

Perceptions of Knowledge of Occupational Health Hazards and Safety Practices Among Gas Station Attendants in Owerri Municipal Imo Metropolis, Imo State Nigeria

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Article History	Abstract
Original Research Article	<p><i>Gas stations (GS) are facilities where lots of motor vehicles and other automobiles, corporate bodies and individuals who use petroleum products like Premium Motor Spirit (PMS), diesel and other liquid fuels purchase the product. They store and dispense large quantity of other hazardous substances or chemicals especially flammable substances such as diesel, kerosene, lubrication oil and Liquefied Petroleum Gas (LPG). The aim of this study is to investigate the perceptions of knowledge of occupational health hazards and safety practices among Gas station attendants in Owerri Municipal Imo metropolis, Imo State. Owerri is the capital of Imo State in Nigeria, set in the heart of Igboland. It is also the state's largest city, followed by Orlu, Okigwe and Ohaji/Egbema. Owerri consists of three Local Government Areas including Owerri Municipal, Owerri North and Owerri West, it has an estimated population of about 1,401,873 as of 2016 and is approximately 100 square kilometres (40 sq mi) in area. the mean and standard deviation on the relationship between age and safety practices among Gas station attendants in Imo State were 2.87 SD=0.79, 2.76 SD=0.73 and 2.67 SD=0.79 for age bracket 19 – 29 years, 30 – 39 years and 40 years and above respectively. The most adhered safety practices by Gas station attendants for age bracket 19 – 29 years was the availability of fire extinguishing equipment at the station which is maintained and serviceable regularly (Mean=3.86, SD=0.43). The most adhered safety practices by Gas station attendants for age bracket 30 – 39 years was the availability of a suitable First Aid box in the Gas station (Mean=3.95, SD=0.26). The most adhered safety practices by Gas station attendants for age bracket 40 years and above was the availability of a suitable First Aid box in the Gas station (Mean=3.92, SD=0.28). Based on the findings of this study, it was concluded that the knowledge of occupational health hazards was good and the safety practices among the Gas station attendants was also good but the attendants did not fully comply with all the safety rules especially on the use of PPE's while at work. The Gas Station Owners/Supervisors/Government should not relent in their effort to teach or enlighten their workers and public on the occupational health hazards in Gas Stations.</i></p> <p>Keyword: Occupational, Health, Hazards, Gas, Stations, Attendees.</p>
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Introduction

Gas stations (GS) are facilities where lots of motor vehicles and other automobiles, corporate bodies and individuals who use petroleum products like Premium Motor Spirit (PMS), diesel and other liquid fuels purchase the product. They store and dispense large quantity of other hazardous substances or chemicals especially flammable substances

such as diesel, kerosene, lubrication oil and Liquefied Petroleum Gas (LPG). Transportation, industrialization and urbanization is growing at a fast rate yearly as well as the population of people in the country which increases the need for fuel such as petrol, diesel and other liquid fuels which are sold in Gas Stations (GS). The need for

petroleum products have given birth to proliferation of Gas stations. The increased use of petroleum products in automobiles, homes and industries has led to the deterioration in air quality and human health. These products contain a number of toxins that are said to be carcinogenic to humans. Gas stations are hazardous work places that pose constant hazard to the staff, public assets and environment. Careless handling has the capacity to create life threatening situations and hamper the health of individuals within the environment.

Okafoagu, Oche, Gana, Ango and Yunusa (2017), stated that Premium Motor Spirit (PMS) remains the only option used as fuel in the automobile industry in Nigeria without any viable alternative in sight. According to Rivinus (2016) there are more than 150 chemicals in petrol but two i.e. benzene and lead are known to be highly dangerous to our health.

Gas station attendants are at high risk and group of individuals who are directly exposed to volatile organic compounds with little or no control over the length and frequency of exposure despite safety regulations. They pump petrol into automobiles and are exposed to several hazards which may limit their efficacy, efficiency and productivity. The Gas station attendants also are of different age groups, educational qualifications, religious backgrounds, marital status and gender.

Statement of the Problem

In Nigeria the Department of Petroleum Resources (DPR) is the Federal Government Agency vested with the responsibilities of regulating the citing, operation and construction of Gas stations. The explanation of an Enforcement pyramid retrieved from Nigeria Country profile on occupational Safety and Health (2016) shows the stages of enforcement process as: verbal advice/warning, improvement/warning notice, final warning notice, prohibition and prosecution of any organization who refuse to comply with standard safety regulations but to what extent are these laws and policies implemented? several health challenges like vomiting, nausea, dizziness, stomach pain, respiratory failure, depression, cardiac abnormalities, heart attack, cancer of the lungs, stomach ache, aphasia, leukemia and so on arise resulting from the fumes of petrol and other hazardous substances inhaled at workplace and safety challenges resulting from the disregard for the use of Personal Protective Equipment (PPE) such as nose mask, coveralls, safety boots, aprons, hard hats, safety gloves and so on combined with stress and long hours of working. With all these challenges, one begins to ask if the job of being a Gas station attendant is worth doing since it poses a great danger or risk to life and property.

Aims and Objectives of the Study

The aim of this paper is to investigate the perceptions of knowledge of occupational health hazards and safety practices among Gas station attendants in Owerri Municipal Imo metropolis, Imo State.

1. Investigate the knowledge of occupational health hazards among Gas station attendants in Owerri metropolis, Imo State.
2. Find out the safety practices adhered to by Gas station attendants in Owerri metropolis, Imo State.
3. Study the relationship between age and knowledge of occupational health hazards among Gas station attendants in Owerri metropolis, Imo State.
4. Ascertain if there is a relationship between gender and knowledge of occupational health hazards among Gas station attendants in Owerri metropolis, Imo State.
5. Study the relationship between educational qualification and knowledge of occupational health hazards among Gas station attendants in Owerri metropolis, Imo State.
6. Ascertain if there is a relationship between age and safety practices among Gas station attendants in Owerri metropolis, Imo State.
7. To find out if there is a relationship between gender and safety practices among Gas station attendants in Owerri metropolis, Imo State.
8. To find out the relationship between educational qualification and safety practices among Gas station attendants in Owerri metropolis, Imo State.

Research Questions

The following research questions are asked to guide the study.

1. What is the knowledge of occupational health hazards among Gas station attendants in Owerri metropolis, Imo State?
2. What are the safety practices adhered to by Gas station attendants in Owerri metropolis, Imo State?
3. What is the relationship between age and knowledge of occupational health hazards among Gas station attendants in Owerri metropolis, Imo State?
4. What is the relationship between gender and knowledge of occupational health hazards among Gas station attendants in Imo State?
5. What is the relationship between educational qualification and knowledge of occupational health hazards among Gas station attendants in Owerri metropolis, Imo State?

6. What is the relationship between age and safety practices among Gas station attendants in Owerri metropolis, Imo State?
7. What is the relationship between gender and safety practices among Gas station attendants in Owerri metropolis, Imo State?
8. What is the relationship between educational qualification and safety practices among Gas station attendants in Owerri metropolis, Imo State?

Area of the Study

Owerri is the capital of Imo State in Nigeria, set in the heart of Igboland. It is also the state's largest city, followed by Orlu, Okigwe and Ohaji/Egbema. Owerri consists of three Local Government Areas including Owerri Municipal, Owerri North and Owerri West, it has an estimated population of about 1,401,873 as of 2016 and is approximately 100 square kilometres (40 sq mi) in area. Owerri is bordered by the Otamiri River to the east and the Nworie River to the south.

The Owerri Slogan is Heartland. It is currently referred to as the entertainment capital of Nigeria because of its high density of spacious hotels, high street casinos, production studios and high quality centres of relaxation. It is the home to annual beauty pageants, "Miss Heartland" and "Miss Adanma".

Concepts of Occupational Health

Occupational health is an aspect of public health, its basic objectives is to ensure that the health and well-being of individuals in any form of occupation are protected maintained and promoted (Amanze & Agu, 2014). The goal of occupational health and safety programme is to foster a safe work environment and as a secondary effect to protect co-workers, family members, employers, customers, suppliers, nearby communities and other members of the public who are impacted by the workplace environment.

Onumbu (2018) affirmed that occupational health is a state or condition of optimal physical mental and social well-being of an individual worker while at work or in a work-related environment.

Occupational health is therefore the complete physical social and mental well-being of all work men and women within the working environment or doing work. Health is the total well-being of a person physically, socially and mentally.

Concepts of Hazards

According to Prashar and Bansal (2009) occupational hazard refers to a potential condition which might be converted into an event (accident). Asuzu (1994) defines a

hazard as any substance process or situation that is predisposed to or itself causes accident or disease. However Gupta (2010) proffered three classical definitions of hazard. He stated that a hazard is something that has the potential to cause harm. This harm can affect people, property and processes in the following ways: People injury, illness death, psychological trauma; Property – damage, contamination, theft and wastage; Processes – work disruption and interruption to production.

A hazard is any practice behaviour or condition or combination of these that can cause injury or illness to people or damage to property.

A hazard is also an unsafe condition or practice that could cause an injury, illness to an employee and it is preventable. Moreover, a hazard is any unsafe practice or act that is capable of causing injury, harm, danger, accident or losses to individuals or people within an environment. Achalu (2000) also identified a link between hazard accident and disease. Exposure to a hazard may increase the risk of accident which in turn can lead to infection, disability or disease. The emerging infection or disease becomes a source of hazard to others.

Occupational Health Hazards of Station Attendants

Amanze and Agu (2014) stated that occupational health hazards are the aspect of work environment which may cumulatively result in deterioration of a worker state of wellbeing. Occupational health hazards as defined by Onumbu (2008), are workplaces or work related dangers, conditions or systems which have the potential of causing stress, injury or loss the workers, employers or both of them. Also, Onumbu (2018), opined that occupational health hazards are those things that pose danger to life, health and property while doing work. Hence, occupational health hazards are work related risk, injury damage or conditions which have the capability of causing accident, injury, danger or losses to workmen or individuals within the work environment or locality. The occupational health hazards for the purpose of identification can be classified into five. These are: Physical hazards, chemical hazards, biological hazards, psycho-social hazards, mechanical/Ergonomic hazards.

Physical hazards: These are the hazards that could be seen felt or perceived by somebody which gives physical (or bodily) harm or loss to persons of their properties in a work or work related area (Onumbu, 2018). Gupta (2010) asserted that the resultant effect of exposure to physical hazards include temporary or permanent hearing loss, damage to blood vessels and nerves, hearing loss, to heat cramps, exhaustion, stroke, first bite, hypothermia, cancer and visual impairment. Onyia (2011) submitted that physical hazards are hazards in the physical environment

that can be seen, heard felt or experienced in the physical environment that can be seen, heard felt or experienced in the physical way. Onumbu (2018), outlined that physical hazards can be sources from heat and cold environment, noise, electric current, vibration, radiation, falling objects, traffic smarts, poor residential or office housekeeping industrial wastes, fire, existence of gangsters, cultists and robbers, poor illumination or light, presence of religious intolerance, assault heavy workload, overcrowded environment, confined spaces, other environmental pollutants like our particles explosion and odours.

Chemical hazards: Jones and David (2012), opined that a chemical can be considered hazardous by virtue of its intrinsic properties, can cause harm or danger to humans, property or the environment. Onumbu (2018) opined that chemical hazards are substances that are corrosive, toxic or undergo atomic reactions which may cause damage, harm or losses to persons or their properties while at work or in a work related area. They exist in various forms like acids, bases (alkalis), gases, fumes, vapour powder, mists, dusty air, solvent and some other solutions. Examples are flammables like some petroleum products carcinogens, dust smoke, drugs or alcohol and others. They are either through the mouth or impacted through the skin.

Gupta (2010) Prashar and Bansal (2009) noted that worker may suffer from respiratory diseases, skin infections, allergy, neurological and reproductive disorders as a result of exposure to chemical hazards. Safe handling of chemical is very important. Chemicals are generally grouped into various categories that is, very toxic, harmful, corrosive, irritant, sensitizing, carcinogenic or mutagenic and toxic. Material Safety Data Sheets (MSDS) should be made available for all hazardous chemical as well as grouping of the chemical and physical properties, precautions for use, first aid and fire-fighting, procedures. Hazardous substances get into the body by inhalation; absorption through the skin, cuts or abrasions and ingestion through the mouth.

Biological hazards: Gupta (2010) submitted that biological hazards are living things or substances produced by living things that can cause illness in humans. These hazards enter into the body system through inhalation, ingestion and absorption. They include bacteria, viruses, fungi parasites, rickettsia, algae and plants.

Substances considered to be biological hazards are micro-organisms, ecto and endo-parasites whether or not genetically modified which may cause infection, allergy, and toxicity or otherwise create a hazard to human health. Prashar and Bansal (2009), suggested that in occupations where there is potential exposure to biological hazards, workers should practice proper personal hygiene, particularly hand washing personal protective equipment

should be provided for workers waste disposal systems and appropriate control including isolation in cases of contagious diseases.

Psychosocial hazards: Psychosocial hazards are associated with the workers state of mind. Prashar and Bansal (2009). More so, psychosocial hazards may equally result from faulty unity of command and relationship. Psychosocial issues in the workplace may include: Violence from and outside the organization, bullying which may include emotional and verbal abuses, sexual harassment mobbing, burnout, exposure to unhealthy elements. Onumbu (2018) affirmed that psychosocial hazards are those hazards that are emotional in nature and they may off an employee's mental spiritual and social well-being negatively while at work or in a work-related area. They may affect the employee's cognitive, affective and even psychological domains. They arise in the form of shouting, aggression, lack of promotion, intimidation, threats, poor remuneration or wages, nepotism, harassment distrust, hostility, poor conditions of service and interpersonal relations, witch-hunting exercise assaults, denials and some others. Psychosocial hazards are hazards that arise from a worker's emotional state while at work or within a work environment which have the capacity to influence work. They may lead to some other hazards and cause accident to the worker which means that they may have multiplier effects sometimes.

Mechanical/Ergonomic hazards: Mechanical/ergonomic hazards are hazards that emanate from vehicles, machines, tools, engines and unsupervised devices that are in motion and can cause accident injury or losses in a work environment or work related area.

Amanze and Agu (2014) stated that mechanical/ergonomic hazards emanate from the design and organization of work including man machine relationship. Prashar and Bansal (2009) asserted that ergonomic hazards can arise from the failure of components of a mechanical system due to faulty design, faulty assembly, faulty materials, lack of repair and maintenance; inadvertence and complacency on the part of the workers at the points of operation; inadequate safeguards of machine and laxity in the use of personal protective equipment. Ergonomic hazards also refer to workplace conditions that constitute risk to the musculoskeletal system of a person (The University of Chicago Environmental Health Safety, 2016). These conditions can lead to great bodily injury, not only to the employees at the service station but also to the public. They are muscular strains due to constant manual handling of pumps, backstrains from repeated lifting of

petrol tanks or gallons, back injury as a result of bad body positioning to fill air into inflated tyres.

Theoretical Framework

Several theories have been linked with occupational health hazards. This study however hinges on the behavioural theories of health which include: Health Belief Model (HBM) and Social Cognitive Theory (SCT). The researcher has chosen these theories because of their usefulness in the control and prevention of occupational health hazards in work places.

Research Design

The study adopted the descriptive survey research design to achieve the objectives of the study. In this study, the researcher collected data on knowledge of Occupational health hazards and safety practices among Gas station attendants in Imo metropolis and subject the data to statistical analysis without manipulating any variable in the study. Olaiya, Samson, Okareh, Justin, Abiodun, Omotola & Omotola (2018) conducted a descriptive study to assess the knowledge, attitude and perception of potential occupational hazards by automobiles workers in Makurdi, Benue State, Nigeria. Prajeesh (2010) conducted a descriptive study on the Assessment of Knowledge on Occupational hazards and Utilization of Safety measures among Gas station attendants at selected petrol pumps at Mangalore.

Descriptive research includes Surveys and fact finding enquiries and the description of the state of affairs as it exists at present. Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual or of a group (Kothari & Garg, 2014). Elendu (2010) also affirmed that a descriptive study is aimed at describing, explaining and

analyzing events and behaviours as they occur at a particular period.

Therefore this design is considered appropriate and suitable for this study as the researcher was interested in finding out the knowledge of occupational health hazards and safety practices among Gas station attendants in Owerri Metropolis, Imo State.

Population for the Study

The study's population comprises of all the Gas station attendants, in Owerri metropolis, Imo State.

Sampling techniques: The multi-stage sampling techniques was used for the study. The techniques involved the use of different sampling techniques at different stages.

Elendu (2010) stated that multi-stage sampling can be applied where the population is large or widely spread or scattered. Therefore multi-stage sampling technique is considered appropriate for this study as the population is and widely spread all over the Owerri Municipal Local Government Area, Owerri North Local Government Area, Owerri West Local Government Area of Imo State. First all the about 153 Gas stations will be stratified into the three Local Government Area.

Methods of Data Analysis

Data analysis for this study was done using the statistical package for social sciences (SPSS) 23.0 version. Mean and standard deviation were used to describe the set of data used for the study and to answer the research questions, while a one way ANOVA was used to test the hypothesis at 0.05 alpha level of significance.

Presentation of Results

Research Question 1: What is the knowledge of occupational health hazards among Gas station attendants in Imo State?

Table 4.1.1: Mean and standard deviation on the knowledge of occupational health hazards among Gas station attendants in Imo State N=494

S/N	Knowledge of Occupational Health Hazards	Yes	No	Mean	SD	Remark
Physical Health Hazards						
1.	Excessive noise and vibration in the Gas station can cause headache, hearing problem and musculo-skeletal disorder.	493	1	2.00	0.04	*
2.	Excessive light results in glaring and affect vision in Gas station.	352	142	1.71	0.45	*
3.	Low light in the Gas station can affect and strain the eyes.	432	62	1.87	0.33	*
4.	Slippery floors can cause falls in the Gas station.	482	12	1.98	0.15	*

5.	Floors full of potholes in the Gas station can cause falls leading to accidents.	479	15	1.97	0.17	*
6.	Excessive heat in the Gas station can cause skin rashes and suffocation.	379	115	1.77	0.42	*
7.	Dust raised by vehicles results in nasal congestion and respiratory diseases.	476	18	1.96	0.19	*
Mean				1.89	0.25	*

*Good knowledge; **Poor knowledge; Criterion Mean = 1.50

Table 4.1 Contd..

S/N	Knowledge of Occupational Health Hazards	Yes	No	Mean	SD	Remark
Chemical Hazards						
8.	The petroleum products are solvents, mist, fumes, gases and vapours which can cause fire explosion and can be harmful to health.	492	2	2.00	0.06	*
9.	Inhaling and ingesting petroleum product at the Gas station can cause Asthma, Cardio-pulmonary disorders, lung cancer, headache and vomiting.	367	127	1.74	0.44	*
10.	Petroleum products on entering the eyes at the Gas station can cause eye irritation and lead to poor vision.	308	186	1.62	0.49	*
11.	Long exposure to PMS, gases and other chemicals at the Gas station, could cause respiratory diseases, renal diseases, cardiovascular diseases, reproductive disorders, insomnia, rupture of the lungs, decreased fertility and death.	459	35	1.93	0.26	*
Mean				1.82	0.31	*

*Good knowledge; **Poor knowledge; Criterion Mean = 1.50

Table 4.1 Contd.

S/N	Knowledge of Occupational Health Hazards	Yes	No	Mean	SD	Remark
Biological Hazards						
12.	Viruses, bacteria, fungi, nematode and other micro-organisms resulting from poor environmental hygiene in the Gas station can cause respiratory, skin and other infections.	489	5	1.99	0.10	*
13.	Improper environmental hygiene can attract mosquitoes, cockroaches and snakes which can cause malaria, leprosy and death.	480	14	1.97	0.17	*
14.	Poor waste disposal system at the Gas station can cause cholera, typhoid fever among others.	477	17	1.97	0.18	*
Mean				1.98	0.15	*

*Good knowledge; **Poor knowledge; Criterion Mean = 1.50

Table 4.1 Contd..

S/N	Knowledge of Occupational Health Hazards	Yes	No	Mean	SD	Remark
Psychological Hazards						
15.	Verbal abuses, violence and sexual harassment from management, fellow workers and customers in the Gas station results in anxiety and depression.	491	3	1.99	0.08	*
16.	Long hours of standing in the Gas station can cause muscle strains, arthritis, dizziness, body pains and related health problems.	481	13	1.97	0.16	*
17.	Armed robbery attacks at the Gas station results in tension, poor mental health, low quality sleep and depression.	471	23	1.95	0.21	*
18.	Emotional disturbances from work place can cause depression, hypertension, high blood pressure, anxiety, boredom, stroke, heart attack and heart failure.	479	15	1.97	0.17	*
19.	Management praising/appreciating workers in the Gas station when they do well does not keep workers in good state of mind and health.	70	424	1.14	0.35	*
	Mean			1.81	0.19	*

*Good knowledge; **Poor knowledge; Criterion Mean = 1.50

Table 4.1 Contd..

S/N	Knowledge of Occupational Health Hazards	Yes	No	Mean	SD	Remark
Mechanical Hazards/Ergonomic Health Hazards						
20.	Working when one is sick in the Gas station is not the character of Gas station management.	447	47	1.90	0.29	*
21.	Working with fuel pump that is faulty or hard to operate can cause pains on the wrist.	381	113	1.77	0.42	*
22.	Lifting heavy machines in the Gas station can cause deformity.	197	297	1.40	0.49	*
23.	Working with out-dated/obsolete tools in the Gas station can cause body pains.	400	174	1.66	0.50	*
	Mean			1.68	0.43	*
	Grand Mean			1.84	0.27	*

*Good knowledge; **Poor knowledge; Criterion Mean = 1.50

Table 4.1 above showed that the mean and standard deviation on the knowledge of occupational health hazards among Gas station attendants in Imo State was 1.84SD=0.27. The mean knowledge of Physical Health Hazards was 1.89 SD =0.25, Chemical Hazards was 1.82 SD =0.31, Biological Hazards was 1.98 SD =0.15, Psychological Hazards was 1.81 SD =0.19 and Mechanical Hazards/Ergonomic Health Hazards was 1.68 SD =0.43. The Gas Station attendants had good knowledge (Grand mean 1.84,SD=0.27) of the occupational health hazards.

Research Question 2: What are the safety practices adhered to by Gas station attendants in Imo State?

Table 4.2 Mean and standard deviation on the safety practices adhered to by Gas station attendants in Imo State N=494

S/N	Safety Practices	AL/P	SM/S	R	N	Mean	SD	Remark
1.	The management sends newly employed attendants for training before resuming work at the Gas station.	240	114	118	22	3.16	0.94	**
2.	My employer periodically sends us for training to upgrade our efficiency and effectiveness.	28	62	123	281	1.67	0.90	*
3.	Personal Protective Equipment (PPE) like safety boots, aprons/coveralls, safety gloves, nose masks, hard hats are adequately provided by the management for use.	30	24	38	402	1.36	0.83	*
4.	We wear PPEs like safety boots, aprons/coveralls, safety gloves, nose masks, hard hats while at work compulsorily.	26	14	35	419	1.29	0.76	*
5.	Safety tips like “NO SMOKING”, “SWITCH-OFF ENGINES”, “NO USE OF MOBILE PHONES”, “IN” and “OUT” exits are not strictly obeyed in the Gas station.	221	24	29	220	2.50	1.43	**
6.	There is always a suitable First Aid box in the Gas station.	418	61	9	6	3.80	0.52	**
7.	Management supervises and ensures our compliance to safety while at work.	124	357	8	5	3.21	0.51	**
8.	All attendants wash hands before eating and do not eat while dispensing petroleum products.	233	251	8	2	3.45	0.55	**
9.	When there is a report of unsafe conditions such as faulty machines, slippery floors and unsafe acts, management act immediately.	329	83	80	2	3.50	0.77	**
10.	There is available fire extinguishing equipment at the station which is maintained and serviceable regularly.	447	36	9	2	3.88	0.41	**
11.	Attendants are trained on hazard control measures including how to put off fire when there is fire outbreak in the Gas station.	296	70	26	102	3.13	1.21	**
	Mean					2.81	0.80	**

*Poor Adherence; **Good Adherence; Criterion Mean = 2.50

Table 4.2 above showed that the mean and standard deviation on the safety practices adhered to by Gas station attendants in River State was 2.81 SD = 0.80. The most adhered safety practice by Gas station attendants was the availability of fire extinguishing equipment at the station which is maintained and serviceable regularly (Mean=3.88, SD=0.41). This was

followed by availability of a suitable First Aid box in the Gas station (Mean=3.90, SD=0.52) while the least adhered safety practice was the wearing of PPEs like safety boots, aprons/coveralls, safety gloves, nose masks, hard hats while at work compulsorily (Mean=1.29, SD=0.76). The Gas Station attendants had good adherence to safety practices (Grand mean 2.81, SD=0.80).

Research Question 3: What is the relationship between age and knowledge of occupational health hazards among Gas station attendants in Imo State?

Table 4.3: Mean and standard deviation on the relationship between age and knowledge of occupational health hazards among Gas station attendants in Imo State

S/N	Knowledge of Occupational Health Hazards	N=246		N=224		N=24	
		19 – 29	SD	30 - 39	SD	40 and above	SD
Physical Health Hazards							
1.	Excessive noise and vibration in the Gas station can cause headache, hearing problem and musculo-skeletal disorder.	2.00	0.06	2.00	0.00	2.00	0.00
2.	Excessive light results in glaring and affect vision in Gas station.	1.46	0.50	1.99	0.09	1.75	0.44
3.	Low light in the Gas station can affect and strain the eyes.	1.80	0.40	1.98	0.13	1.63	0.49
4.	Slippery floors can cause falls in the Gas station.	1.96	0.20	2.00	0.00	1.92	0.28
5.	Floors full of potholes in the Gas station can cause falls leading to accidents.	1.96	0.20	1.99	0.12	1.92	0.28
6.	Excessive heat in the Gas station can cause skin rashes and suffocation.	1.88	0.33	1.64	0.48	1.79	0.41
7.	Dust raised by vehicles results in nasal congestion and respiratory diseases.	1.93	0.25	2.00	0.00	1.92	0.28
Mean		1.85	0.28	1.94	0.12	1.85	0.31
Chemical Hazards							
8.	The petroleum products are solvents, mist, fumes, gases and vapours which can cause fire explosion and can be harmful to health.	2.00	0.00	2.00	0.00	1.92	0.28
9.	Inhaling and ingesting petroleum product at the Gas station can cause Asthma, Cardio-pulmonary disorders, lung cancer, headache and vomiting.	1.53	0.50	1.97	0.17	1.83	0.38
10.	Petroleum products on entering the eyes at the Gas station can cause eye irritation and lead to poor vision.	1.61	0.49	1.66	0.47	1.42	0.50
11.	Long exposure to PMS, gases and other chemicals at the Gas station, could cause respiratory diseases, renal diseases, cardiovascular diseases, reproductive disorders,	1.90	0.30	1.98	0.13	1.75	0.44

S/N	Knowledge of Occupational Health Hazards	N=246		N=224		N=24	
		19 – 29		30 - 39		40 and above	
		Mean	SD	Mean	SD	Mean	SD
	Mechanical Hazards/Ergonomic Health Hazards						
20.	Working when one is sick in the Gas station is not the character of Gas station management.	1.86	0.35	1.98	0.15	1.67	0.48
21.	Working with fuel pump that is faulty or hard to operate can cause pains on the wrist.	1.88	0.33	1.65	0.48	1.83	0.38
22.	Lifting heavy machines in the Gas station can cause deformity.	1.64	0.48	1.12	0.32	1.58	0.50
23.	Working with out-dated/obsolete tools in the Gas station can cause body pains.	1.64	0.51	1.66	0.47	1.67	0.48
	Mean	1.76	0.42	1.60	0.36	1.69	0.46
	Grand Mean	1.82	0.29	1.85	0.16	1.80	0.29

Table 3 above showed the mean and standard deviation on the relationship between age and knowledge of occupational health hazards among Gas station attendants in Imo State. The mean and standard deviation of ages 19 – 29, 30 – 39 and 40 and above were 1.82 SD=0.29, 1.85 SD=0.16 and 1.80 SD=0.29 respectively. The most knowledgeable occupational health hazards of Gas station attendants of age bracket 19 – 29 years was Biological Hazards (Mean=1.96, SD=0.18) and the least were Chemical Hazards (Mean=1.76, SD=0.32) and Mechanical Hazards/Ergonomic Health Hazards (Mean=1.76, SD=0.42). The most knowledgeable occupational health hazards of Gas station attendants of age bracket 30 – 39 years was Biological Hazards (Mean=1.99, SD=0.07) and the least was Mechanical Hazards/Ergonomic Health Hazards (Mean=1.60, SD=0.36). The most knowledgeable occupational health hazards of Gas station attendants of age bracket 40 and above was Biological Hazards (Mean=1.94, SD=0.19) and the least was Mechanical Hazards/Ergonomic Health Hazards (Mean=1.69, SD=0.46).

Research Question 4: What is the relationship between gender and knowledge of occupational health hazards among Gas station attendants in Imo State?

Table 4.4: Mean and standard deviation on the relationship between gender and knowledge of occupational health hazards among Gas station attendants in Imo State

S/N	Knowledge of Occupational Health Hazards	N=219		N=275	
		Male		Female	
		Mean	SD	Mean	SD
	Physical Health Hazards				
1.	Excessive noise and vibration in the Gas station can cause headache, hearing problem and musculo-skeletal disorder.	2.00	0.00	2.00	0.06
2.	Excessive light results in glaring and affect vision in Gas station.	1.65	0.48	1.76	0.43
3.	Low light in the Gas station can affect and strain the eyes.	1.91	0.29	1.85	0.36

4.	Slippery floors can cause falls in the Gas station.	1.98	0.13	1.97	0.17
5.	Floors full of potholes in the Gas station can cause falls leading to accidents.	1.97	0.16	1.97	0.18
6.	Excessive heat in the Gas station can cause skin rashes and suffocation.	1.75	0.43	1.78	0.42
7.	Dust raised by vehicles results in nasal congestion and respiratory diseases.	1.96	0.19	1.96	0.19
	Mean	1.89	0.24	1.90	0.26

Chemical Hazards

8.	The petroleum products are solvents, mist, fumes, gases and vapours which can cause fire explosion and can be harmful to health.	2.00	0.00	1.99	0.09
9.	Inhaling and ingesting petroleum product at the Gas station can cause Asthma, Cardio-pulmonary disorders, lung cancer, headache and vomiting.	1.72	0.45	1.76	0.43
10.	Petroleum products on entering the eyes at the Gas station can cause eye irritation and lead to poor vision.	1.55	0.50	1.68	0.47
11.	Long exposure to PMS, gases and other chemicals at the Gas station, could cause respiratory diseases, renal diseases, cardiovascular diseases, reproductive disorders, insomnia, rupture of the lungs, decreased fertility and death.	1.90	0.30	1.95	0.22
	Mean	1.79	0.31	1.85	0.30

Table 4.4 Contd.

S/N	Knowledge of Occupational Health Hazards	N=219		N=275	
		Male	Female	Male	Female
		Mean	SD	Mean	SD
Biological Hazards					
12.	Viruses, bacteria, fungi, nematode and other micro-organisms resulting from poor environmental hygiene in the Gas station can cause respiratory, skin and other infections.	1.99	0.10	1.99	0.10
13.	Improper environmental hygiene can attract mosquitoes, cockroaches and snakes which can cause malaria, leprosy and death.	1.98	0.15	1.97	0.18
14.	Poor waste disposal system at the Gas station can cause cholera, typhoid fever among others.	1.97	0.16	1.96	0.20
	Mean	1.98	0.14	1.97	0.16

Psychological Hazards

15.	Verbal abuses, violence and sexual harassment from management, fellow workers and customers in the Gas station results in anxiety and depression.	2.00	0.00	1.99	0.10
16.	Long hours of standing in the Gas station can cause muscle strains, arthritis, dizziness, body pains and related health problems.	1.97	0.16	1.97	0.16
17.	Armed robbery attacks at the Gas station results in tension, poor mental health, low quality sleep and depression.	1.97	0.18	1.94	0.23
18.	Emotional disturbances from work place can cause depression, hypertension, high blood pressure, anxiety, boredom, stroke, heart attack and heart failure.	1.99	0.12	1.96	0.20
19.	Management praising/appreciating workers in the Gas station when they do well does not keep workers in good state of mind and health.	1.16	0.36	1.13	0.34
	Mean	1.82	0.16	1.80	0.21

Table 4.4 Contd.

S/N	Knowledge of Occupational Health Hazards	N=219		N=275	
		Male	Female	Male	Female
		Mean	SD	Mean	SD
Mechanical Hazards/Ergonomic Health Hazards					
20.	Working when one is sick in the Gas station is not the character of Gas station management.	1.92	0.28	1.89	0.31
21.	Working with fuel pump that is faulty or hard to operate can cause pains on the wrist.	1.74	0.44	1.79	0.41
22.	Lifting heavy machines in the Gas station can cause deformity.	1.33	0.47	1.45	0.50
23.	Working with out-dated/obsolete tools in the Gas station can cause body pains.	1.60	0.49	1.69	0.48
	Mean	1.65	0.42	1.71	0.42
	Grand Mean	1.83	0.25	1.84	0.27

Table 4 above showed the mean and standard deviation on the relationship between gender and knowledge of occupational health hazards among Gas station attendants in Imo State. The mean and standard deviation of male and female were 1.83 SD=0.25 and 1.84 SD=0.27 respectively. The most knowledgeable occupational health hazards of the male Gas station attendants was Biological Hazards (Mean=1.98, SD=0.14) and the least was Mechanical Hazards/Ergonomic Health Hazards (Mean=1.65, SD=0.42). The most knowledgeable occupational health hazards of the female Gas station attendants was Biological Hazards (Mean=1.97, SD=0.16) and the least was Mechanical Hazards/Ergonomic Health Hazards (Mean=1.71, SD=0.42).

Research Question 5: What is the relationship between educational qualification and knowledge of occupational health hazards among Gas station attendants in Imo State?

Table 4.5: Mean and standard deviation on the relationship between educational qualification and knowledge of occupational health hazards among Gas station attendants in Imo State

S/N	Knowledge of Occupational Health Hazards	N=260		N=96		N=138	
		Mean	SD	Mean	SD	Mean	SD
Physical Health Hazards							
1.	Excessive noise and vibration in the Gas station can cause headache, hearing problem and musculo-skeletal disorder.	2.00	0.06	2.00	0.00	2.00	0.00
2.	Excessive light results in glaring and affect vision in Gas station.	1.48	0.50	1.96	0.20	1.97	0.17
3.	Low light in the Gas station can affect and strain the eyes.	1.82	0.39	1.91	0.29	1.96	0.19
4.	Slippery floors can cause falls in the Gas station.	1.96	0.19	2.00	0.00	1.99	0.12
5.	Floors full of potholes in the Gas station can cause falls leading to accidents.	1.96	0.19	2.00	0.00	1.96	0.19
6.	Excessive heat in the Gas station can cause skin rashes and suffocation.	1.79	0.41	1.67	0.47	1.79	0.41
7.	Dust raised by vehicles results in nasal congestion and respiratory diseases.	1.95	0.23	1.96	0.20	2.00	0.00
	Mean	1.85	0.28	1.93	0.17	1.95	0.15
Chemical Hazards							
8.	The petroleum products are solvents, mist, fumes, gases and vapours which can cause fire explosion and can be harmful to health.	1.99	0.09	2.00	0.00	2.00	0.00
9.	Inhaling and ingesting petroleum product at the Gas station can cause Asthma, Cardio-pulmonary disorders, lung cancer, headache and vomiting.	1.53	0.50	1.96	0.20	2.00	0.00
10.	Petroleum products on entering the eyes at the Gas station can cause eye irritation and lead to poor vision.	1.55	0.50	1.58	0.50	1.79	0.41
11.	Long exposure to PMS, gases and other chemicals at the Gas station, could cause respiratory diseases, renal diseases, cardiovascular diseases, reproductive disorders, insomnia, rupture of the lungs, decreased fertility and death.	1.90	0.30	1.98	0.14	1.94	0.23

Mean		1.74	0.35	1.88	0.21	1.93	0.16
Biological Hazards							
12.	Viruses, bacteria, fungi, nematode and other micro-organisms resulting from poor environmental hygiene in the Gas station can cause respiratory, skin and other infections.	1.98	0.14	2.00	0.00	2.00	0.00
13.	Improper environmental hygiene can attract mosquitoes, cockroaches and snakes which can cause malaria, leprosy and death.	1.97	0.16	1.95	0.22	1.99	0.12
14.	Poor waste disposal system at the Gas station can cause cholera, typhoid fever among others.	1.95	0.22	1.98	0.14	1.99	0.12
Mean		1.97	0.17	1.98	0.12	1.99	0.08

Table 4.5 Contd..

S/N	Knowledge of Occupational Health Hazards	N=260		N=96		N=138	
		Mean	SD	Mean	SD	Mean	SD
Psychological Hazards							
15.	Verbal abuses, violence and sexual harassment from management, fellow workers and customers in the Gas station results in anxiety and depression.	2.00	0.06	2.00	0.00	1.99	0.12
16.	Long hours of standing in the Gas station can cause muscle strains, arthritis, dizziness, body pains and related health problems.	1.96	0.20	1.98	0.14	2.00	0.00
17.	Armed robbery attacks at the Gas station results in tension, poor mental health, low quality sleep and depression.	1.94	0.24	1.95	0.22	1.99	0.12
18.	Emotional disturbances from work place can cause depression, hypertension, high blood pressure, anxiety, boredom, stroke, heart attack and heart failure.	1.95	0.21	1.97	0.17	2.00	0.00
19.	Management praising/appreciating workers in the Gas station when they do well does not keep workers in good state of mind and health.	1.18	0.38	1.15	0.35	1.07	0.26
Mean		1.80	0.22	1.81	0.18	1.81	0.10
Mechanical Hazards/Ergonomic Health Hazards							
20.	Working when one is sick in the Gas station is not the character of Gas station management.	1.85	0.36	1.96	0.20	1.97	0.17
21.	Working with fuel pump that is faulty or hard to operate can cause pains on the wrist.	1.80	0.40	1.68	0.47	1.79	0.41

22.	Lifting heavy machines in the Gas station can cause deformity.	1.58	0.50	1.36	0.48	1.09	0.28
23.	Working with out-dated/obsolete tools in the Gas station can cause body pains.	1.62	0.51	1.57	0.50	1.78	0.42
	Mean	1.71	0.44	1.64	0.41	1.66	0.32
	Grand Mean	1.81	0.29	1.85	0.21	1.87	0.16

Table 4.5 above showed the mean and standard deviation on the relationship between educational qualification and knowledge of occupational health hazards among Gas station attendants in Imo State. The mean and standard deviation of O Level, NCE/OND and B.Sc/HND were 1.81 SD=0.29, 1.85 SD=0.21 and 1.87 SD=0.16 respectively. The most knowledgeable occupational health hazards of Gas station attendants with O Level was Biological Hazards (Mean=1.97, SD=0.17) and the least was Mechanical Hazards/Ergonomic Health Hazards (Mean=1.71, SD=0.44). The most knowledgeable occupational health hazards of Gas station attendants with NCE/OND was Biological Hazards (Mean=1.98, SD=0.12) and the least was Mechanical Hazards/Ergonomic Health Hazards (Mean=1.64, SD=0.41). The most knowledgeable occupational health hazards of Gas station attendants with B.Sc/HND was Biological Hazards (Mean=1.99, SD=0.08) and the least was Mechanical Hazards/Ergonomic Health Hazards (Mean=1.66, SD=0.32).

Research Question 6: What is the relationship between age and safety practices among Gas station attendants in Imo State?

Table 4.6: Mean and standard deviation on the relationship between age and safety practices among Gas station attendants in Imo State

S/N	Safety Practices	N=246		N=224		N=24	
		19 - 29		30 - 39		40 and above	
		Mean	SD	Mean	SD	Mean	SD
1.	The management sends newly employed attendants for training before resuming work at the Gas station.	3.11	0.91	3.23	0.97	2.96	0.91
2.	My employer periodically sends us for training to upgrade our efficiency and effectiveness.	2.00	0.88	1.23	0.69	2.42	0.97
3.	Personal Protective Equipment (PPE) like safety boots, aprons/coveralls, safety gloves, nose masks, hard hats are adequately provided by the management for use.	1.52	0.92	1.16	0.63	1.50	1.14
4.	We wear PPEs like safety boots, aprons/coveralls, safety gloves, nose masks, hard hats while at work compulsorily.	1.42	0.88	1.11	0.49	1.50	1.14
5.	Safety tips like "NO SMOKING", "SWITCH-OFF ENGINES", "NO USE OF MOBILE PHONES", "IN" and "OUT" exits are not strictly obeyed in the Gas station.	2.29	1.38	2.84	1.43	1.46	0.98
6.	There is always a suitable First Aid box in the Gas station.	3.66	0.65	3.95	0.26	3.92	0.28
7.	Management supervises and ensures our compliance to safety while at work.	3.36	0.53	3.04	0.41	3.38	0.65
8.	All attendants wash hands before eating and do not eat while dispensing petroleum products.	3.35	0.57	3.59	0.50	3.08	0.50

9.	When there is a report of unsafe conditions such as faulty machines, slippery floors and unsafe acts, management act immediately.	3.70	0.56	3.34	0.91	2.92	0.65
10.	There is available fire extinguishing equipment at the station which is maintained and serviceable regularly.	3.86	0.43	3.92	0.37	3.67	0.48
11.	Attendants are trained on hazard control measures including how to put off fire when there is fire outbreak in the Gas station.	3.33	1.03	2.97	1.38	2.63	0.92
Grand Mean		2.87	0.79	2.76	0.73	2.67	0.79

Table 4.6 above showed that the mean and standard deviation on the relationship between age and safety practices among Gas station attendants in Imo State were 2.87 SD=0.79, 2.76 SD=0.73 and 2.67 SD=0.79 for age bracket 19 – 29 years, 30 – 39 years and 40 years and above respectively. The most adhered safety practices by Gas station attendants for age bracket 19 – 29 years was the availability of fire extinguishing equipment at the station which is maintained and serviceable regularly (Mean=3.86, SD=0.43). The most adhered safety practices by Gas station attendants for age bracket 30 – 39 years was the availability of a suitable First Aid box in the Gas station (Mean=3.95, SD=0.26). The most adhered safety practices by Gas station attendants for age bracket 40 years and above was the availability of a suitable First Aid box in the Gas station (Mean=3.92, SD=0.28).

Research Question 7: What is the relationship between gender and safety practices among Gas station attendants in Imo State?

Table 7: Mean and standard deviation on the relationship between gender and safety practices among Gas station attendants in Imo State

S/N	Safety Practices	N=219		N=275	
		Mean	SD	Mean	SD
1.	The management sends newly employed attendants for training before resuming work at the Gas station.	3.12	0.92	3.19	0.96
2.	My employer periodically sends us for training to upgrade our efficiency and effectiveness.	1.68	0.86	1.67	0.94
3.	Personal Protective Equipment (PPE) like safety boots, aprons/coveralls, safety gloves, nose masks, hard hats are adequately provided by the management for use.	1.33	0.83	1.37	0.83
4.	We wear PPEs like safety boots, aprons/coveralls, safety gloves, nose masks, hard hats while at work compulsorily.	1.27	0.73	1.29	0.78
5.	Safety tips like “NO SMOKING”, “SWITCH-OFF ENGINES”, “NO USE OF MOBILE PHONES”, “IN” and “OUT” exits are not strictly obeyed in the Gas station.	2.35	1.45	2.61	1.40
6.	There is always a suitable First Aid box in the Gas station.	3.90	0.34	3.73	0.61
7.	Management supervises and ensures our compliance to safety while at work.	3.20	0.48	3.23	0.53
8.	All attendants wash hands before eating and do not eat while dispensing petroleum products.	3.44	0.51	3.45	0.59

9.	When there is a report of unsafe conditions such as faulty machines, slippery floors and unsafe acts, management act immediately.	3.54	0.78	3.46	0.77
10.	There is available fire extinguishing equipment at the station which is maintained and serviceable regularly.	3.90	0.36	3.86	0.45
11.	Attendants are trained on hazard control measures including how to put off fire when there is fire outbreak in the Gas station.	3.16	1.23	3.11	1.20
Grand Mean		2.81	0.77	2.82	0.82

Table 7 above showed that the mean and standard deviation on the relationship between gender and safety practices among Gas station attendants in Imo State were 2.81 SD=0.77 and 2.82 SD=0.82 for male and female respectively. The most adhered safety practices by the male Gas station attendants were the availability of fire extinguishing equipment at the station which is maintained and serviceable regularly (Mean=3.90, SD=0.36) and the availability of a suitable First Aid box in the Gas station (Mean=3.90, SD=0.34). The most adhered safety practices by the female Gas station attendants was the availability of fire extinguishing equipment at the station which is maintained and serviceable regularly (Mean=3.86, SD=0.45).

Research Question 8: What is the relationship between educational qualification and safety practices among Gas station attendants in Imo State?

Table 4.8: Mean and standard deviation on the relationship between educational qualification and safety practices among Gas station attendants in Imo State

S/N	Safety Practices	N=260		N=96		N=138	
		Mean	SD	Mean	SD	Mean	SD
1.	The management sends newly employed attendants for training before resuming work at the Gas station.	3.01	0.93	3.03	0.98	3.53	0.82
2.	My employer periodically sends us for training to upgrade our efficiency and effectiveness.	1.92	0.88	1.49	0.89	1.32	0.81
3.	Personal Protective Equipment (PPE) like safety boots, aprons/coveralls, safety gloves, nose masks, hard hats are adequately provided by the management for use.	1.44	0.89	1.35	0.83	1.20	0.70
4.	We wear PPEs like safety boots, aprons/coveralls, safety gloves, nose masks, hard hats while at work compulsorily.	1.33	0.79	1.31	0.80	1.19	0.67
5.	Safety tips like "NO SMOKING", "SWITCH-OFF ENGINES", "NO USE OF MOBILE PHONES", "IN" and "OUT" exits are not strictly obeyed in the Gas station.	2.14	1.34	2.49	1.47	3.17	1.32
6.	There is always a suitable First Aid box in the Gas station.	3.66	0.65	3.94	0.32	3.99	0.12
7.	Management supervises and ensures our compliance to safety while at work.	3.34	0.52	3.15	0.50	3.02	0.43
8.	All attendants wash hands before eating and do not eat while dispensing petroleum products.	3.33	0.53	3.46	0.52	3.66	0.56
9.	When there is a report of unsafe conditions such as faulty machines, slippery floors and unsafe acts, management act immediately.	3.60	0.65	3.18	0.93	3.52	0.82

10.	There is available fire extinguishing equipment at the station which is maintained and serviceable regularly.	3.85	0.45	3.81	0.51	3.97	0.17
11.	Attendants are trained on hazard control measures including how to put off fire when there is fire outbreak in the Gas station.	3.20	1.10	2.73	1.39	3.29	1.23
Grand Mean		2.80	0.79	2.72	0.83	2.90	0.69

Table 4.8 above showed that the mean and standard deviation on the relationship between educational qualification and safety practices among Gas station attendants in Imo State were 2.80 SD=0.79, 2.72 SD=0.83 and 2.90 SD=0.69 for O Level, NCE/OND and B.Sc/HND respectively. The most adhered safety practices by the Gas station attendants with O Level was the availability of fire extinguishing equipment at the station which is maintained and serviceable regularly (Mean=3.85, SD=0.45). The most adhered safety practices by the Gas station attendants with NCE/OND was the availability of a suitable First Aid box in the Gas station (Mean=3.94, SD=0.32). The most adhered safety practices by the Gas station attendants with B.Sc/HND was the availability of a suitable First Aid box in the Gas station (Mean=3.99, SD=0.12).

Conclusion

Based on the findings of this study; it was concluded that the knowledge of occupational health hazards was good and the safety practices among the Gas station attendants was also good but the attendants did not fully comply with all the safety rules especially on the use of PPE's while at work.

Recommendations

Based on the findings of the study, the following recommendations are made:

- The Gas Station Owners/Supervisors/Government should not relent in their effort to teach or enlighten their workers and public on the occupational health hazards in Gas Stations. Knowledge of health hazards among Gas Station attendants was good but narrow and safety practices was also good but the use of PPE's was very poor. Therefore Gas Stations need to train and retrain their staff on the job.
- The management/owners of Gas stations should motivate their staff often by using incentive to reinforce good safety practice exhibited by them especially on the use of safety wears and punish offenders to deter poor compliance to safety practices.
- The Government should set up special task force/monitoring team to monitor the activities of Gas Stations as the DPR cannot ensure the strict compliance

alone. People tend to obey and practice the law better where there is a monitoring task force.

- Erring Gas Stations should be made to pay fine or shut down if they are still not complying with Standard Safety Practices after several warnings.
- The Gas Station management should comply with the safety act. (Industrial safety, Health and Welfare Regulation, 1965), of the country in regards to the petroleum products by providing adequate PPE's for fuel attendants and compel them to wear them for their own safety or stand the chance of losing their jobs (termination of appointment).

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