be encouraged to wear proper clothing when working in the workshop and that workers should be encouraged to report defective tools, test equipment to the supervisors.

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CHAPTER ONE

INTRODUCTION

Background of Study

The magnitude of the global impact of occupational accident in terms of human suffering and related economic costs has been a long-standing source of concern at work place (OHS 2009). The World Health Organization (2004) quoting the Director General asserted that the amount of toxic chemical generated in different parts of the world has been estimated at 600,000 tones. The Health and Safety Executive (HSE 1992) lamented that the largest group of occupational accident reported annually to the HSE or local authorities are those associated with manual handling; about 34% accident and mishap causing injuries are related to manual handling and result in absence from normal work of more than three days. Bimbola (2011) decried that Nigerian workers across all sectors of the economy recently have become more endangered and prone to accidents which ranges from minor to fatal; as some have lost lives right in the line of duty, while some have lost vital organs therefore being rendered permanently incapacitated. The International Labour Organization(2009) commented that the worldwide fatality level from work related injuries and disease amount to 2 million annually; the annual rate of work-related injuries and disease are on the decline in industrialized countries, on the contrary, the trend of injuries and disease from workplace environment is frightening in developing countries (ILO, 2005). Another aspect to the issue of occupational safety which may be different from the aspect of unavailability of safety equipment and which most people are not really looking into as much as they should be doing is the aspect of health. Bravo (2002) stated that the issue of health and safety at work place which once occupied a major place in programme and plan of employers is

now treated with levity. People are generally not aware of the risks involved in day-to-day industrial work; risks are taken as

something inherent in jobs. The International Labour Organization (2009) gave a definition of occupational health as follows: occupational health should aim at;

- The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations.
- The protection of workers in their employment from risks resulting from factors adverse to health.
- The adaptation of work to man and each man to his job.

The gravity of work place hazards as seen in the recent International Labour Organization (ILO) estimates that among the world's 2.9 billion workers, at least 2,000,000 deaths per year are attributable to occupational diseases and injuries (Takala 2002). The introduction of new technologies and automation of industries is causing a rapid transformation of the work environment. The equipment and machinery used in either the production or service industries bring varying degree of hazards and risks that threaten the health and safety of the workers. The overall picture that emerges from all parts of the developing world is one of increased health and safety risk in all occupations. This is as a result of the seeming advancement in industrial and production activities without an equal advancement in the provision of health and occupational safety measures commensurate with these advancement (ILO, 2005).

Visiting a cement, flour mill industry will expose one to the health hazards and risks which the workers are subjected to. The industry generates a lot of dust which are hazardous

to the health of workers. Pneumoconiosis results from inhalation of a variety of industrial dusts. By the time anybody would have spent a minimum of 5 minutes in these industries before coming out into the open and free outside air; the person would have inhaled a lot of dust and germs; and workers actually spend not less than 8 working hours per day (that is, without overtime) in such rooms; why then will such people not develop breathing difficulties, allergic reactions and asthma (WHO, 2005). For the workers of such industries one begins to wonder what facilities are put in place by the company and government for safeguarding their health. What amount of money can the company pay the workers that will be enough to restore their deteriorating health conditions? Section 5(a)(1) of the Occupational Safety and Health (OSH) Act, often referred to it as the General Duty Clause, which requires employers to “furnish each of his employees employment and a place of employment which are free from recognized hazards that are likely to cause death or serious physical harm to his employees”. Section 5(a)(2) requires employers to “comply with occupational safety and health standards formulated under this Act”(www.osha.gov).

Every area of human endeavour, industry and profession has dangers, risks and hazards which are peculiar to it. One of such industrial sector is the automobile workshop which is of concern to the researcher. The automobile workshop is a place where repairs and overhaul of cars and other automotive vehicles are carried out on the systems and parts of these vehicle by the automobile mechanic (ILO 2009).The automobile workshop has experienced and is still experiencing so many accidents and mishaps; the workshop contains safety hazard that range from tools to chemical. The safety issues in the automobile workshop concerns not only the materials and equipment inside the workshop, but also the behaviour of the workers and the automobile owners who may enter the workshop. Whenever accidents occur it shows

that someone somewhere has failed in his duty. This could be due to negligence, ignorance or lack of knowledge. An accident can therefore be seen as an unexpected, unplanned event in a sequence of events that occur through a combination of causes and that result in physical harm to an individual, damage to property or both (ILO 2009).

Statement of the problem

Safety practice which is a must for every automobile workshop has an array of problems militating against their effective implementation; thereby endangering the lives of the workers. The effect of occupational accidents, risks and hazard are enormous ranging from disabilities to health fatalities and ultimately death. The workers in the automobile workshop want things done but are not aware of the safety measures. Smith (1992) established that for safety to attain its proper place of reduced or no accidents in the automobile workshop; the listed problems and many more should be tackled; inadequate orientation, disobedience to prescribed rules and regulations, negligence and ignorant behaviours on the part of stakeholders and lack of interest in health matters by the management. It is worthy of note that a holistic approach to the problems listed will go a long way in helping to identify potential hazard, reducing the risks and occurrences of accidents in the automobile workshop. It is in the light of these that this study was embarked upon to investigate the level of awareness and implementation of occupational health and safety hazards in the automobile workshops in Abuja.

Purpose of Study

The purpose of this study was to investigate into the level of awareness and implementation of occupational health and safety hazards in the automobile workshops in Abuja. Specifically, the study determined;

1. The adequacy of facilities for the safety and health of workers in the automobile workshop
2. The level of awareness of the workers on safety and health rules and regulations in the automobile workshop
3. The extent to which health and safety rules and regulations are implemented in the automobile workshop
4. Strategies for increasing the awareness of occupational health and safety practices among the stake holders in the automobile workshop

Significance of Study

This study would be of benefit to the stakeholders in the automobile workshop. They include automobile workshop workers, the management of automobile workshops and the owners of automobiles who may enter the workshop.

It would be beneficial to the automobile workers as they would become aware of issues which they may have considered as unimportant but are of great importance as far as safety is concerned.

It would be beneficial to the management of the automobile workshop as they would be exposed to ways through which the safety awareness of workers and stakeholders in industry can be improved to ensure a reduction in the rate of occupational accidents; thereby securing the lives of both workers and valuable equipment from accidents and damages.

More so, the automobile owners would benefit as the findings would expose them to safety hazards in the workshop and ways of conducting themselves while in the workshop so that accidents would be avoided.

Scope of Study

This study is delimited to the adequacy of facilities for the health and safety of workers in the automobile workshops in Abuja, it also covers the health and occupational standards and regulations as it concerns the workers, the level of awareness of the workers on the health and occupational regulations and how the management implements these health and safety regulations in their workshops.

However this study did not concern itself with the safety measures available to roadside automobile workers due to the scattered nature of the workshop, lack of standard for the roadside automobile workshop.

Research Questions

The following research questions were developed to guide the study;

1. How adequate are the facilities for the safety and health of workers in the automobile workshop?
2. To what extent are the workers aware of safety and health rules and regulations in the automobile workshop?
3. To what extent to which health and safety rules and regulations are implemented in the automobile workshop?

4. What are the strategies for increasing the awareness of occupational health and safety practices among the stakeholders in the automobile workshop?

Hypothesis

1. There is no significant difference between the responses of the technical staff and management staff on the adequacy of facilities for the safety and health of workers in the automobile workshop
2. There is no significant difference between the responses of the technical staff and management staff on the level of awareness of the workers on safety and health rules and regulations in the automobile workshops in Abuja.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter presents a review to the literature related to the study under the following headings:

1. An Overview of Occupational Health and Safety
2. Work and health
3. History of Occupational Health in Nigeria
4. Legislation of safety
5. Summary of reviewed literature

An overview of Occupational Health and Safety

Occupation is the activity, work or trade a person is engaged in order to earn a living. Safety, according to the Longman Active Study dictionary (2010) is defined as the state of being safe from danger or harm. The magnitude of global impact of occupational accidents and diseases as well as major industrial disasters in terms of human suffering and related economic costs has been a long-suffering source of concern at workplace (ILO 2009).

According to Kitumbo (2009), the prevention of accidents at workplaces would have considerable effect on reducing costs. The number of accidents could be reduced considerably through enhancement of safety and health prevention measures.

Increased globalization has caused important changes for many developing countries; in terms of developmental changes through which a country passes; such as underdevelopment and poverty, industrial revolution, industrialization which has increased the risks that

now treated with levity. People are generally not aware of the risks involved in day-to-day industrial work; risks are taken as

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Hypothesis

3. There is no significant difference between the responses of the technical staff and management staff on the adequacy of facilities for the safety and health of workers in the automobile workshop
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According to Kitumbo (2009), the prevention of accidents at workplaces would have considerable effect on reducing costs. The number of accidents could be reduced considerably through enhancement of safety and health prevention measures.

Increased globalization has caused important changes for many developing countries; in terms of developmental changes through which a country passes; such as underdevelopment and poverty, industrial revolution, industrialization which has increased the risks that workers are exposed to Mendes (2009). Concerns are and are still being expressed that industrialization and mechanization are becoming more prominent and this may unravel some factors contributing to casualties and ill health at work. Ocheya (1999).

According to Okeola (2009) each worker is entitled to a safe and healthy condition at workplace; resulting in worker safety and overall good health. This is evident in the development of legislations in which employers and employees all have responsibilities to ensure safety. As a result, in 1907; the Bureau of Mines was created to investigate accidents, examine health hazards and also make recommendations for improvement. In the 1960's there was a passage of legislations, promoting workplaces safety. Among these acts are; the service Contract Act of 1965, the Federal Metal and safety Act and the Contract Workers and Safety Act. These led to the passage of the Occupational Safety and Health Act in 1970 (Goetsch 2008). The International Labour Organisation developed guidelines on occupational safety and health in order to ensure continual improvement of performance (ILO 2001).

The Occupational Safety and Health Administration (OSHA) is the government's administrative arm of Occupational safety and Health (OSH) Act, formed in 1970. The OSHA sets and revokes safety and health standards, investigates problems, assesses penalties, conducts inspections, petitions the court to take appropriate actions against unsafe employers, provides safety training, provides injury prevention consultation and also

maintains a data base of health and safety statistics (Goetsch 2008). Since the work of ensuring occupational safety in the workplace is a collective responsibility; the different parties concerned with the passage, implementation and adherence to laws and regulation on occupational safety and health have the following roles to play:

The role of the Government:

- i. Health and general education of the general public;
- ii. Making legislations concerning occupational safety and health;
- iii. Enforcement of these legislation;
- iv. Investigations of reported cases of occupational accidents and diseases;
- v. Preparations of the code of practice and guidelines on safety and health in various operations;
- vi. Co-operation with various national and international organizations concerned with occupational safety and health;
- vii. Provision of technical advice on occupational health and safety;
- viii. Prosecution of default employers who do not abide to the factories' decree and other subsidiary legislations.

The role of Employers:

- i. Registration of the industry or factory with the Inspectorate Department of the Federal Ministry of Labour and Productivity.
- ii. Keeping equipment in safe order.
- iii. Ensuring workers perform their duties as required by the Occupational Health and Safety Legislation;

- iv. Ensuring workers have the training and experience needed to do their jobs safely;
- v. Informing the workers of dangers on the job site;
- vi. Monitoring workers who may be exposed to certain hazards such as chemicals and or noise.

The role of Employees:

- i. Obeying all safety and health instructions;
- ii. wearing all protective equipment, gears and clothing in the correct way;
- iii. Avoiding unsafe acts and practices;
- iv. Compliance to all necessary medical examinations;
- v. Report any hazards, accidents or near misses immediately for the employer or supervisor to investigate.

Primarily, the role of an OSHA inspection officer involves monitoring and ensuring compliance with workplace health and safety legislation. An inspection officer provides information and ensures that all involved with safety at a workplace comply with legislative requirements. OHS inspection officers visit workplaces for a variety of reasons including to:

- i. Investigate workplace accidents;
- ii. Investigate reports of unsafe or unhealthy conditions and dangerous work practices.
- iii. Inspect workplaces for workplace health and safety hazards;
- iv. Creation of safety awareness

- v. Provision of occupational safety and health policy to provide an enabling environment for safety and health;
- vi. Conduct workplace health and safety audits;
- vii. Provide information and advice on the legislation
- viii. Provision of penalties for factories who contravene the regulation
(Worksafe2007)

With the realization that all hands should be on deck in order to maintain a safe workplace; there came along the long needed incentives for employers to begin playing an active role in creating and maintaining safe workplace. This in turn, led to the development of organized safety programmes sponsored by managements. The early safety programmes were based on the three E's of safety: engineering, education and enforcement.

The engineering aspect of safety involves improvement of designs to both product and process. By altering the design of a product, the process used to manufacture it can be simplified and as a result the product is made less dangerous, this is called designing for safety.

The education aspect of safety programme ensures that employees know how to work safely, the importance of doings so and that safety is expected by management. Safety education covers the what, when, where, why and how is safety.

The enforcement aspect of safety involves ensuring that employees abide by safety policies, rules, regulations, practices and procedures. It is worthy of note that supervisors and employers play a vital role in the enforcement of modern safety programmes.

Work and Health

The knowledge and understanding of the relationships and interactions between work and health is important in the practice of occupational health and safety. Both work and health positively and negatively affect each other. Work is supposed to be a means of economic survival and source of satisfaction and happiness where properly planned and executed. It also provides for social status and companionship as well as shared responsibility. But on the negative aspect, it can result to stress, dissatisfaction and threat to employee's health and well being and their attendant morbidity and death. It means that work has effect on health and vice versa. The working environment and the working conditions can positively or negatively affect the employees' health protection and health maintenance. Also, the workers health can affect his or her performance and productivity depending on environmental dispositions and the nature of occupational organization and policies. Poor health reduces productivity and worker's efficiency. Achalu (2000)

Work as defined by the Longman Active Study dictionary (2010) means the job or the activities a person does regularly to earn money. The same dictionary defines work as physical or mental activity and effort. Health as defined by the same dictionary means the general condition of your body and how healthy you are (Longman Active Study Dictionary, 2010). The World Health Organisation defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (www.wiki answer.com).

The health of a worker is very important in the workplace as most workers spend at least eight hours a day in the workplace. Therefore the work environment should be safe and healthy; yet this is not the case of many workers. Every day, workers are faced with a multitude of health hazard such as dusts, gases, noise, vibration and extreme temperature (ILO 2011).

Health is essential in work, it can influence work positively; this can be observed in a situation where countries with good health and safety record perform better economically than those with a poor record (OHS 2009). The effect can be immediate as in accidents such as moving machinery coming in contact with the hands or fingers (Foster 1991); or it may not be immediate when compared to the accident, this is because some effects take years before they manifest or are even noticed. For example people who work with heavy, noisy machines with little or no ear protectors. It took years before most of these people realized that they were gradually going or have even become virtually deaf (Atwell 1991).

The demand on the health of many workers is more than what the health of the workers can handle. In concurrence with this truth, Atwell (1991) suggested that in considering a person suitably for employment, the health status must be assessed and ensure that it corresponds with the requirement of the work. This can be done through a pre-employment health and medical assessment, which may take one or more of these forms:

1. Questioning the potential employee based on his or her health status;
2. Examining or screening should be done on the potential employee by an occupational health nurse or doctor;
3. Testing the potential employee through physical and mental exercises.

He further stated that the health screening procedures should be run properly. He commented unhappily about the improper medical examinations conducted in some workshops. He found out that many workers in some industries are suffering from advanced and serious illness; but they managed to get employment by sending their fit relatives for the medical examination before

engagement. He suggested that the industrial physician and the management should make use of passports to make sure that those finally employed are those examined medically.

Various jobs have different screening requirements, for example part of the pre-employment medical-screening requirement for a prospective auto-mechanic may include:

- i. Test for hypertension;
- ii. Test for aero-phobia (fear of heights)
- iii. Test for Parkinson's disease (shaky hands or arms).

The needs for health assessment in industries differ from one to a number of the following according to Foster (cited in Bamford 1991):

- i. To follow or keep record of illness or injury;
- ii. Periodic , for those who work with known hazards;
- iii. Pre-employment;
- iv. To monitor those with known health challenges in order to ensure that their condition does not worsen;

- v. Promotion;
- vi. To comply with legal requirements;
- vii. As part of a health promotion programme;

There are various reasons why health assessment is necessary with regards to work as identified by Worksafe (2007).

- i. Assessment of a person's working capacity and to match this with a suitable job;
- ii. To ensure that those with known health problems are not exposed to hazardous work situations likely to worsen the condition;
- iii. Reduces the number and severity of work place injury;
- iv. Identifies the need for worker training and review of procedures;
- v. Increases workers' participation and ownership of workplace health and safety;
- vi. Reduces production losses and damages to equipment and property
- vii. Screening out those who may be unsuitable for a for a particular job;
- viii. Acts as measure for future assessment based on the information obtained;
- ix. It is part of an organization's overall policy for positive health promotion;
- x. Prevention of accidents in an organization resulting from health;

An estimate of about 50%-60% of all the lost workdays in the work place is attached to stress at work. The factors causing stress at work include the intensity of work, violence and harassment. These factors work together to affect the mental and physical health of the workers which in turn reduces work performance and ultimately productivity. Also high workload and inflexibility of working hours are contributing factor to an imbalance between work and personal life; this is particularly true for women who have to cater for the domestic duties. All these put together are major factors contributing to ill health, accidents and absenteeism from work both in the developing and industrialized nations of the world.

It is obvious that work can be influenced by health and so can health be influenced by work. Hence care should be taken in ensuring that work does not affect health to the point of no repair; neither should health affect work to the point of loss or damage.

History of Occupational Health in Nigeria

The development of occupational health in Nigeria followed the pattern in other developing countries. Originally, the main occupation was unmechanized agriculture and animal husbandry. The workforces were mainly women and children. Payment for work was not known. Workers were exposed to many types of health hazards. Treatment then was not organized. Later, manufacturing including construction came into being. Modern occupational health, as reported by Achalu, (2000, p. 25) started as a result of colonization and industrialization by Britain. In Nigeria, the first occupational health services was introduced by the Medical Examination Board of Liverpool Infermary in 1789 with the main aim of caring for the health of British slave dealers from Africa to Britain. However, after the abolition of slave trade, the Royal Niger Company of Britain increased its exploration and trading activities in Nigeria. The Company organized its own health services which were later inherited by the United African

Company (UAC). During the British colonial rule, many of their soldiers were dying of malaria. This led Colonel Lugard to establish health services to take care of the health and welfare of soldiers and other colonial administrators. Later, during the Second World War, the Medical Corps was separated to cater for the military alone leading to the creation of Public Health Service which became the nucleus of the National Health Service. After the world war, many industries started emerging and the chief among them were construction of rail lines and coal mining. This attracted employment of many Labourers especially young men. These workers commonly worked 12-14 hours shift; 7 days a week under terrible conditions of dust, physical hazards, accidents, smoke, heat and noxious fume among others. Feeding was very poor; workers were dying in their forties and fifties. People had no knowledge between work conditions and health. They accepted work related illnesses and injuries as part of the job and lived shorter lives. Employers attributed workers' poor health and early death to workers' personal habits on the job and their living conditions at home. Little or no attention was paid to prevention of the hazards in work places. Payment was very poor and dismissal very common because job seekers were many. Workers' reaction to poor conditions at work resulted in the death of coal miners in Enugu. This originated the worker's day in Nigeria. These developments and awareness lead to the establishment of some occupational health services in some Nigerian industries and occupational health legislations Act in Nigeria. The earliest practices that can be regarded as occupational health services in Nigeria were carried out by British Companies like UAC, John Holt. This was followed by establishment of some occupational health services by Nigerian governments in the Railway Corporation and Coal Mines. Such services included pre-employment and periodic medical examination, treatment of minor illnesses and accidents. In some cases, general practitioners were hired on part time basis, especially in urban centres to

take care of the sick injured workers. The increased industrialization and its impact on health, safety and welfare of workers lead to the creation of occupational health unit in the Federal Ministry of Health and the Institute of Occupational Health in Oyo State Ministry of Health. These agencies organized courses for managers, safety officers, medical officers, occupational hygienists, and other personnel involved with the protection, maintenance and promotion of health and welfare of workers in Nigeria.

History of the auto-mechanic trade

Prior to the introduction of cars; the option of transportation was horse drawn carriages, train, ship and walking. Automobiles became available just before the beginning of the 20th century. Production was low and the spare parts were difficult to obtain.

The early car owners had no place to go for repair if there was a fault with their cars. The car owners were left with the option of repairing their cars on their own or seeking for a bicycle mechanic who was not killed enough. The wealthier car owners employed chauffeur-mechanics as their servants who would drive and maintain their vehicles.

In the twenties, motorized vehicles became very common. At this time the Ford Motor Corporation used standard interchangeable parts. It became possible for the vehicle repair industry to grow; either as independent companies or as dealership for a specific automotive maker.

Mechanics were paid by the hour or day and repairs were billed for the actual time taken. Repair shops with good mechanics had a big advantage as repairs were quicker and therefore cheaper.

At the beginning of the 1930's rather than the employers paying a guaranteed daily wage, they split any labour charge 50%/50% with their mechanics. Mechanics spent their time sitting on work benches, waiting and hoping for work. The problems of slow economy were downloaded onto mechanics who for many days would go home with little or no pay.

After the World War two, the economy boomed and the flat rate became dominate. Flat rate is a piece of work system where the workers time is not compensated on his billable hours. As the workers had little control over the accounting procedures that determined their pay, the system was open to abuse by employer. Unscrupulous mechanics also learned how to manipulate the system for extra pay at the expense of the customers.

The increasing sophistication and complexity of modern autos has made the automotive technician one of the most technically demanding trades. Not only do modern mechanics have to diagnose sensor and computer glitches but also have to learn and master the new technologies introduced by manufacturers. Originally manufacturers thought that computerization would reduce the need for skill; but the reality is the opposite. Auto repair has become more demanding and requires grater skill across a host of new discipline such as computer trouble shooting, variable valve timing and fuel injection, (www.google.com)

Legislation of safety

Legislation involves making laws, in order to protect the health of workers in an industry by the legislative arm of the community (Advanced Learners Dictionary, 2001. The state or country where the industry is located may decide to pass a law. Legislation can be used to eliminate or reduce exposure of workers to occupational hazards. This is because, if the industrialists are not legally compelled to protect the workers, they may not do anything to help

prevent workers' exposure to hazards, especially when they still make their profits and workers are always there to be hired and dismissed at will with the slightest flimsy excuses. According to workplace safety and Insurance Bureau (quoted by Asogwa, 2007), occupational diseases can be prevented by:

- a) Finding out what materials and substances were being used in their workplace with the aim of ensuring safety provisions.
- b) Finding out how to work safely around materials and equipment in their workplace.
- c) Use protective equipment provided by their employer. Make sure that they know how to use the facilities if not ask questions.
- d) Be alert to the symptoms of change in your health status and be able to report on time.
- e) Always tell the company doctor where they work, what they do and what substances they work with because this information will help in making accurate diagnosis.
- f) Keep records of all jobs and industries that they worked with in order to find the cause of the illness.
- g). Periodic health education of all the workers to provide them with adequate knowledge of all the hazards that can cause diseases associated with their occupation and the preventive measures to adopt as well as the importance of keeping safety rules of the occupation.
- h). All the workers should be trained and retrained periodically on how to use the protective devices provided by the management in the language familiar to them; regular supervision and monitoring to ensure compliance to the proper use of the devices; information on safety provisions and their importance should be displayed on the posters and notice boards and the sign posts mounted at strategic positions in the company. At times hand bills should be provided

for personal keeps for constant consultation and reminder. Managers should show good example by using the devices always.

Dating back to 1802 when the Health and Morals of Apprentices Act was passed by the government of Manchester and England as a result of an outbreak of fever among the children working in the cotton mills. This signified the beginning of government's involvement in workplace safety. Other Laws and Acts have been passed since then. this has led to an improvement in safety (Goetsch 2008).

The legislation for enforcing safety and health standards in Nigerian workplaces are the Factories Act Cap 126, Laws of the Federation of Nigeria, 1990. Other regulatory bodies are in National Agency for Food and Drug Administration and Control (NAFDAC), Standards Organization of Nigeria (SON). These bodies are responsible for both the protection of the safety and health of the workers as well as those of consumers and the environment.

Safety legislation are aimed at achieving the following as they affect industries, their clients their workers and the environment at large with regards to their health and safety:

1. To promote personal responsibility and effort on everyone's part to avoid accident and prevent health hazards and injuries to themselves and to others who may be affected by their mistakes and to comply with statutory obligations;
2. To create an awareness on the need for risk assessment for all potential hazardous activities for those responsible for the management of equipment or the working environment;
3. To ensure that the industry provides facilities, equipment and substances that are subject to safe systems of work;

4. To provide an environment in which everyone can carry out his or her duty without fear of intimidation, harassment, violence or unnecessary stress;
5. To provide support on matters of occupational safety through the manager, who will be responsible for advice to the factory, regular auditing and has the responsibility and right for enforcement;
6. To monitor the health and safety performance of the company through regular report to the Board of Directors and a provision of a report on health and safety performance on the factories' website;
7. To ensure that arrangements are made to act upon health and safety matters at all levels through regular staff meetings.

There is a great expectation for the improvement of a safe working condition as a result of an increase in the level of awareness

Below is a list of safety acts passed by several legislatures:

1. WAC 296-800-1105; provide your employees a workplace that is free from hazards that are causing and are likely to cause serious injury or death
2. WAC 296-800-11015, prohibit employees from entering or being in an unsafe workplace
3. WAC 296-800-11015takes responsibility for the safe conditions of tools and equipment used by employees.
4. WAC 296-800-11015, Establish, supervise and enforce rules that lead to a safe and healthy work environment that are effective in practice

5. WAC 296-800-11015 protects employees from exposure to hazardous concentrations of biological agents that may result from the processing, handling or usage of materials or waste. (Washington State Department of Labour and Industries).

Safety culture

Safety culture is made up of shared and accepted attitude, beliefs and practices supported by documented policies and procedures throughout an organization. It is an atmosphere that shapes safe behaviours and practices. A safety culture takes time to create and results in everyone's commitment to safety as an important part of doing business Hale (2000). The OHS (2009) suggests that in order to ensure adequate safety culture within an organization; lack of management and lack of trust or fear must be dealt with. Effective safety culture has the potential of promoting or increasing the morale of employers or employee and also to reduce workplace injuries.

A good safety culture in a workplace exists when safety and health is understood to be and is accepted as a high priority. Safety and health does not exist in a vacuum isolated from other aspects of an organization, such as people and financial management. Safety culture is an integral part of the overall corporate culture (OHS 2009). Corporate culture is often referred to as the bond that glues an organization together. It is said to be a contributing factor to the performance of an organization by means of socializing the workers in a way that increases commitment to the goals of the organization (Pizzi et al, 2002).

Promoting safety culture starts with having a safety policy. The policy should make it known that safe work practices are required of the employees at all levels and at all times (Goetsch 2008). The safety policy acts as a foundation upon which all promotional efforts are

built. A policy that is not built on a sound safety culture promoting occupational health and safety as well as the well-being of the organization's employees and stakeholders is bound to be fruitless.

Promotion of a safety culture with a view to preventing accidents in the workplace can be achieved through the following:

1. Communication and consultation;
2. Understanding and recognizing safety hazard;
3. Leadership that is visible,
4. Taking responsibility
5. Understanding potential emergencies;
6. Risk assessment
7. Employee involvement and participation;

The use of safety slogans according to Pizzi(2002) is another effective way of ensuring a good safety culture. It involves the use of short words, phrases or sentences which take the form of reminders. Below are some examples;

“The chance taker is the accident maker”

“Safety first, last and always”

Training as a tool for safety

The training of employees is of great importance in order to achieve a safe working environment. Everyday workers are faced with a multitude of health hazards such as dusts, smoke, gases, noise, vibration and extreme temperature (ILO 2011). Generally workers are not aware of the

risks involved in day-to-day industrial work. The workers take risks as inherent in jobs. There are some workers who consider it a matter of male pride to carry on construction work at a point high up from the ground level without any safety belt, Bravo (2002). Some safety hazards faced by workers in the automobile workshop include:

1. Walking on slippery floors;
2. Using blunt cutting tools;
3. Being hit or trapped by falling objects;
4. Being hit by machinery that moves such as forklifts or moving vehicles, worksafe (2006)

The United Kingdom's Health and Safety Executive suggests that some employees may have particular needs. For example

1. People changing jobs or taking on extra responsibilities need to know about any new health and safety implications;
2. new recruits need basic induction training on how to work safely including arrangement for first aid
3. a re-training programme for some worker skill which may require updating

The employees should also be exposed to the different types of personal protective equipments and their functions. Examples include:

1. Body protection (coveralls chemical protective clothing, aprons);
2. Eye protection (impact glasses, splash goggles);
3. Face protection (welding face shields);
4. Fall protection (fall arrest harnesses);

5. Foot protection safety foot wear);
6. Hand protection (gloves);
7. Head protection (hard hats);
8. Respiratory protection (purifying and air-supply respirators), Worksafe (2007)

It is obvious that training is a process of teaching and learning; and such there will be quality improvement in the teaching and learning techniques, if the trainers and learners are familiar with the following principles learning:

1. Success in learning tends to stimulate additional learning – as a result training session should be long enough to ensure that progress is seen but as much as possible should not allowed boredom to set in.
2. Learners need immediate and continuous feed back to know if indeed they have learned.
3. The process of repetition and application should be built into the training process; as people never forget what they have done over time.
4. Trainees should be exposed to the practical aspect of what they are being taught theoretically; as people learn by doing.

Summary of Reviewed Literature

From the reviewed literature, it is a known fact that the need for occupational safety and health can be dated back to more than a century old. Within this period of time; companies, factories, employers and employees have sought for a safe working environment; using strategies aimed at improving the working environment, compensating those affected by their work negatively.

The various roles played by the employers, employees, and the government as a strategy towards the advancement and promotion of safety was also looked into. although, rather unfortunate that despite all the effort geared towards the prevention of occupational hazard and death we are still be-deviled with the frustrating occurrence of these occupational accidents, injuries and death in the workshops, factories and industries; thereby leading to loss of manpower which in turn affect productivity and finally the economy of the nation.

As a result of the above consequences resulting from negligence to occupational health and safety, the researcher saw it necessary to explore the various ways by which loss of man power, purchase of equipment and machine due to damage, low productivity can be prevented.

Finally, it is hoped that this research will foster productivity and growth in the automobile workshop and the economy of the nation at large.

CHAPTER THREE

METHODOLOGY

This chapter describes the Research design, Area of study, Population of the study, instrument for data collection, validation of the instrument, administration of the instrument, method of data analysis and the decision rule.

Research Design

The research design used in carrying out this study was the survey research design where questionnaires were used to source for opinions of respondents on the issue of occupational health and safety hazards in automobile workshops in Abuja. The survey research design was chosen as a suitable method for the research as it seeks the view of people about a particular issue that concerns them, gives room for the research to study the group of people and items to elicit information from the respondents. Olaitan and Nwoke (1999), define a survey as a descriptive study in which the entire population or representative sample of the population is studied by collecting and analyzing data from the group through the use of questionnaires. Therefore the survey design was considered suitable since the study will seek information from a sample that was drawn from a population using questionnaire.

Area of the Study

The study was carried out in the Federal Capital Territory, Abuja, specifically in its city centre where the automobile workshops are located. Abuja lies on latitude 8 and 10°N and longitude 6 and 8°E. It is the seat of government for the nation.

Population of the Study

The targeted population for the study was 50 respondents; comprising of 20 technical staff and 30 managerial staff. Since the population was small sampling was not adopted.

Instrument for Data Collection

The questionnaire was the main instrument used by the researcher for the data collected for the study. It consists of four sections as follows:

Section I: This section contains 16 items dealing with the: The adequacy of facilities for the safety and health of workers in the automobile workshop.

Section II: Contains of 15 items dealing with the level of awareness of the workers on safety and health rules and regulations in the automobile workshop.

Section III: Contains 15 items dealing with the extent to which health and safety rules and regulations are implemented in the automobile workshop.

Section IV: Contains 15 items dealing with strategies for increasing the awareness of occupational health and safety practices among the stakeholders in the automobile workshop.

Validation of the instrument

The instrument was validated by my supervisor and two other lecturers in the Department of Industrial and Technology Education, Federal University of Technology Minna. The validation suggestions were incorporated in the final draft of the instrument with appropriate modification based on the suggestions and corrections. This was to ensure that the instrument was capable of eliciting necessary information for the data needed for the study.

Administration of the Instrument

The questionnaire was personally administered by the researcher to the respondents (managerial and technical staffs) and the completed questionnaires were also collected by the researcher.

Method of Data Analysis

The data collected was analyzed using mean, standard deviation and t-test. A four points rating scale and a three points rating scale was used to analyze the data collected for the study

Scoring the instrument

Research Questions one and four were analyzed using the four points rating scale as shown below:

Strongly Agree (S.A) = 4

Agree (A) = 3

Disagree (D) = 2

Strongly Disagree (SD) = 1

Very adequate (VA) = 4

Adequate (AD) = 3

Inadequate (I) = 2

Very Inadequate (VI) = 1

$$\bar{X} = \frac{\sum fx}{\sum f} = \frac{4+3+2+1}{4} = 2.5$$

For Research Questions two and three a three points rating scale was used as shown below

Much aware (MA) = 3

Aware (A) = 2

Not aware (NT) = 1

Well Implemented (WI) = 3

Implemented (I) = 2

Not Implemented (NI) = 1

$$\bar{X} = \frac{\sum fx}{\sum f} = \frac{3+2+1}{3} = 2.00$$

Decision Rule

In order to determine the level of agreement or disagreement of any item, a mean score of 2.50 and 2.00 was used respectively. Therefore any item with a mean response of 2.50 and above was accepted and any item with a mean response of 2.49 and below was rejected for questions one and four; on the other hand any item with a mean response of 2.00 and above was accepted and any item with a mean response of 1.99 and below was rejected for questions two and three. The hypothesis was tested using t-test at 0.05 level of significant. Where the calculated t-test value was equal or greater than t-table value, the null hypothesis is rejected, meaning that there was significant difference and where the calculated t-test value is less than the t-table value, the null hypothesis was accepted, meaning that there is no significant difference.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

The data presented in this chapter were collected through the responses of management and technical staff of automobile industries in Abuja.

Research question 1

How adequate are the facilities for the safety and health of workers in the automobile workshops in Abuja?

Table 1: mean responses of management and technical staff on the adequacy of facilities for the safety and health of workers in the automobile workshops in Abuja.

$N_1=20; N_2=30$

S/N	Items	X_1	X_2	X_t	Remark
1	Health care centre	3.35	2.87	3.11	Agree
2	Equipped first aid box	3.35	2.83	3.09	Agree
3	First aid room	3.00	1.83	2.41	Disagree
4	Ear muffs	3.80	2.63	3.21	Agree
5	Fire alarm	3.95	2.87	3.41	Agree
6	Lockers	3.60	2.90	3.25	Agree
7	Canteen or Cafeteria	3.55	2.77	3.16	Agree
8	Hard hats	3.55	2.60	3.08	Agree
9	Toilet	3.70	2.50	3.10	Agree
10	washing areas	3.80	2.97	3.38	Agree
11	Portable drinking water	3.90	3.07	3.48	Agree
12	Nose masks	3.65	2.73	3.19	Agree
13	Safety goggles	3.60	2.87	3.23	Agree
14	Safety boots	3.85	3.40	3.62	Agree
15	Overalls	3.80	3.87	3.83	Agree
16	Functional fire extinguishers	3.25	3.17	3.21	Agree

Table 1 above shows that both the managerial staff and technical staff of the automobile workshops in Abuja agree to the questions in items 1,2,4,5,6,7,8,9,10,11,12,13,14,15 and 16 because their mean scores were up to 2.5 and above but disagree to the questions in item 3 because the mean score is below 2.50

Research question 2

To what extent are the workers aware of safety and health rules and regulations in automobile workshops in Abuja?

Table 2: Mean responses of management and technical staff on the level of awareness of the workers on safety and health rules and regulations in automobile workshops in Abuja.

N₁=20; N₂=30

S/N	Items	X ₁	X ₂	X _t	Remark
1	Keep all hand tools clean and in safe working order	2.75	2.53	2.64	Agree
2	Containers containing chemicals should be clearly labelled with the name of the chemical	2.10	2.07	2.08	Agree
3	Car batteries which are classified as the hazardous waste should be collected by a licensed contractor	2.00	1.33	1.66	Disagree
4	Clean up spilled liquids immediately	2.95	2.40	2.67	Agree
5	Report defective tools, test equipment to the manager	2.45	2.23	2.34	Agree
6	Report all accidents to the supervisors or managers regardless of the severity	2.55	1.90	2.23	Agree
7	Solid waste should be kept in bins with lids or cover	2.35	1.47	1.91	Disagree

	so as to prevent rain from coming in contact with the waste				
8	Tyres should be stored away from building and ignition sources to reduce the risk of fire	2.25	1.76	2.00	Agree
9	Liquid hazardous waste should not be put in the general waste bin	2.65	2.67	2.66	Agree
10	Workers should not carry sharp edged or pointed tools in their pockets	2.95	2.23	2.59	Agree
11	Workers should not indulge in horseplay or play practical jokes in the workshop	2.95	2.10	2.53	Agree
12	While batteries await collection; they must be placed on a spill tray to avoid lead acid being washed into the soil	2.10	1.37	1.74	Disagree
13	Workers must wear safety goggles when required	2.25	2.67	2.46	Agree
14	The floor workshop should be kept clean of scraps and litter	2.50	2.33	2.41	Agree
15	Workers must be with proper clothing at all times when working in the workshop	2.95	2.50	2.72	Agree

Table 2 shows that the respondents agreed to items 1,2,4,5,6,8,9,10,11,13,14 and 15 as they all have a mean score of 2.00 and above but disagreed to items 3,7 and 12 as their mean scores fall below 1.99

Research question 3

To what extent are the health and safety rules and regulations implemented in automobile workshops in Abuja?

Table 3: Mean responses of management and technical staff on the extent to which health and safety rules and regulations are implemented in automobile workshops in Abuja.

N₁=20; N₂=30

S/N	Items	X ₁	X ₂	X _t	Remark
1	Keep all hand tools clean and in safe working order	2.95	2.03	2.49	Agree
2	Containers containing chemicals should be labelled with the name of the chemical	2.05	1.53	1.79	Disagree
3	Car batteries which are classified as the hazardous waste be collected by a licensed contractor	2.35	2.07	2.21	Agree
4	Clean up spilled liquids immediately	2.15	1.30	1.72	Disagree
5	Report defective tools, test equipment to the Manager	2.45	1.50	1.97	Disagree
6	Report all accidents to the supervisors or managers regardless of the severity	2.20	1.73	1.96	Disagree
7	Solid waste should be kept in bins with lids or covers, so as to prevent rain from coming in contact with the waste	2.75	2.37	2.56	Agree
8	Tyres should be stored away from building and ignition sources to reduce the risk of fire	2.65	2.67	2.66	Agree
9	Liquid hazardous waste should not be put in the general	2.95	1.67	2.31	Agree

	waste bin				
10	Workers should not carry sharp edged or pointed tools in their pockets	2.95	1.53	2.24	Agree
11	Workers should not indulge in horseplay or play practical jokes in the workshop	2.15	2.20	2.17	Agree
12	While batteries await collection; they must be placed on a spill tray to avoid lead acid being washed into the soil	2.90	1.90	2.40	Agree
13	workers must wear safety goggles when required	2.75	2.50	2.62	Agree
14	The floor workshop should be kept clean of scraps and litter	2.50	2.37	2.43	Agree
15	Workers must be with proper clothing at all times when working in the workshop.	2.65	1.77	2.21	Agree

Table 3 above shows that the respondents agreed to items 1,3,7,8,9,10,11,12,13,14 and 15 as they have a mean score of 2.00 and above but disagreed to items 2,4,5 and 6, since they all have mean scores 1.99 and below.

Research question 4

What are the strategies for increasing the awareness of occupational health and safety practices among the stakeholders in the automobile workshop?

Table 4: Mean responses of management and technical staff on the strategies for increasing the awareness of occupational health and safety practices among the stakeholders in the automobile workshops in Abuja.

S/N	Items	X ₁	X ₂	X _t	Remark
1	Workers should be encouraged to have good maintenance culture for machine and equipment	3.95	3.93	3.94	Agree
2	Safety slogans should be adopted and used as safety reminder for workers	3.85	3.60	3.72	Agree
3	Mandatory induction courses should be recommended for every new employee	3.90	3.83	3.86	Agree
4	The workshop should possess its own safety code	3.25	3.13	3.19	Agree
5	Every technical officer should be provided with the workshop's safety code	3.30	3.23	3.26	Agree
6	Safety and danger signs should be placed in lockerrooms passages for people to see	3.95	3.83	3.89	Agree
7	Every worker should be provided with protective wears such as safety boots,overalls etc	3.90	3.87	3.88	Agree
8	Workers should be trained on how to recognize potential hazards	3.85	3.83	3.84	Agree
9	All accidents, whether major or minor should be promptly reported and documented for protective or corrective purposes	3.80	3.27	3.53	Agree
10	Behaviours and habits that undermine and jeopardize safety should be discouraged	3.95	3.17	3.56	Agree

11	Management and supervisors should ensure and enforce compliance to the safety rules and regulations by workers	3.75	3.80	3.77	Agree
12	Inexperienced workers should not be allowed to perform any operation without supervision	3.80	3.77	3.78	Agree
13	Equipment, machines and working tools should be tested in order to ensure that they are in good working condition before usage	3.55	3.80	3.67	Agree
14	Equipment, machines and working tools that pose a threat to the safety of workers should be disposed off	3.50	3.80	3.65	Agree
15	Seminars/ workshops on safety should be organized for workers on a regular basis	3.95	3.80	3.87	Agree

Table 4 shows that the two groups or respondents agree to all the items as they all have mean scores of 2.50 and above.

Hypothesis One

There is no significant difference between the responses of technical staff and managerial staff on the adequacy of facilities for the safety and health of workers in the automobile workshops in Abuja

Table 5: t-test of management staff and technical staff on the adequacy of facilities for the safety and health of workers in the automobile workshops in Abuja.

$N_1=20; N_2=30$

S/N	Items	SD ₁	SD ₂	t-cal	Decision
1	Health care centre	2.85	2.41	0.62	NS
2	Equipped first aid box	2.85	2.65	0.65	NS
3	First aid room	2.54	1.51	1.85	NS
4	Ear muffs	3.30	2.19	1.39	NS
5	Fire alarm	3.42	2.42	1.22	NS
6	Lockers	3.11	2.45	0.84	NS
7	Canteen or Cafeteria	3.09	2.35	0.95	NS
8	Hard hats	3.08	2.65	1.12	NS
9	Toilet	3.19	2.07	1.48	NS
10	washing areas	3.29	2.48	0.96	NS
11	Portable drinking water	3.38	2.58	0.93	NS
12	Nose masks	3.18	2.28	1.11	NS
13	Safety goggles	3.13	2.39	0.88	NS
14	Safety boots	3.33	2.91	0.49	NS
15	Overalls	3.29	3.35	-0.07	NS
16	Functional fire extinguishers	2.83	2.78	0.09	NS

Table 5 shows that the null hypothesis was accepted for all the items as they have t-scores less than the t-value ranging from -0.07 to 1.85. Hence there is no significant difference between the responses of the management and technical staff.

Hypothesis Two

There is no significant difference between the responses of the technical staff and the managerial staff on the level of awareness of the workers on safety and health rules and regulations in automobile workshops in Abuja.

Table 6: t-test of management staff and technical staff on the level of awareness of the workers on safety and health rules and regulations in automobile workshops in Abuja.

$N_1=20; N_2=30$

S/N	Items	SD ₁	SD ₂	t-cal	Decision
1	Keep all hand tools clean and in safe working order	2.24	2.03	0.35	NS
2	Containers containing chemicals should be clearly labelled with the name of the chemical	1.58	1.59	0.06	NS
3	Car batteries which are classified as the hazardous waste should be collected by a licensed contractor	1.45	0.93	1.83	NS
4	Clean up spilled liquids immediately	2.41	1.90	0.85	NS
5	Report defective tools, test equipment to the manager	1.95	1.71	0.41	NS
6	Report all accidents to the supervisors or managers	2.05	1.51	1.21	NS

	regardless of the severity				
7	Solid waste should be kept in bins with lids or cover so as to prevent rain from coming in contact with the waste	1.84	1.10	1.92	NS
8	Tyres should be stored away from building and ignition sources to reduce the risk of fire	1.73	1.39	1.05	NS
9	Liquid hazardous waste should not be put in the general waste bin	2.14	2.16	-0.03	NS
10	Workers should not carry sharp edged or pointed tools in their pockets	2.41	1.71	1.15	NS
11	Workers should not indulge in horseplay or play practical jokes in the workshop	2.41	1.61	1.38	NS
12	While batteries await collection; they must be placed on a spill tray to avoid lead acid being washed into the soil	1.61	1.03	1.79	NS
13	Workers must wear safety goggles when required	1.87	1.75	0.79	NS
14	The floor workshop should be kept clean of scraps and litter	2.00	1.88	0.30	NS
15	Workers must be with proper clothing at all times when working in the workshop	2.41	2.00	0.69	NS

Table 6 shows that the null hypothesis was accepted for all the items as they have t-scores less than the t-value ranging from -0.03 to 1.92. Hence there is no significant difference between the responses of the management and technical staff.

Specifications of Analysis

Managerial data parameters:

$N_1 = 20$ (Number of management staff)

$X_1 = \text{mean}$

$SD_1 = \text{Standard deviation}$

Technical data parameters

$N_2 = 30$ (Number of technical staff)

$X_2 = \text{mean}$

$SD_2 = \text{Standard deviation}$

Testing the hypothesis

Level of significance (α) = 0.05 at a degree of freedom of 48

Where the hypotheses used were:

1. There is no significant difference between the responses of technical and management staff on the adequacy of facilities for the safety and health of workers in the automobile workshops in Abuja.

2. There is no significant difference between the responses of technical and management staff on the level of awareness of workers on safety and health rules and regulations in the automobile workshops in Abuja.

t-value= 2.0106

When t-cal is greater than the t-value; the null hypothesis is rejected; hence there is significant difference (S). When t-value is greater than t-cal; the null hypothesis is accepted; hence there is no significant difference (NS)

Findings

The following data resulted from the analysis of the data collected.

1. **What is the adequacy of facilities for the safety and health of workers in the automobile workshops in Abuja?**
 - i. There is an adequate health care centre in the workshop for the workers
 - ii. There is an adequate first aid box for the workers
 - iii. Earmuffs are adequate for the workers
 - iv. Lockers are adequate for the workers
 - v. Overalls are adequate for the workers
 - vi. There is no first aid room
2. **What is the level of awareness of the workers on safety and health rules and regulations in automobile workshops in Abuja?**
 - i. Workers are aware that hand tools should be kept clean and in safe working order
 - ii. The workers are aware that spilled liquids should be cleaned up immediately

- iii. There is an awareness among the workers that workers should not indulge in horseplay or play practical jokes in the workshop
- iv. The workers are aware that liquid hazardous waste should not be put in the general waste bin
- v. Workers are aware that containers containing chemicals should be labelled with the name of the chemical
- vi. The workers are aware that all accidents should be reported to the supervisors regardless of the severity
- vii. Workers are aware that car batteries which are classified as hazardous waste should be collected by a licensed contractor
- viii. The workers are aware that workers must wear safety goggles when required
- ix. Workers are aware that the floor of the workshop should be kept clean of scraps and litter

3. To what extent are the health and safety rules and regulations implemented in the automobile workshops in Abuja?

- i. Solid waste are kept in bins with lids or covers ,so as to prevent rain from coming in contact with the waste
- ii. Tyres are stored away from buildings and ignition sources to reduce the risk of fire
- iii. Workers are not with proper clothing at all times when working in the workshop
- iv. While batteries await collection, they are placed on a spill tray to avoid lead acid being washed into the soil
- v. Containers containing chemicals are not clearly labelled with the name of the chemical

- vi. Accidents are not reported to the supervisors regardless of the severity
- vii. Spilled liquids are not cleaned up immediately

4. What are the strategies for increasing the awareness of occupational health and safety practices among the stakeholder in the automobile workshops in Abuja?

- i. Workers should be encouraged to have good maintenance culture for machine and equipment
- ii. Safety slogans should be adopted and used as safety reminder for workers
- iii. Mandatory induction courses should be recommended for every new employee
- iv. Safety and danger signs should be placed in locker rooms and passages for people to see
- v. Every worker should be provided with protective wears such as safety boots, overalls etc.

Discussion of findings

The research questions formulated for the study form a basis for the discussion of findings.

Research question one dealt with the adequacy of facilities for the safety and health of workers in the automobile workshops. The findings as indicated in table one revealed that there is an adequate health centre available for the safety and health of the workers. This may be as a result of the realization of the importance of good health as it concerns productivity. This is in line with Bamford (1991) who opined that a workman's capital is his health and ability to work. The table also showed that that first aid boxes are adequately provided for the workers. There is need for adequate first aid boxes for the safety and health of workers. This conforms with the view of (Barber and Donovan, 1998) that stressed that a

timely or late administration of a first aid treatment has great impact in determining whether the victim of the accident dies or remains alive.

Further findings showed that adequate earmuffs are provided for the workers. ILO (2009) put forward that workers need to be protected from excessive noise (greater than 90dBA) to avoid partial or ultimately total deafness. The table however indicated that there is no adequate first aid room; this is not good enough as the goal of occupational safety and health is to foster a safe work environment. The health and safety regulations (1981) put forward that employers should provide adequate first aid rooms for the workers. It further stated that the first aid room should be large enough to hold a health examination with enough space at each side for people to work, have washing surfaces such as a sink, be kept clean and accessible at all times when employees are at work. This same table shows that fire extinguishers are adequate; where fire outbreaks are likely to occur, thereby reducing damages resulting from fire outbreak. This is in agreement with the National Fire Protection Agency (NFPA, 1998) which stated that the availability, accessibility and proper use of fire extinguisher can help stop the growth, escalation and subsequent outbreak of domestic and industrial fire, thereby preventing accidents or injuries to people and damages to equipment.

Research question two dealt with the level of awareness of the workers on safety and health rules and regulations in automobile workshops. Table two showed that the workers are aware that hand tools should be kept clean and in safe working order. Accidents can be prevented when tools are in good shape and are kept clean; as an accident is an unexpected, unplanned event or a sequence of events that occurs through a combination of causes that results in physical harm (injury or fatality) to an individual, damage to property, a near miss, a loss or a combination of these effects (Pius,2009). The same table also showed that workers are aware that they must wear safety goggles when required. It will be agreed that this is good safety behaviour by the workers and it tends to promote the safety measures that might have been

put in place by the management of the workshop. The table also revealed that the workers are aware that the floor of the workshop should be kept clean of scraps or litter; this is good because these scraps or litter pose as safety hazards to the health of the workers. The OSH (2005) established that the safety and health of the workers and the protection of machines, tools and equipment can be guaranteed in an environment of awareness on safety and health practices.

Research question three dealt with the extent to which health and safety rules and regulations are implemented in the automobile workshop. Table three revealed that all accidents are not reported to the supervisors or managers; this is a bad step because information on accidents is essential; Pius(2009) says that it facilitates proper planning and better statistics ; this can only be achieved if workers honestly report all cases of accidents to their supervisors; the information provided about the accidents helps in documentation as it provides a database of reference for protective and corrective purposes in order to guide against any future occurrence. It also provides an understanding of the role of the human factor as a causative agent in the accident, so as to behaviours and habits that undermine safety can be discouraged. The table also showed that containers containing chemicals are not labelled with the name of the chemical. This is hazardous and as such it will endanger the safety of the workers. The chemical may include the following paints, solvents, fuels, lubricating oils; these chemicals have an effect on human health ranging from minor burns to irritation of the skin. According to the International Labour Organization (2009); 400,000 deaths are caused by exposure to chemicals annually. The OHS (2009), Also put forward that the automobile workshops contain dangerous chemicals including oils, solvents, antifreeze and gasoline and as such containers and cabinets should be correctly labelled with the contents they hold inside and the specific hazard that the content pose and that the container lids should be closed tightly. The table also revealed that spilled liquids are not

cleaned immediately. This is not good as accidents can be reduced considerably through the enhancement of safety and health preventive measures (Kitumbo 2009). It also revealed that workers are not with proper clothing at all times when working in the workshop. There is need for employers to implement the wearing of protective clothing when working in the workshop. This is in line Asogwa (2007) who established that protective clothing should be properly designed according to the anthropometric measurement of the workers to avoid discomfort while performing tasks. This, according to Asogwa (2007) will discourage unwillingness of the workers to use the clothing properly or even do without it claiming that it is uncomfortable and makes him clumsy. Workers should also be motivated to use the clothing for safety measures. Hazards and consequences of negligence, according to Asogwa, should be made as concrete as possible through real life case studies and factual material drawn from work situations in which the people are employed.

Research question four dealt with the strategies for increasing the awareness of occupational health and safety practices among the stakeholders in the workshop. The findings in table four showed a consensus agreement in the encouragement of workers towards having good maintenance culture on the machines and equipment by the workers. In order to ensure that the machines and equipment attain their productivity life span and not pose as a threat to the safety and health of workers, a good maintenance of the machines and equipment is very paramount. Goetsch (2008) stressed that the success of any programme aimed at increasing safety culture is dependent on the involvement of the employees in the development stage of the programme to the implementation and monitoring stage. There was also an agreement that safety posters and danger signs should be placed on lockers and passages for people to see. This is good as these posters and danger signs act as supplement and provide instructions, warnings and information on safety. The use of safety slogans is also important as it passes a message in a unique

way. There was also an agreement on the need for mandatory induction courses for every new employee. These courses should cover the what, when, where and how of safety. This is in line with (Goetsch, 2008) who opined that a good induction course on safety should seek to in still in the workers the ways of recognizing potential hazards.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary of the Study

This study is aimed at the investigation of automobile workshops in Abuja as it concerns the level of awareness and implementation of occupational health and safety hazards in automobile workshops in Abuja. In order to achieve this, some related literature were reviewed to ensure that the topic is adequately treated. The reviewed literatures briefly narrated the history that gave rise to the birth of Occupational Safety and Health (OSH) Acts, the history of occupational health and safety hazards in Nigeria, the relationship between work and health. A brief history of the auto-mechanic trade; other areas that were reviewed with the intention of

giving justice to the topic include the contributions of the legislature to occupational safety and the methods or strategies for promoting safety in the workplace.

The questionnaire method was used as the instrument for data collection with a total of 50 respondents comprising of 20 management staff and 30 technical staff. A total of 61 questionnaire items were distributed under 4 research questions (that is 16 items for question 1 and 15 items for the other three questions). The responses of the respondents were analysed using mean, standard deviation and t-test.

Implication of the Study

The finding of the study has the following implications on both the management and the technical staff of automobile workshops in Abuja. They include:

Lack of first aid room; which leads to improper attention given to the accident victim; as such the victim does not get adequate rest needed for recovery.

Lack of awareness towards safety and health rules and regulations; this is evident as workers are not aware that car batteries which are classified as hazardous waste should be collected by a licensed contractor, there by posing health hazards.

Lack of implementation of safety and health rules and regulations. This is seen in the fact that containers containing chemicals are not labelled with the name of the chemical. This is hazardous as these chemicals contain harmful substances.

Lack of adherence to safety and health rules and regulations. This is evident as the workers do not report defective tools, test equipment to the manager, which is a source of potential accident.

Conclusion

The burden of occupational health and safety problems lies on the shoulders of both the workers and the machinery. The number of accidents could be reduced considerably through the enhancement of safety and health prevention measures.

Each worker is entitled to a safe and healthy working condition; resulting in worker safety and overall good health. This in turn would result in increased productivity. Such progress can only be achieved through prevention- a tool for eliminating unnecessary human suffering and damage to tools. It is therefore high time that owners of workshops proceed quickly from complaints to preventive measures; as a safe and healthy workplace is a wealthy workplace.

Recommendations

In view of the findings discovered the following recommendations were given

1. There should be an adequate first aid room for the workers.
2. Workers should be encouraged to report defective tools, test equipment to the supervisors.
3. The workers should be encouraged to wear proper clothing at all times when working in the workshop.
4. Containers containing chemicals such as lubrication oils, antifreeze and fuel should be clearly labelled with the name of the chemical.
5. Spilled liquids should be cleaned immediately.

Suggestion for further study

Further research study can be carried out in the following areas based on the findings of the research.

1. Assessment of the impact of technology on roadside mechanics
2. Evaluation of risk assessment in the automobile workshops
3. Evaluation of maintenance and safety culture of workers in the automobile workshop

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APPENDIX I

APPENDIX II

DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGER STATE.

A RESEARCH QUESTIONNAIRE

RESEARCH TOPIC: Investigation into the level of awareness and implementation of occupational health and safety in automobile workshops in Abuja.

INTRODUCTION: Please your faithfulness and sincerity is required to complete this questionnaire. The questionnaire is for the purpose of research; hence your view will be treated with the utmost confidentiality.

INSTRUCTION: In the items below, please tick (√) in the appropriate column based on your opinion.

NOTE: VA=Very Adequate AD=Adequate I=Inadequate VI=Very Inadequate

SECTION I: How adequate are the facilities for the safety and health of the workers in the automobile workshops in Abuja ?

S/N	ITEMS	VA	AD	I	VI
1.	Health care centre				
2.	Equipped first aid box				
3.	First aid room				
4.	Ear muffs				
5.	Fire alarm				
6.	Lockers				
7.	Canteen or cafeteria				
8.	Hard hats				
9.	Toilet				
10.	Washing areas				
11.	Portable drinking water				
12.	Nose masks				

13.	Safety goggles				
14.	Safety boots				
15.	Overalls				
16.	Functional fire extinguishers				

SECTION II: To what extent are the workers aware of safety and health rules and regulations in automobile workshops in Abuja?

Please tick (√) in the appropriate column in order to indicate the level of awareness of health and safety rules and regulations in your workshop.

NOTE: MA=Much Aware A=Aware NT=Not aware

S/N	ITEMS	MA	A	NT
1.	Keep all hand tools clean and in safe working order			
2.	Containers containing chemicals should be clearly labeled with the name of the chemical			
3.	Car batteries which are classified as the hazardous waste should be collected by a licensed contractor			
4.	Clean up spilled liquids immediately			
5.	Report defective tools, test equipment to the manager			
6.	Report all accidents to the supervisors or managers regardless of the severity			
7.	Solid waste should be kept in bins with lids or cover so as to prevent rain from coming in contact with the waste			
8.	Tyres should be stored away from building and ignition			

	sources to reduce the risk of fire			
9.	Liquid hazardous waste should not be put in the general waste Bin			
10.	Workers should not carry sharp edged or pointed tools in their Pockets			
11.	Workers should not indulge in horseplay or play practical jokes in the workshop			
12.	While batteries await collection; they must be placed on a spill tray to avoid lead acid being washed into the soil			
13.	Workers must wear safety goggles when required			
14.	The floor workshop should be kept clean of scraps and litter			
15.	Workers must be with proper clothing at all times when working in the workshop			

SECTION III: To what extent are the health and safety rules and regulations implemented in the automobile workshops in Abuja?

Please tick (✓) in the appropriate column in order to indicate the extent to which health and safety rules and regulations are implemented in your workshop.

NOTE: **WI=Well Implemented** **I=Implemented** **NI=Not Implemented**

S/N	ITEMS	WI	I	NI
1.	Keep all hand tools clean and in safe working order			
2.	Containers containing chemicals should be labelled with the name of the chemical			
3.	Car batteries which are classified as the hazardous waste should be collected by a licensed contractor			
4.	Clean up spilled liquids immediately			
5.	Report defective tools, test equipment to the manager			
6.	Report all accidents to the supervisors or managers regardless of the Severity			
7.	Solid waste should be kept in bins with lids or cover so as to prevent rain from coming in contact with the waste			
8.	Tyres should be stored away from building and ignition sources to reduce the risk of fire			
9.	Liquid hazardous waste should not be put in the general waste bin			
10.	Workers should not carry sharp edged or pointed tools in their pockets			
11.	Workers should not indulge in horseplay or play practical jokes in the Workshop			

12.	While batteries await collection; they must be placed on a spill tray to avoid lead acid being washed into the soil			
13.	Workers must wear safety goggles when required			
14.	The floor workshop should be kept clean of scraps and litter			
15.	Workers must be with proper clothing at all times when working in the Workshop			

SECTION IV: What are the strategies for increasing the awareness of occupational health and safety practices among the stakeholders in the automobile workshops in Abuja.

Please tick in the appropriate column in order to indicate your opinion about the various strategies that can be adopted in increasing the awareness of occupational health and safety practices in your workshop.

NOTE: SA=Strongly Agree A=Agree SD=Strongly Disagree D=Disagree

S/N	ITEMS	SA	A	SD	D
1.	Workers should be encouraged to have good maintenance culture for machine and equipment				
2.	Safety slogans should be adopted and used as safety reminder for workers				
3.	Mandatory induction courses should be recommended for every new employee				
4.	The workshop should possess its own safety code				
5.	Every technical officer should be provided with the workshop's safety code				
6.	Safety and danger signs should be placed in locker rooms and passages for people to see				
7.	Every worker should be provided with protective wears such as safety boots, overalls etc				
8.	Workers should be trained on how to recognize potential hazards				
9.	All accidents, whether major or minor should be promptly reported and documented for protective or corrective purposes				
10.	Behaviours and habits that undermine and jeopardize safety should be discouraged				
11.	Management and supervisors should ensure and enforce compliance to the safety rules and regulations by workers				
12.	Inexperienced workers should not be allowed to perform any				

	operation without supervision				
13.	Equipment, machines and working tools should be tested in order to ensure that they are in good working condition before usage				
14.	Equipment, machines and working tools that pose a threat to the safety of workers should be disposed off				
15.	Seminars/ workshops on safety should be organized for workers on a regular basis				

APPENDIX III

Formula used for the Study

Mean $\bar{x} = \frac{\sum x_i}{\sum n}$

\bar{x} = Mean

Σ = the sum of

x = the score

f = the frequency of each point in the scale

Standard deviation

$$SD = \sqrt{\frac{\Sigma x(x - \bar{x})}{\Sigma x}}$$

X = Mean

Σ = the sum of

x = the score

f = the frequency

t-test formula $\frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2 + s_2^2}{n_1 + n_2}}}$

\bar{X}_1 = Mean score of management

\bar{X}_2 = Mean of technical staff

S_1^2 = Variance of management staff

S_2^2 = Variance of technical staff

N_1 = Number of management staff

N_2 = Number of technical staff

t- calculated =

$$\frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$