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Knowledge of Occupational Hazards and Safety Practices among Petrol Station Workers in Ibadan Metropolis, Oyo State, Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Due to the growing population and automobiles, there has been a massive growth in the number of petrol stations worldwide. The oil and gas sector is quickly becoming one of the largest employers in Nigeria, particularly in urban and peri-urban regions where it has drawn a sizable labour force from the petrol station industry. Like any other sector of the petroleum business, a petrol station's activities are fraught with danger. Nevertheless, there is scant or no recorded data on safety procedures and hazard awareness among petrol station employees in the city of Ibadan, which

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might be applied to health hazard management measures. In order to provide relevant data for health hazard control strategies, this research thus identifies gaps in safety practices as well as factors that influence these behaviors. Employees at petrol stations are a high-risk group that are subject to work-related risks and have no control over the frequency or duration of safety regulations. The study's objective was to evaluate the workers at petrol stations in Ibadan metropolis with regard to their understanding of safety procedures and occupational dangers.

The research was a descriptive cross-sectional study that employed a multi-staged selection technique. To achieve the required sample size, 650 randomly selected petrol station employees were chosen from 130 petrol stations with an average age of 29.4 ± 4.6 years in the Ibadan metropolitan area. The data was analyzed using the Statistical Package for the Social Sciences (SPSS Version 20. Based on the results of occupational safety practices, it was discovered that 48.7%, 47.7%, and 48.2% of the respondent's wear face masks, do not eat or drink while working, and do not use personal protective equipment, respectively. The results of the distribution of occupational safety practices showed that 48.7% of the respondents wore face or nose masks 47.7%, of the respondents did not drink or eat while working and 48.2% of the respondents did not use personal protective equipment while working. The distribution of respondents' knowledge of safety practices showed that 98.2%, 52.6%, 58.7%, 66.5%, 62.9%, 63.2%, 50.8%, 70.3%, 67.7%, and 46.8% of the respondents did not light a match or smoke near the nozzle, made sure car engines were off when dispensed, ensured good nozzle handling, did not answer a cell phone while dispensed gasoline, wash hands before eating or drinking at work, used personal protective equipment while dispensing gasoline, used chemical hand gloves, cleaned hands with water and soap after closing, and use of uniforms and wear boots while working respectively.

The discovery of low awareness of safety procedures and occupational hazards among employees in gas stations makes it necessary for these workers to recognize potential risks at work, implement safety controls to mitigate them, retrain and onboard new employees in safety protocols, and supply and enforce the daily use of personal protective equipment (PPE).

Keywords: Petrol station workers; occupational hazards; knowledge; safety; hazard; safety practices; Ibadan; Nigeria.

1. INTRODUCTION

"A hazardous work environment creates critical concerns, and resultantly, workers may suffer from job-related stress" [1]. "An occupational health hazard is any agent, substance, object, equipment, human behaviour or factor capable of injury, disability, disease or death in individual working in an organization. Occupational infections caused by transmissible agents like bacteria, virus, fungi, parasites and toxins produced by these organisms can be hazardous when contracted by abattoir workers in their daily practices" [2]. So, this study aimed at assessing the knowledge of occupational hazards and safety practices among petrol station workers in Ibadan metropolis, Oyo State, Nigeria. The knowledge level of control/preventive measures relating to occupational hazard exposure was suboptimal. Though studies that examined occupational health hazards have increased over the last 3 years, there is still a lack of recognition and knowledge gap of the exposures in the Nigeria filling stations. Apart from exposure to biological hazards and their preventive measures, which have received some research attention, all the other exposures have not been extensively studied [3]. An urgent call is required to study an assessment of knowledge of occupational hazards and safety practices among petrol station workers in Ibadan metropolis, Oyo State, Nigeria. "Most of the workers are exposed to numerous workplace hazards. The implementation of safety measures in high-income countries has largely mitigated these risks. However, in many low- and middle-income countries (LMICs), resources to institute safety measures are lacking, increasing the risk of occupational exposures to these hazards" [4]. The ever-increasing usage of automobiles and the population increase in urban and semi-urban areas worldwide have made the petroleum industry one of the sectors with the quickest growth rates. In Kenya, the quantity of gas stations on main thoroughfares and in urban areas has skyrocketed. Petroleum products, such as gasoline, diesel, and kerosene, are transported from the deployed subterranean tanks to the corresponding dispenser pump units via an underground pipe network. Depending on the local market need, gas stations may feature one or more dispenser pumps for each product in

addition to a variety of sized and number of fuel tanks [5]. In order to refuel clients' automobiles, petrol stations in poor nations, such as Kenya, employ pump attendants at the dispenser. The introduction of self-service machines has been made by industrialized nations in Europe, America, and several Asian countries, such as China, India, and Malaysia. Additionally, consumers in certain nations, like as India, have the choice between a typical fueling service where customers' vehicles are refueled by pump staff or a self-refueling petrol station where individuals refuel their own vehicles [6]. These facilities draw a lot of employment into the petroleum industry because, in addition to providing refueling services, they also sell liquidified pressurized gas (LPG) cylinders and offer 24-hour car services like car washes, oil changes, and mechanical repairs to cars, as well as large parking areas and food outlets.

In Nigeria's automotive industry, premium motor spirit (PMS) is still the only gasoline option available; no practical substitute is in sight. The love of cars, which leads to the annual purchase of several thousands of them, contributes to the success of PMS sales in Nigeria. VOCs, or volatile organic compounds, are solvents found in PMS and may be harmful to human health [7]. Regulations limit volatile organic compounds (VOCs) such benzene to 6%–8% of PMS in Nigeria and 1%–5% (v/v) in the USA and Europe [7-10]. Between 1994 and 1998, there were an estimated 7400 fires and explosions at public service stations in the United States of America that required attendant safety measures. Approximately two-thirds (4620) of those 7400 fires involved automobiles [11].

Regardless of the jurisdiction in which they operate, employers must provide occupational safety and health orientation to their new, young, and inexperienced workers upon hire or transfer in order to minimize the exposure to these chemical hazards. This is emphasized in the General Safety Orientation Guidelines (GSOG) for the oil and gas industry and a guide for service station operators [12,13]. Included in the safety information should include the company's responsibilities as well as any particular risks, working conditions, tools, policies, procedures, rules, and practices. Employees must always maintain good personal hygiene and wear Personal Protective Equipment (PPEs) such as gloves and overalls. The rules also advise against breathing in gasoline fumes when working in shifts and rotating tasks, as well as when a workplace has insufficient ventilation. All storage and transportation containers for gasoline must be appropriate, leak-proof, composed of metal or another sufficiently strong material, and constructed to stop evaporation. Additionally, Vapour Control Systems (VCS) must be installed by gas stations and activated when petroleum products are discharged from gasoline tankers into Underground Storage Tanks (UST). Furthermore, all petroleum vapours released from the USTs are recovered thanks to the installation of Vapour Recovery Units (VRU) in the gasoline bulk storages [14].

Petrol station workers are a high-risk group and are directly exposed to VOCs with no control over the length and frequency of exposure despite safety regulations [15]. These workers are exposed to several occupational hazards which may limit their efficacy, efficiency and productivity. The safety of people and protection of the environment are major concerns at petrol filling stations. At room temperature, motor fuels such as petrol and other fuels can be dangerous because they release fumes that, in the right amounts when combined with air, can ignite and burn explosively [16]. The implementation of safety measures and the dangers and adverse effects of volatile organic compounds (VOCs) require a thorough understanding of these topics. This understanding will then convert into suitable attitudes and beliefs regarding the health hazards connected with solvent exposure [17,18,19]. Thus, The Occupational Safety and Health Administration (OSHA) describes five categories of occupational hazards: physical safety hazards, chemical hazards, biological hazards, physical hazards, and ergonomic risk factors. The workers at petrol station are at risk of all of these hazards. Therefore, the questions used in questionnaire are categorized among different domains, e.g., Knowledge regarding various health hazards at petrol station, knowledge regarding prevention of these health hazards, knowledge regarding causes of such health hazards, knowledge regarding management of health hazards etc. Such categorization helps to understand the deficiency of knowledge in certain domain. Specific measures can be undertaken to improve the knowledge in that specific domain. it was necessary to inform the employees of petrol stations of these negative impacts. Therefore, the study's objective was to evaluate petrol station employees' awareness of safety procedures and occupational dangers in Ibadan, Oyo State, Nigeria.

1.1 Main Objective

This project seeks to gather data on the awareness of safety procedures and occupational dangers among gas station employees in Ibadan, Oyo State, Nigeria.

1.2 Specific Objectives

The specific objectives are to;

1. determine the knowledge of occupational hazards among petrol station workers
2. access the various forms of safety practices among petrol station workers

1.3 Research Questions

In order to find solutions to the objectives of this study, the following research questions were raised:

1. What are the occupational hazards associated with petrol station works?
2. What are the various forms of safety practices needed by petrol station workers?

2. MATERIALS AND METHODS

2.1 The Study Area

With a population of nearly 3 million, Ibadan, the capital of Oyo State, is the third most populated city in Nigeria, behind Lagos and Kano. With eleven (11) local governments in its metropolis—Ibadan North, Ibadan North-West, Ibadan North-East, Ibadan South-East, and Ibadan South-West—Oluyole, Egbeda, Ona-Ara, Lagelu, Ido, and Akinyele—it is the largest city in the nation by geographic area. Ibadan was the biggest and most populated metropolis in Nigeria and the second most populous city in Africa in 1960, the year of the country's independence. Ibadan is located in south-western Nigeria, 128 km inland northeast of Lagos and 530 km southwest of Abuja, the federal capital, and is a prominent transit point between the coastal region and the areas in the hinterland of the country. Ibadan had been the centre of administration of the old Western Region since the days of the British colonial rule, and parts of the city's ancient protective walls still stand to this day. The principal inhabitants of the city are the yorubas, as well as various communities from other parts of the country.

2.2 Target Population

The entire workforce of petrol station attendants operating at pumps in operational petrol stations in Oyo State's capital city of Ibadan made up the study population. All individuals who work at gas pumps, whether men or women, and who have been doing so for at least six months are included in the study's target group. Nonetheless, individuals employed as cashiers, clerks, cleaners, customer service agents, or those involved in car oil changing were also included in the study. In the study area, about one hundred and eighty-two (182) petrol stations was counted but only one hundred and thirty (130) are functioning at the time of the study with 650 petrol station workers within Ibadan metropolis in Oyo state. However, the petrol filling stations belonged to the independent and non-independent marketers.

2.3 Local Government Areas and Demography

According to National census of 2006, Oyo state has a total population of 5,580,894. National population commission (2016), pronounced that Oyo state has population of 7,840,864 and the current estimated population of Oyo state by United Nation in 2018 is 15,000,000. According to World Population Review (2018) and Wikipedia, the population of people living within Ibadan metropolis is estimated to be over 3.5 Million. The target population for this study will include residential buildings, landlords, developers and building contractors. There are 11 Local government Areas within Ibadan metropolis categorized into urban and pheri-urban. These Local Government areas include and categorized as follows Table 1 and Fig. 1.

2.4 Research Design

Descriptive study designs were used in this study. Data from each selected petrol station was collected at a time and examined. The researcher used both qualitative and quantitative approaches in data collection. Qualitative data is that data that use non-numerical data like observations and interviews while quantitative data is presented in numerical values and from which statistical inferences may be drawn from the study subjects.

2.4.1 Sampling unit

The sampling unit of this study was petrol service stations workers. At the time of this survey only

one and hundred thirty (130) petrol service stations was selected and six hundred and fiftry (650) petrol attendants from petrol station was used by the researcher. Purposive sampling was used to select that one hundred and thirty (130) petrol stations in Ibadan metropolis with a special focus on petrol stations which have dispenser pumps for diesel, petrol and kerosene, car servicing bay and front office section. The respondents were drawn from the mentioned sections and staff in the front office included and not limited to managers, owners and supervisor.

2.5 Sample Size and Sampling Procedure

For the purpose of this study, total enumeration was adopted for this study. The purpose of using this technique is to achieve a good representation of the population size whose fraction may not be too significant for the study. All the 130 petrol filling stations and 650 petrol attendants from petrol station was used. The population of this study was including all the petrol stations in all the local government area that constitutes the Ibadan metropolis in Oyo state. However, 130 petrol filling stations were

Table 1. Major six Local Government Areas in Ibadan metropolis according to population in 2006

S/N	Urban LGA	Population Census Figure (2006)	Pheri-Urban LGA	Population Census Figure (2006)
1	Ibadan North	308,119	Oluyole	203,461
2	Ibadan North East	331,444	Egbeda	283,643
3	Ibadan North west	154,029	Ona-Ara	265,571
4	Ibadan South West	283,098	Akinyele	211,811
5	Ibadan South East	266,457	Ido	104,087
6	-Oluyole		Lagelu	148,133

Source: National Population Commission (2006)

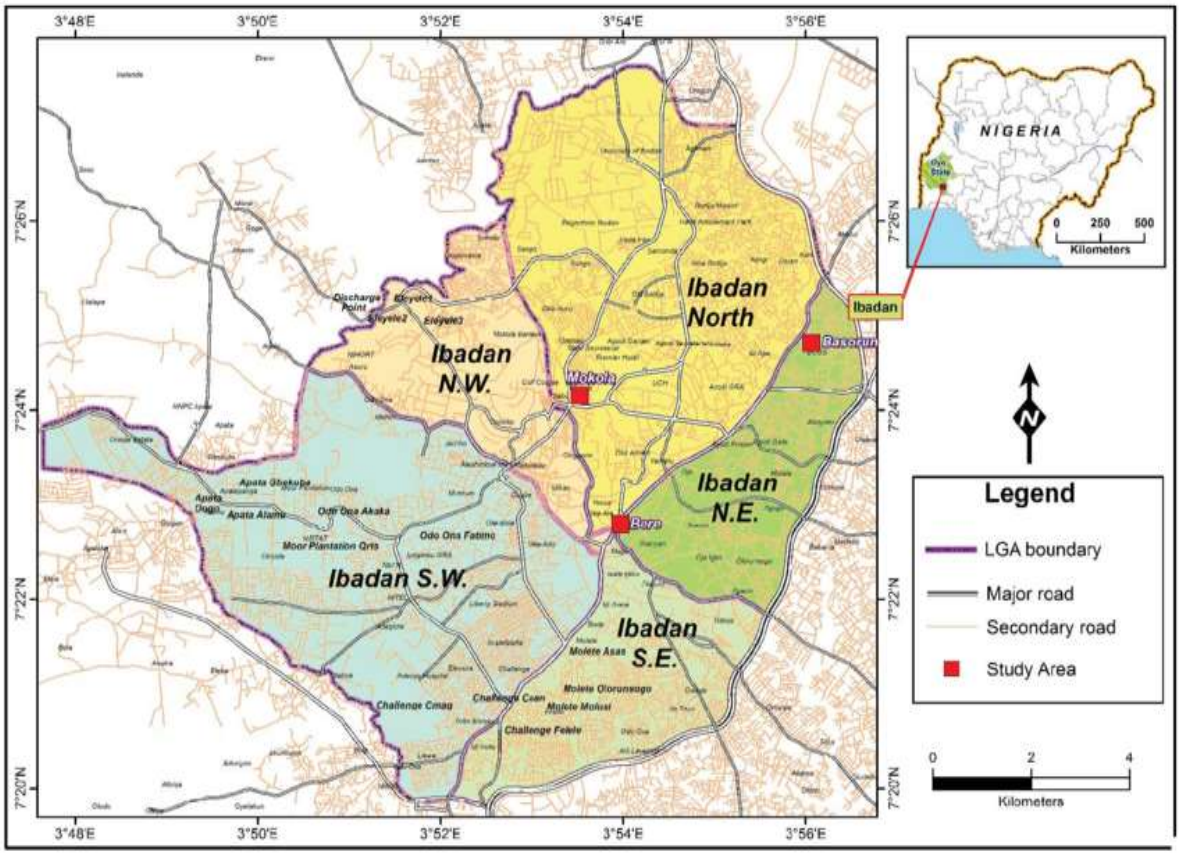

Fig. 1. Map of Ibadan

sample within Ibadan metropolis. In doing this, 5 petrol station attendants were purposively selected making a total of six hundred and fifty (650) consecutive petrol attendants. Therefore, 650 petrol station attendants were recruited for the study.

2.5.1 Sampling procedure

Stratified and simple random techniques were used to obtain samples from selected petrol stations in Ibadan metropolis. Simple random sampling ensured that all workers from the selected petrol station had an equal opportunity of being selected while stratification ensured that cases from smaller strata of the population were included in sufficient numbers to allow comparison. A total of 130 petrol stations were used in this study and a number of respondents were picked randomly and proportionately drawn from all the petrol stations involved in the study to give a desired sample size of six hundred and fifty (650). A proportionate ratio was used to select respondents from dispenser pump section, car servicing section and front office section. Then, respondents within the petrol station were sampled through simple random sampling and the samples be used for data collection.

2.6 Data Collection

The questionnaires were self-administered and with the assistance of a research assistant and petrol station attendants. Four research assistants who were previously trained by the researchers functioned as research assistants in the data collection activity. The hazards, health problems and occupational safety practices of petrol station attendants were discussed with them and all items on the questionnaire were reviewed until comprehension was ensured. Data collection was carried out over a period of one month.

2.7 Data Analysis

Data was collected through questionnaires, interview guide and observation checklist.

Open and closed-ended questionnaires were used to collect data from the respondents on the social economic details, occupational hazards and safety practices awareness, factors that influence safety practices and safety management systems in the working place The data collected from the field was coded, organized and analyzed using Statistical Package for the Social Sciences (SPSS) version 20.0. The analysis of the data used descriptive statistics (Frequencies, mean, percentage and measures of central tendency) and qualitative statistics for non-numerical data and quantitative statistics for numerical values. Pearson Chi-square test analysis was also used to show the association between different variables to achieve the objectives. The research findings were then presented using charts, graphs and tables that helped in understanding and interpretation of the information.

3. RESULTS AND DISCUSSION

3.1 Background Characteristics of the Respondents

Table 2 shows the background characteristics of the respondent. Majority of the respondents are male while only 37.1% are females. Respondents aged <20 years had highest percentage (28.4%) while only 1.3% were 50 years and above. Majority (60.6%) of the respondents were single while 39.4% are married. Almost half (48.9%) of the respondents had JSS3 education while only 4.2% had OND education. The study shows that 47.7% of the respondent are practicing Christianity, 47.4% are practicing Islam while only 4.8% are traditionalist. Majority of the respondents earn above 20,000 per month, while 26.9% respondent earns less than 20,000 per month. 43.1% of the respondents have 6-10 years of experience while only 27.1% had above 10years of experience. The result shows that 54.2% of the respondents said they had training as petrol attendant; while only 45.8% said they did not have any training as a petrol attendant. Majority of the respondents works 2-3 days in a week, while only 45.2% works 4-5 days in a week. It is also shown from the result that majority of the respondents are working as attendant while only few works in fuel cars only.

Table 3 shows the percentage distribution of occupational safety practice. It is shown from the result that minority (48.7%) of the respondent's wear nose/face masks while working while majority (51.3%) of then do not wear it. The result shows that 47.7% of the respondents do not drink or eat while working, while 52.3% of then eat or drink while working. Also, 48.2% of respondent do not use personal protective equipment, while majority of them use personal protective equipment.

Table 2. Background characteristics of the respondent

Variables	Frequency	Percent
Sex		
Male	390	62.9
Female	230	37.1
Age		
<20	176	28.4
20-29	125	20.2
30-39	167	26.9
40-49	144	23.2
50 and above	**8**	**1.3**
Marital status		
Single	376	60.6
Married	244	39.4
Level of education		
Primary education	178	28.7
JSS3	303	48.9
SS3	84	13.5
OND	26	4.2
HND /BS.c	29	4.7
Religion		
Christian	296	47.7
Muslim	294	47.4
Traditionalist	30	4.8
Monthly allowance		
Less than N 20,000	167	26.9
Above N 20,000	265	42.7
Range N 20,000- N 30,000	188	30.3
Number of years you have been working in filling station		
1-5 years	185	29.8
6-10 years	267	43.1
Above 10 years	168	27.1
Did you have any training as petrol attendant		
Yes	336	54.2
No	284	45.8
How many day did you work in a week		
2-3days	340	54.8
4- 5days	280	45.2
Work category of petrol station worker		
Attendant	241	38.9
Lubrication	152	24.5
Lane Manager	76	12.3
Cashier and Fuel Cars	48	7.7
Fuel cars only	20	3.2
administrative assistant and general services	83	13.4

Table 3. Percentage distribution of occupational safety practice

Variables	No	Yes
Wearing nose/face masks while working	302(48.7%)	318(51.3%)
Eating or drinking while working	296(47.7%)	324(52.3%)
use personal protective equipment	299(48.2%)	321(51.8%)

Fig. 2 shows the percentage distribution of occupational safety practices. The result shows that only 25.50% of the respondents have good occupational safety practices.

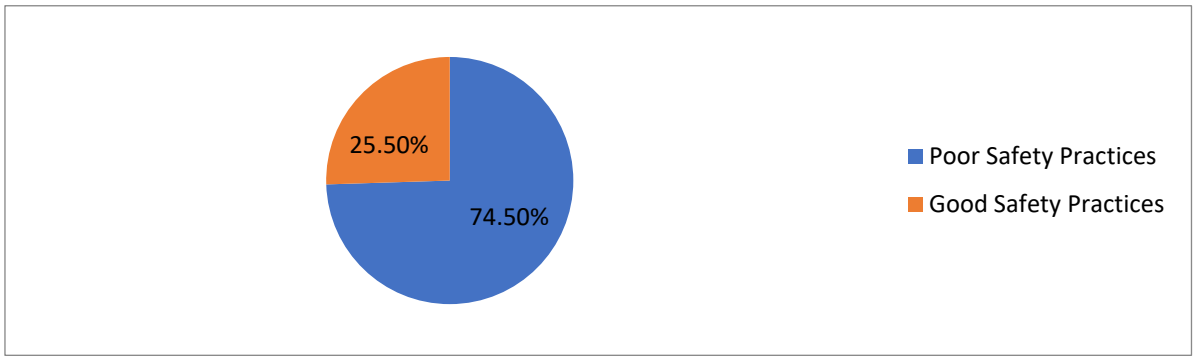

Fig. 2. Percentage distribution of occupational safety practices

Table 4 shows the percentage distribution of knowledge of safety practices among petrol station workers. Most (98.2%) of the respondents answered correctly that do not light a match or smoke close to nozzle, while only 1.8% answered the same question incorrectly. Majority of the respondents answered correctly that they ensure car engines are switched off while dispensing petrol while 47.4% of the respondents answered the same question incorrectly. 58.7% of the respondents answered correctly that they ensure good nozzle handling while only 41.3% answered the same question incorrectly. The result shows that 66.5% of the respondents do not answer cell phone while dispensing petrol while 33.5% answered the same question incorrectly. It is shown from the result that 62.9% of the respondents answered correctly that they wash hands before eating or drinking at work while only 37.1% answered the same question incorrectly. It is also shown from the result that 59.0% of the respondents answered correctly that they wash hands before eating or drinking at work while 41.0% answered the same question incorrectly. 63.2% of the respondents answered correctly that they use personal protective equipment while dispensing petrol, while only 36.8% of the respondent answered the same question incorrectly. 50.8% of the respondents answered correctly that they use chemical hand gloves while 49.2% answered the same question incorrectly. Majority of the respondents answered correctly that they wash hands with water and soap after closing, while 29.7% answered the same question incorrectly. The study shows that 67.7% of the respondents answered correctly that there is provision and use of uniforms while 32.3% answered the same question incorrectly. It shows that 46.8% of the respondents answered correctly that they wear boots while working while 53.2% answered the same question incorrectly.

48.7% of the respondents answered correctly that they use nose and face masks while only 48.9% answered the same question incorrectly. 53.2% of the respondents answered correctly that they wash hands with soap and water after

Table 4. Percentage distribution of knowledge of safety practices among petrol station workers

Variables	Correct	Incorrect
Do not light a match or smoke close to nozzle	609(98.2%)	11(1.8%)
Ensure car engines are switched off while dispensing petrol	326(52.6%)	294(47.4%)
Ensure good nozzle handling	364(58.7%)	256(41.3%)
Do not answer cell phone while dispensing petrol	412(66.5%)	208(33.5%)
Wash hands before eating or drinking at work	390(62.9%)	230(37.1%)
Wash hands before eating or drinking at work	366(59.0%)	254(41.0%)
Use of personal protective equipment while dispensing petrol	392(63.2%)	228(36.8%)
Use of chemical hand gloves	315(50.8%)	305(49.2%)
Washing of hands with water and soap after closing	436(70.3%)	184(29.7%)
Provision and use of uniforms	420(67.7%)	200(32.3%)
Wearing of boots while working	290(46.8%)	330(53.2%)
Use of nose/face masks	317(51.1%)	303(48.9%)
Washing of hands with soap and water after accidental spills	330(53.2%)	290(46.8%)
Assessment of pump before use	201(32.4%)	419(67.6%)

accidental spills. It is also shown from the result that 32.4% of the respondents answered correctly that they assess petrol before use while 67.6% answered the same question incorrectly.

Fig. 3 shows percentage distribution of knowledge of safety practices. It is shown from the result that only 23.70% of the respondents have good knowledge of safety practices.

Table 5 shows the percentage distribution of occupational hazard among petrol station workers. Out of 620 respondents, 61.1% of them have experienced inhalation of petrol fumes as a form of occupational hazard while others said they have not experienced. The result shows that 74.6% of the respondent said they have experienced confrontation from customers as a form of occupational hazard while only 25.4% said they have never experienced that. It is also shown from the result that 75.5% of respondents have experienced exposure to noise while only 24.5% have never experienced that. Majority of the respondents said they have experienced chronic cough due to dust, while only 15.7% said they have never experienced that. 78.0% of the respondents said they have experienced exposure to heat stress often result in heat exhaustion and heat stroke, while 22.0% said they have never experienced that. 69.6% of the workers said they have experienced hearing loss as a form of occupational hazard while 30.4% said they have never experienced that. The result shows that 80.1% of the respondents have experienced hearing impairment as a form of occupational hazard while only 19.9% said they have never experienced it. Also, 60.8% of the workers said they have experienced hypertension due to a high level of noise from machinery as a form of hazard while 39.2% said they have never experienced that. 63.3% of the respondents said they have experienced back pain/general body pain while repeatedly bending over to work, while 36.7% said they have never experienced that. Majority of the workers said they have experienced robbery has a form of hazard while only 39.6% said they have never experienced it.

It is shown from the result that 62.1% of the workers have experienced fire as a form of hazard, while 37.9% said they have not experienced it. 59.3% of the respondents said they have experienced extreme weather as a form of occupational hazard while only 40.7% said they have not experienced it. It is also revealed that 62.6% of the respondents said they have experienced exhaust fume, while 37.4% said they have never experienced it.

Fig. 4 shows Percentage Distribution of Occupational Hazard among Petrol Station Workers. The result shows that only 29.80% of the respondent had satisfactory score on occupational hazard.

Fig. 5 shows percentage distribution of hazard at work place, the result shows that only 3.40% of the workers have experienced hazard at workplace.

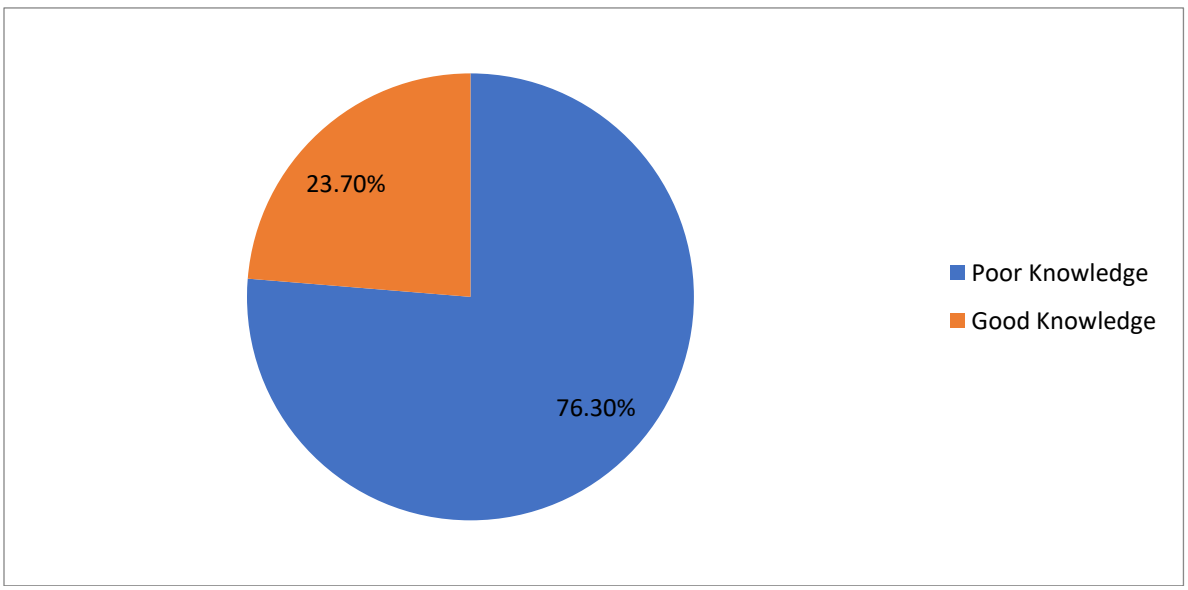

Fig. 3. Percentage distribution of knowledge of safety practices

Table 5. Percentage distribution of occupational hazard among petrol station workers

Variables	Yes	No
Inhalation of petrol fumes	366(61.1%)	233(38.9%)
Confrontation from customers	447(74.6%)	152(25.4%)
Exposure to noise	452(75.5%)	147(24.5%)
Chronic cough due to dust	505(84.3%)	94(15.7%)
Exposure to heat stress often result in heat exhaustion and heat stroke	467(78.0%	132(22.0%)
Hearing loss	417(69.6%)	182(30.4%)
Hearing impairment	480(80.1%)	119(19.9%)
Hypertension due to a high level of noise from machinery	364(60.8%)	235(39.2%)
Back pain/general body pain while repeatedly bending over to work	379(63.3%)	220(36.7%)
Robbery	362(60.4%)	237(39.6%)
Fire	372(62.1%)	227(37.9%)
Extreme weather	355(59.3%)	244(40.7%)
Exhaust fume	375(62.6%)	224(37.4%)

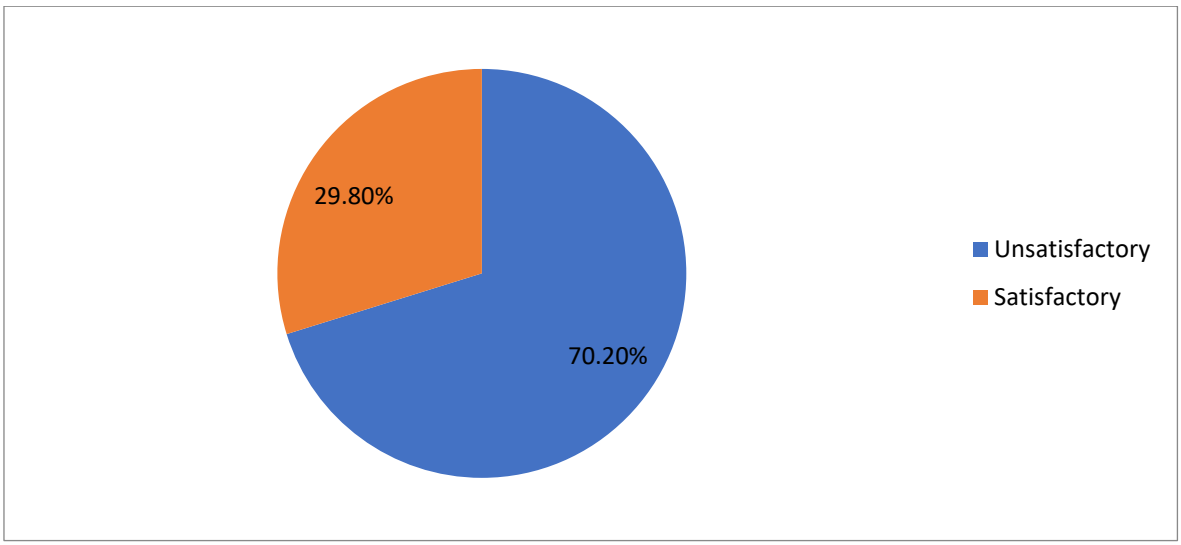

Fig. 4. Percentage distribution of occupational hazard among petrol station workers

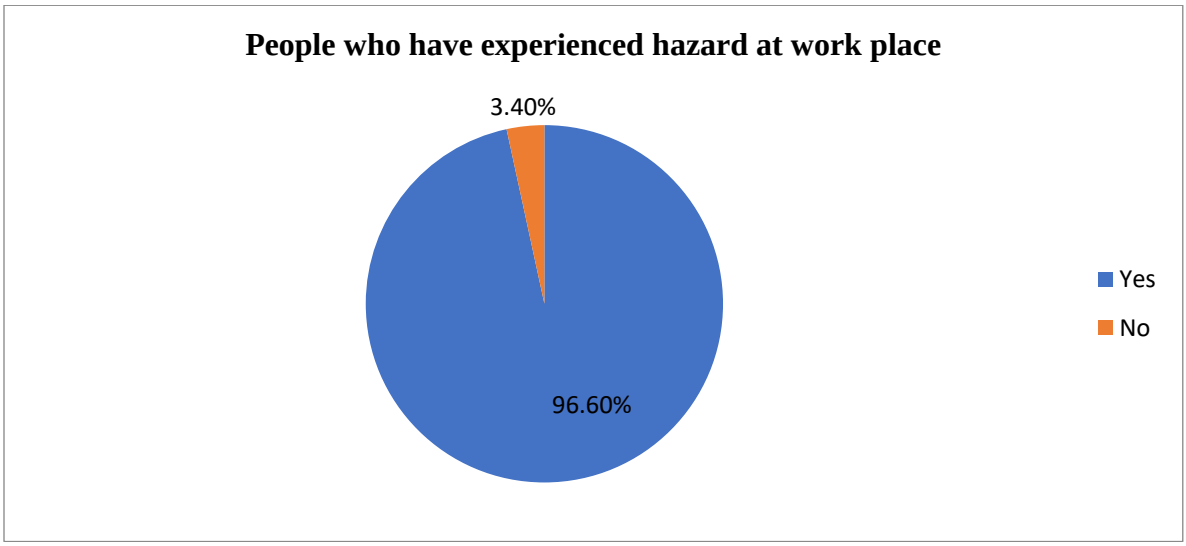

Fig. 5. Percentage distribution of hazard at workplace

4. SUMMARY OF FINDINGS

The major findings of this study are summarily presented below:

1. The study findings have shown that safety practices in place at petrol stations in Ibadan included presence of first aid kit and firefighting equipment, use of uniform and PPEs and observing warning sign and symbols. However, there was high use of PPE, Aprons/overall and the least used to be gloves and face mask among petrol station workers at the time of the study.
2. The finding of the study revealed that 100% of respondents have experienced of one form of the hazard at their place of work. The study revealed that majority of the petrol station workers have experienced hazard at their place of work.
3. The study showed that the petrol station attendants experienced various health problems since commencement of work as petrol station attendants.
4. The finding of the study revealed that the safety and administration of the working environment showed that all petrol stations had an identified person in charge of safety and administration, also the majority of the workers were trained, and most of the petrol stations had regular updated records

5. CONCLUSION

The study established that petrol station worker's workers in this study were exposed to various hazards. Therefore, needed various forms of safety practices on a daily basis. Awareness and use of PPE, hand washing practices, availability of first aid boxes and conducting of medical examinations were all poor. Efforts should be made by the independent petroleum marketers association and other stakeholders to ensure that the owners of filling stations take responsibility for the health and safety of their workers. Workers at petrol stations were subjected to a variety of health risks. PPE was not used, and no periodic medical examinations were performed on the workers. Risk factors for unpleasant health symptoms included a lack of prior health and safety training and eating meals during working hours near fuel distribution sites. These dangerous habits must be curtailed.

The results of this study indicate a statistically significant relation between the knowledge of petrol station workers and their age, education level, and monthly income. Also, there was a significant relation regarding worker's knowledge and their occupational exposure to health hazards. The study further illustrated that there was a significant relation between the knowledge of the studied sample and their work practices related to preventive measures. Also, there was a significant relation between petrol station workers' exposure to hazards and their working environment. This reflected a significant relation between workers' work practices related to preventive measure and their work characteristics.

6. RECOMMENDATIONS

Based on the finding of the present study, suggested the following recommendation:

1. Petrol station owners should conduct health risk assessments in their petrol stations.
2. Petrol station owners should make sure that health regulations are implemented, with employees being provided biennial medical surveillance programme.
3. There should be more stringent hierarchy of control measures in place that include provision of personal protective equipment.
4. The Department of labour should be more stringent in its audit of petrol stations, as to review that workers are compliant with legislations that are designed to assist in protecting worker's health and safety.

7. CONTRIBUTION TO THE KNOWLEDGE

The review of literature showed that there is paucity of empirical study on occupational hazards, health problem and safety practices among petrol station worker in Nigeria. As a result, this study has added the following to knowledge:

1. First, the outcome of this study has indicated that, there was high level of awareness of use of PPE among petrol station workers, in addition, the study observed that "No smoking" safety sign was strictly observed by all Staff and clients while "switch off phone" safety sign was hardly observed as use of mobile phones at the forecourt was a common practice nearly to all the petrol stations.
2. Furthermore, empirical results from the study has proven that workers had low to

moderate knowledge on health effects, also had advance knowledge on health risks associated with petroleum products.

3. Petrol station attendants were of the perception that some of the safety rules including warning sign “No mobile phones”, “Turn off engine while refueling” and “use of recommended containers” was hard to practice.
4. The most common accident occurrences stated was fuel splash on the skin. However, petrol station attendants were carelessness and ignorance were the main contributing factors attributed that accident happens by chance.

8. SUGGESTED AREAS FOR FURTHER RESEARCH

Assessment of health status of petrol workers should be further investigated.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. AlDhaen E. Awareness of occupational health hazards and occupational stress among dental care professionals: Evidence from the GCC region. Front. Public Health. 2022;10:922748.
   DOI: 10.3389/fpubh.2022.922748
2. Ilo, Clementine Ifeyinwa, Ede, Alison Okorie, Aronu, Cecilia Nkechi, Abonyi, Isaiah Chimezie, Okeke, Monique Ugochinyere, Nwazunku, Augustine Alugbala, et al. Knowledge of occupational health hazards and preventive practices among abattoir workers in Anambra State. GSC Advanced Research and Reviews sArticle. 2021;07(03):115–121.
   DOI:
   https://doi.org/10.30574/gscarr.2021.7.3.0129
3. Tawiah PA, Baffour-Awuah A, Effah ES, et al. Occupational health hazards among healthcare providers and ancillary staff in Ghana: A scoping review. BMJ Open. 2022;12:e064499.
   DOI: 10.1136/ bmjopen-2022-064499
4. Rai R, El-Zaemey S, Dorji N, Rai BD, Fritschi L. Exposure to Occupational Hazards among Health Care Workers in Low- and Middle-Income Countries: A Scoping Review. Int. J. Environ. Res. Public Health. 2021;18:2603.
   Available:https://
   doi.org/10.3390/ijerph18052603
5. Chilcott R. Chemical hazard Information, Hazard Identification, incident Management and Toxicology review. Health protection & Agency (HPA), United Kingdom; 2008.
6. Solanki RB, Bhise AR, Dangi BM. A study on spirometry in petrol pump workers of Ahmedabad, India. Lung India: Official Organ of Indian Chest Society. 2015; 32(4):347.
7. Brautbar N, Williams J. Industrial solvents and liver toxicity: Risk assessment, risk factors and mechanisms. Int J Hyg Environ Health. 2002;205(6):479-91.
8. Wallace L. Environmental exposure to benzene: An update. Environ Health Perspect. 1996;104(Suppl 6):1129-36.
9. Menkes DB, Fawcett JP. Too easily lead? Health effects of gasoline additives. Environ Health Perspect. 1997;105(3):270-3.
10. Brief RS, Lynch J, Bernath T, Scala RA. Benzene in the workplace. Am Ind Hyg Assoc J. 1980;41(9):616-23.
11. Guldberg PH. Gasoline and vapor exposures in service station and leaking underground storage tank scenarios. J Expo Anal Environ Epidemiol. 1992;2(1): 97-107.
12. National Fire Protection Association's Special Data Information Package. Fires in or at Service Stations and Motor Vehicle Repair and Paint Shops [Internet]; 2016 [cited 2016 Nov 14].
    Available:http://www.nfpa.org/assets/files
13. Mitchelle JV, Marcel V, Mitchell B. What next for the oil and gas industry? London: Chatham House; 2012.
14. Workplace Health and Safety Queensland. A guide for service station operators under the work health and safety Act 2011, Office of The Industrial Relations, Australia; 2016.
    Available:https://www.worksafe.qld.gov.au/__data/assets/pdf_file/0020/82910/guide
    (Retrieved on 23rd March, 2018).
15. Eisaei HR, Ahmadi Dehrashid SS, Khani MR, Hashemi SM. Assessment and Control of VOCs emitted from gas stations in Tehran, Iran. Pollution. 2015;1(4):363-371.

16. Chiabhlaem T. Occupational Health and Safety (Thailand) [Internet]; 2011 [cited 2016 Dec 3]. Available:http://thongchai99.wordpress.com
17. Health and Safety Executive. Dispensing Petrol: Assessing and controlling the risk of fire and explosion at sites where petrol is stored and dispensed [Internet]; 2002 [cited 2017 Feb 12]. Available:http://www.hse.gov.uk/press.Assessed
18. Keretetse GS, Laubscher PJ, Du Plessis JL, Pretorius PJ, Van Der Westhuizen FH, Van Deventer E, et al. DNA damage and repair detected by the comet assay in lymphocytes of African petrol attendants: A pilot study. Ann Occup Hyg. 2018;52(7): 653-62.
19. Wiwanitkit V. Classification of risk occupation for benzene exposure by urine trans-muconic acid level. Asian Pac J Cancer Prev. 2006;7(1):149-50.

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