ASSESSMENT OF KNOWLEDGE, SAFETY PRACTICES, AND LUNG FUNCTION OF PETROL PUMP ATTENDANTS IN JOS METROPOLIS, NIGERIA.

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ABSTRACT

Background: Urbanization has led to increase in use of automobiles globally, which has caused an increase in the number of fueling stations, as well as petrol pump attendants who are exposed to the volatile solvents in petrol. The aim of this study was to assess the knowledge, safety practices, and lung function of petrol pump attendants in Jos Metropolis, Plateau state, Nigeria.

Methods: A descriptive cross-sectional study was carried out using quantitative methods. Total sampling was done to select all 114 registered fueling stations in Jos metropolis. Simple random sampling was used to select 2 participants at each station giving a total of 228 participants. Data was collected and subsequently analyzed using SPSS version 23. Lung function was assessed using peak flow meters. A 95% significance level and p-value of 0.05 were used while carrying out bivariate and multivariable analysis.

Results: There was poor overall knowledge of hazards and their effects among 70.2% of the pump attendants, while 80.7% were found to have inappropriate safety practices overall. Also, 82.9% of attendants were found to have normal lung function. Multivariate analysis revealed that male pump attendants had significantly higher odds of having abnormal lung function (aOR=3.41, CI=1.61-7.24, p=0.001), and those with good knowledge of work-related hazards had 0.3 times lower odds of having abnormal lung function compared to those with poor knowledge. (aOR=0.28, CI=0.11-0.72, p=0.008).

Conclusion: Overall, knowledge was found to be poor and majority of attendants had inappropriate safety practices. Lung function was found to be abnormal in a minority of respondents. Since poor knowledge typically translates to inappropriate practices, it is therefore of paramount importance that efforts be made to sensitize the pump attendants about occupational hazards they can encounter to ensure their safety at work.

Keywords: Petrol pump attendant, knowledge, safety practices, lung function, Nigeria

INTRODUCTION

Petrol, also known as premium motor spirit, is a man-made derivative of petroleum used primarily to fuel vehicles and other machines that use an engine. Petrol contains up to 150 different chemicals, but it primarily is comprised of hydrocarbons, including alkenes, benzene, toluene, and xylenes (BTEX compounds). Limited contact with petrol is usually harmless. However, petrol and its vapors are toxic, and extended exposure to them can adversely affect a person's health.[1] Petrol may enter into the bloodstream by way of inhalation, ingestion, or absorption from the skin. Clinical manifestations of continuous exposure to petrol vapors include dizziness, headache, coughing, blurry vision, weakness, convulsions, and arrhythmia among others.[2]

Exposure of petrol pump attendants to these vapors is increasingly becoming a concern especially in countries with warmer climates, as there is increased petrol vaporization at higher ambient temperatures and increased risk of higher inhalation uptake than in temperate regions. Petrol contains volatile organic compounds such as benzene which by regulation is limited to 6–8% of the content in Nigeria and between 1% to 5% in the United States of America and Europe.[3] When exposed to high levels of benzene in the air, about half of the benzene breathed in passes through the lining of the lungs, travels throughout the body and is subsequently converted to metabolites in the liver and bone marrow.[4]

Over the years there has been increased emergence of fueling stations to meet the demands of the increasing global population. Furthermore, a high level of benzene in the breathing zone of pump attendants has been reported from the assessment of breathing zone samples taken during refueling. Petrol pump workers who work constantly for more than 8 hours per day every week, have been shown to be at high risk of developing several abnormalities, even though they are asymptomatic. It has also been reported by the International Labor Organization that about 160 million people suffer from work related diseases yearly.[5,6,7,8] In a report published by the Center for Disease Control, oil and gas extraction workers in the United States of America have occupational fatality rates 7 times the national average.[9] And according to the National Institute for Occupational Safety and Health, the deaths among these workers occurred after inhalation of petroleum hydrocarbons in the course of their work.[10,11] A cohort study carried out in Italy had results which demonstrated increase in the standardized mortality ratio values for petrol pump attendants.[12] An assessment of petrol station workers done in China, revealed reduced antioxidant ability in the petrol station workers, which translates to a higher risk of Deoxyribonucleic acid (DNA)and cell damage in this group.[13,14] Studies carried out in Egypt and Ethiopia demonstrated higher prevalence of abnormal lung functions, decreased antioxidant activity and other evidence of oxidative stress among the workers.[15,16]

Studies carried out in Nigeria to assess awareness of hazards among petrol pump attendants show that though some of them have good knowledge of the hazards associated with their occupation, this does not always translate to them using their personal protective equipment (PPEs).[7,17,18] Studies carried out in Nigeria have also demonstrated the deterioration of lung function in workers exposed to petroleum vapor, which progressed with the duration of the exposure.[19,20,21] It has been demonstrated among petrol pump attendants, that having the required knowledge regarding hazards in their work environment, impacts on their ability to take responsibility for their safety at work.[22,23] There is sometimes poor knowledge among the petrol pump attendants themselves, and an even lower percentage use PPEs regularly which could mitigate the harmful effects of the volatile solvents in petrol.[24,25] Therefore, having adequate knowledge produces potential for application of good occupational health safety practices by employers and employees.[26]

This study therefore was carried out to assess knowledge, safety practices, and lung function of petrol pump attendants in Jos Metropolis, Plateau

State. The findings from this study may help to further enlighten petrol station employers and pump attendants on appropriate practices in order for them to take some responsibility for their safety at work.[26]

METHODS

The study was conducted in Plateau State which is in the North Central region of Nigeria. It has a land mass of 26,899 square kilometers with a projected 2022 population of 4,717,300. This study was conducted in registered fueling stations in Jos Metropolis of Plateau State. Jos Metropolis is made up of Jos North Local Government Area (LGA) and part of Jos South LGA. The major languages spoken include Angas, Berom, Geomai, Kofyar, Mwaghavul, Ron, Tarok, Hausa, Yoruba and Igbo, and the 2 major religions are Christianity and Islam.[28,29] There is a high density of fueling stations in Jos Metropolis.

Study design

A descriptive Cross-Sectional study design was employed using quantitative methods for data collection.

Study population

The study population included 228 petrol pump attendants in 114 fueling stations in Jos metropolis.

Inclusion criteria

Petrol pump attendants 18 years of age or older, who had worked for at least 1 year at the fueling station, and who gave consent.

Exclusion criteria

Petrol pump attendants who were indisposed, or who had a pre-existing lung morbidity such as asthma.

Sample size determination

The minimum sample size was determined using the Cochran's formula for determination of sample size for Cross Sectional studies [30]

$$n = z^2pq/d^2$$

Where n= minimum sample size; z=critical value 1.96 at 5% confidence; p = proportion of petrol pump attendants who practice use of their PPE while working at the fueling station in a previous study= 0.07;[18] q=1-p; d=margin of error; ≈ 100 participants.

In order to account for non-response, the following formula was used: $N_{adj} = n/1\text{-}nr$.

N_{adj}= adjusted sample size; n= calculated sample size; nr = non-response rate set at 10% = 111 participants

All 114 fueling stations in the metropolis were sampled and two persons per fueling station were selected to ensure that the sample used was more representative of the study population. A total of 228 participants therefore, were included in the study.

Sampling technique

A total sampling was done to include all 114 fueling stations in the metropolis. A list of the fueling stations present in Jos Metropolis was obtained from the Department of Petroleum Resources, which had the names and addresses of the 114 fueling stations. Simple random sampling by balloting was then used to select 2 attendants at each fueling station.

Study instrument

A semi-structured interviewer administered questionnaire adapted from a previous study was used to collect data. It was pretested in Jos East fueling stations on 10% (23) of the calculated sample size. It was written in English language and contained 4 sections. Section A contained the sociodemographic characteristics of the respondents. Section B inquired about their knowledge, while section C assessed lifestyle and workplace practices. Section D contained the results of their lung function test.

Data collection

Four research assistants who were resident doctors trained on data collection by the investigator. Data was collected at the fuelling stations with the

permission of the fuelling station managers. The interviews were conducted in English language and metal tape measures and rulers were used to measure the height of the respondents. For assessing the lung function, peak flow meters were used and sterilized after each use.

Measurement of variables

To assess knowledge, correct answers were scored 1, incorrect answers and those with no response were scored 0. Scores were graded as good knowledge (≥ 50%), and poor knowledge (□50%).[24,31] For practice, a score of 1 was given for appropriate practice and 0 for inappropriate practice. Practice was classified as appropriate (>50%), or as inappropriate (≤ 50%).[31] The reference values used to assess the peak flow rate were derived from a study of normal adult Nigerians, as it has been noted that there are is an overestimation of PEFR by 12-15% when prediction formulae derived from Caucasian populations are used for Africans.[32,33]

Data management and analysis

The Open Data Kit (ODK) platform was used and data uploaded daily to the platform. Data was downloaded on Excel sheets and cleaned, after which it was exported to SPSS.Data was analysed using SPSS version 23. Univariate and bivariate analysis were carried out. A p-value of ≤0.05 was considered statistically significant and 95% confidence interval was used. Factors which were found to be statistically significant on bivariate analysis were subject to multivariate analysis to determine predictors of abnormal lung function.

ETHICAL CONSIDERATIONS

Approval for the study was obtained from the Ethics and Research Committee of the Jos University Teaching Hospital (JUTH/DCS/IREC/127/XXXI/2583) Plateau State, and the Department of Petroleum Resources. Written informed consent was also obtained from participants after informing them of the purpose of the study, their rights to participate or not, and how the information collected would be treated with confidentiality. They were also informed that they would not be making any payments for the test and their test results would be relayed to them for free regarding their lung function, and also that information collected may be published to add to the body of knowledge in this area.

RESULTS

In this study, a total of 228 petrol pump attendants were studied. The response rate was 100%

Table 1: Sociodemographic characteristics of respondents

Variables	Frequency(n=228)	Percentage (%)
Age*		
18-28	161	70.6
29-38	57	25.0
39-48	8	3.5
49-58	2	0.9
Mean age: 27 (±5.9)		
Sex		
Male	106	46.5
Female	122	53.5
Highest educational level		
Primary	2	0.9
Secondary	171	75.0
Tertiary	55	24.1
Tribe		
Plateau indigenous	139	61.0
Hausa	29	12.7
Ibo	17	7.5
Yoruba	15	6.6
Others*	28	12.3
Marital status		
Single	165	72.4
Married	61	26.8
Separated	1	0.4
Divorced	1	0.4
Religion		
Christianity	190	83.3
Islam	38	16.7

* Age range: 18 -53 *Others-these include Idoma, Ibibio, Tiv, Ebira, Nupe, and Igala tribes.

Table 1 (above) shows that, 130 (57%) of participants were aged less than 27 years of age, while 122 (53.5%) were female. With regards to level of education, 55 (24.1%) had tertiary level of education; with 165 (72.4%) of the respondents being single.

Table 2: Knowledge of hazards of working with petrol among petrol pump attendants

Variables	Frequency(n=228)	Percentage (%)
Presence of harmful chemicals in petrol		
Yes	189	82.9
No	39	17.1
Specific harmful chemicals		
Yes	29	12.7
No	199	87.3
Names of harmful chemicals		
Correct response	23	10.1
Incorrect response	6	2.6
Don't know	199	87.3
Ways of exposure (multiple responses)		
Skin Absorption	131	57.5
Inhalation	192	84.2
Ingestion	74	32.5
Knowledge of PPE		
Yes	203	89
No	25	11
Specific PPE-multiple responses		
Facemask	160	70.2
Protective footwear	26	11.4
Protective goggles	45	19.7
Protective gloves	60	26.3
Overalls	75	32.9
Unwanted effects from contact with petrol		
Yes	88	38.6
No	140	61.4
Unwanted effects named-multiple responses		
Eye symptoms (pain, tearing, redness)	32	14.0
Skin symptoms (dryness, peeling, cracking)	10	4.4
CNS symptoms (headache, dizziness)	33	14.5
Respiratory symptoms (sneezing)	1	0.4
Abdominal symptoms (nausea, loss of appetite)	9	3.9
Cancer	2	0.9
Cardiac problems	1	0.4

From the ***Table 2*** (above), 189 (82.9%) of respondents knew that petrol contains harmful chemicals, while 203 (89%) knew of protective equipment that could be used to avoid contact with petrol while at work.

Figure 2: Overall knowledge among participants regarding hazards of working with petrol

Figure 2 (above) shows that 29.8% of respondents were observed to have good knowledge overall, regarding hazards of working with petrol.

Table 3: Work related practices which may influence exposure to petrol fumes among petrol pump attendants

Variables	Frequency(n=228)	Percentage (%)
Working hours per day		
≤8 hours	145	63.6
>8 hours	83	36.4
Number of years of work		
≤2 years	106	45.5
>2 years	122	53.5
Pre-employment health check		
Yes	46	20.2
No	182	79.8
Regular health checks		
Yes	34	14.9
No	194	85.1
Frequency of health checks		
No checks	194	85.1
Monthly	10	4.4
Once a year	11	4.8
Bi-annual	6	2.6
Quarterly	5	2.2
Thrice a year	2	0.9
Availability of PPE at work		
Yes	156	68.4
No	72	31.6
PPE use		
Always	30	13.2
Sometimes	131	57.5
Never	67	29.4
Reason for not using PPE always		
Not always available	101	44.3
Discomfort	75	32.9
Unnecessary	1	0.4
It is optional	1	0.4
Customers are not comfortable with it	1	0.4
No reason	49	21.5
Availability of wash points		
Yes	215	94.3
No	13	5.7

Table 3 (cont'd): Work related practices which may influence exposure to petrol fumes among petrol pump attendants

Variables	Frequency(n=228)	Percentage (%)
Frequency of fuel spillage		
Always	12	5.3
Most of the time	61	26.8
Sometimes	151	66.1
Never	4	1.8
Training sessions		
Yes	98	43.0
No	130	57.0
Venue of training session		
No sessions	130	57.0
No location given	50	21.9
Fueling station	41	41.8
Outside location	7	7.1
Frequency of training sessions		
No sessions	130	57.0
Daily	4	1.8
Monthly	7	3.1
Yearly	48	21.1
Bi-annual	7	3.1
Quarterly	3	1.3
Occasional	29	12.7
Who conducted training:		
No sessions	130	57.0
Manager	65	28.5
DPR officials	17	7.5
Fire service officials	7	3.1
Other external bodies	9	3.9
What was covered		
No sessions	130	57.0
General safety measures	69	30.3
Preventing fires/use of fire	27	11.9
extinguishers	2	0.8
Use of PPE		

Table 3 (above) shows, 36.4% of respondents spent over 9 hours at work in the fueling stations daily, while 53.5% of them had worked in the fueling station for over 3 years. Regarding PPE use, 156 (68.4%) had PPEs available at the time of the interview, while only 13.2% used their PPEs at all times while working.

Table 4: Lifestyle practices among pump attendants

Variable	Frequency(n=228)	Percentage (%)
Smokes cigarettes		
Yes	20	8.8
No	208	91.2
Sticks per day		
0	208	91.2
1-5	17	7.5
>6	3	1.3
Cigarette use		
Males		
Yes	20	20.9
No	86	81.1
Females		
Yes	0	0
No	122	100
Takes alcohol		
Yes	30	13.2
No	198	86.8
Level of alcohol use		
Males		
None	97	91.5
Occasional	2	1.9
Moderate	5	4.7
Harmful	2	1.9
Females		
None	101	82.8
Occasional	1	0.8
Moderate	4	3.3
Harmful	16	13.1
Willingness to adopt safer work and lifestyle practices	211	92.5
Yes	17	7.5
No		

From the ***Table 4*** (above), just less than a tenth (8.8%) of the participants were found to smoke cigarettes while 13.1% of females and 1.9% of males were observed to take alcohol in harmful amounts.

From ***Figure 3*** (above), majority (80.7%) of respondents were found to have inappropriate safety practices.

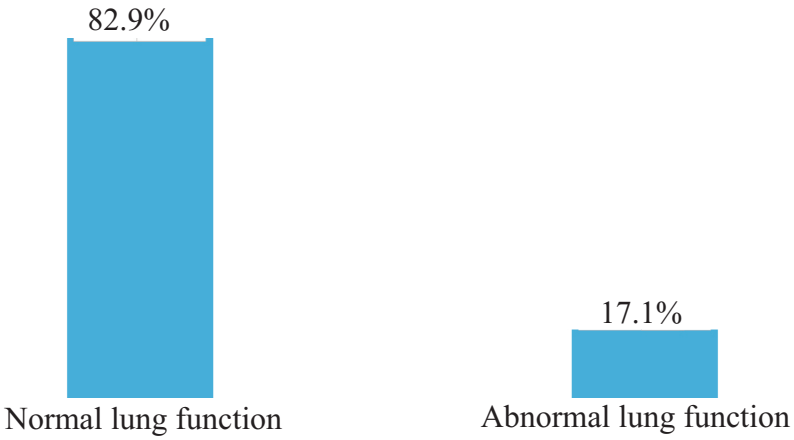

Figure 4: Lung function assessment of respondents

From ***Figure 4*** (above), majority (82.9%) of participants were found to have normal lung function.

Table 5: Bivariate analysis of factors associated with lung function

Factor	Normal lung function	Abnormal lung function	Chi-square value	P-value	Odds ratio	Confidence interval
Age						
≤28	104 (80%)	26 (20%)	1.787	0.181	0.612	0.296-1.263
>28 (ref)	85 (86.7%)	13 (13.3)				1
Sex						
Male	80(75.5%)	26(24.5%)	**7.698**	***0.006****	**0.367**	**0.178-0.758**
Female (ref)	109(89.3%)	13(10.7%)				**1**
Highest level of education attained						
Primary/Secondary	142(82.1%)	31(17.9%)	0.335	0.563	0.780	0.335-1.814
Tertiary (ref)	47(85.5%)	8(14.5%)				1
Work hours						
≤8hrs	122(84.1%)	23(15.9%)	0.434	0.510	1.267	0.626-2.562
>8hrs (ref)	67(80.7%)	16(19.3%)				1
Number of years working						
≤2yrs	86(81.1%)	20(18.9%)	0.434	0.510	0.793	0.398-1.582
>2yrs (ref)	103(84.4%)	19(15.6%)				1
Alcohol Intake						
Yes	26(86.7%)	4(13.3%)	0.347	0.556	1.396	0.458-4.253
No (ref)	163(82.3%)	35(17.7%)				1
Cigarette Smoking						
Yes	17(85%)	3(15%)	-	1.000[f]	1.186	0.330-4.261
No (ref)	172(82.7%)	36(17.3%)				1
PPE use						
Always	38(86.4%)	6(13.6%)	0.463	0.496	1.348	0.541-3.542
Sometimes/Never (ref)	151(82.1%)	33(17.9%)				1
Practice score						
Appropriate	107(81.7%)	24(18.3%)	0.321	0.571	0.816	0.402-1.653
Inappropriate (ref)	82(84.5%)	15(15.5%)				1
Knowledge score						
Good	62(91.2%)	6(8.8%)	**4.687**	***0.030****	**2.685**	**1.069-6.747**
Poor (ref)	127(79.4%)	33(20.6%)				**1**

f=Fisher's exact; *p-value<0.05 statistically significant

From the above ***Table 5*** (above), sex as well as the knowledge of participants were found to have a statistically significant relationship with lung function.

Table 6: Predictors of abnormal lung function among petrol pump attendants

Factors	Adjusted odds ratio	Confidence interval	p-value
Sex			
Male	**3.414**	**1.611-7.237**	***0.001****
Female (ref)		**1**	**-**
Knowledge			
Good	**0.277**	**0.107-0.719**	***0.008****
Poor (ref)		**1**	**-**

*p-value<0.05 statistically significant

From table 6 above, male pump attendants had 3 times higher odds of having abnormal lung function, and those with good knowledge of work-related hazards had 0.3 times lower odds of having abnormal lung function compared to those with poor knowledge.

DISCUSSION

In this study, the overall level of knowledge among petrol pump attendants with regards to the hazards of working with petrol was poor. The public health implication of this is, there is a higher likelihood of the pump attendants to expose themselves to hazards in their occupational environment, whose harmful effects may not be discovered till much later in life. This low level of knowledge could partially be attributed to a minority of the pump attendants in this study having had training sessions regarding safety at work. This was similar to results obtained in a study carried out in Sokoto State where majority of respondents had poor knowledge regarding the hazards of their occupation.[24] The results of this study were however at variance with findings of a study carried out in Imo State, where over two-thirds of respondents had good knowledge of their occupational hazards. Variations in these findings could be due to the different location of the studies, as well as the diversity of respondents interviewed including officials in sales (pump attendants), management, and accounting for the study carried out in Imo State.[34,35] Majority of respondents in this study had good knowledge of the presence of harmful chemicals in petrol- this is similar to results from a study conducted in Sokoto.[35] Also, majority of the respondents in this study had good knowledge regarding use of protective equipment while at work, while just a little over one-third of respondents had knowledge of the health hazards associated with their occupation. Similar results were obtained in studies conducted in Benin City, and Ile-Ife, where the pump attendants demonstrated good knowledge of PPE, with the minority having good knowledge regarding the health hazards.[17,18] When these workers know how to protect their lives and health and those of their co-workers, it equips them to take up and demand interventions to make their work environment safer.[37]

Less than a quarter of respondents were found to have appropriate safety practices overall in this study. This could be due to the poor knowledge which was found among the respondents. This is in agreement with findings of similar studies in Sokoto and Osun States, Nigeria, and Ghana, where poor knowledge among the pump attendants translated to poor safety practices among them.[17,24] Neglecting safety practices may eventually lead to ill-health in workers, which may cause work

interruptions, decreased worker productivity and absenteeism. Absenteeism may lead to the remaining workers having to work overtime in order to compensate for lost productivity. Having to replace ill workers can also incur costs for the employer. [35]

With regards to work duration, it has been established that toxicity of chemicals depends upon the absorbed dose, the route of exposure and duration of exposure.[36] Most of the pump attendants in this study worked an 8-hour shift, however more than a third of the attendant worked for more than 9 hours regularly. This duration of exposure daily, determines how much of these volatile organic compounds would be breathed in by the attendants. [8]Majority of respondents in this study had been working as pump attendants for over 3 years. It is known that toxicity of chemicals including the BTEX compounds, depends on the exposure duration-acute or chronic. Studies carried out in Calabar, Kano, Ethiopia, and China had results that demonstrated evidence of toxicity to the pump attendants, which correlated with the worker's years of exposure. [3,14,36]

The minority of respondents had undergone health checks before starting work as pump attendants. This is similar to findings of studies carried out in Uyo, Nigeria and Senegal where few respondents reported ever undergoing pre-or post-employment medical examination.[18,37] Also, less than a quarter of respondents in this study were receiving any medical follow-up post-employment. This is similar to findings of a study in Senegal where none of the pump attendants were receiving any medical checks.[37] It has been established that occupational hazards may produce immediate or delayed symptoms depending upon duration and intensity of exposure, as well as individual susceptibility. Pre-and post-employment exams, as part of workplace policies, enable detection of health issues that could adversely affect workers' output as well as the functioning of the organization.

It was found that a minority of respondents smoked cigarettes. This is similar to results obtained in studies carried out in Osun and Ogun States. Smokers already tend to take in more benzene than non-smokers.[37,38] Furthermore, during refueling of vehicles, the atmospheric concentration of benzene is high. This amount is even higher when there are long queues of cars to be fueled, which is a usual occurrence during fuel scarcities in Nigeria.[39] It has also been found that smoking delays healing and recovery of lung function. [40,41] This puts petrol pump attendants who smoke at a higher risk of health challenges. Less than one-quarter of respondents in this study were found to consume alcohol. However, more female pump attendants were found to consume alcohol in harmful amounts than their male counterparts. Harmful alcohol intake according to the CDC, is more than 1 bottle of alcohol per day for females and more than 2 bottles a day for men.[42] Implications of this harmful intake include increased exposure of such an individual to the harmful effects of xenobiotic substances such as benzene in petrol fumes, as ethanol has been associated with significant reduction in liver regeneration. Furthermore, because the liver is the primary site for metabolism of these toxic substances, any impairment to its function puts the individual at a higher risk of experiencing adverse health consequences of benzene exposure.[43]

In this study, the lung function of petrol pump attendants was assessed using their peak flow rates. More than three-quarters of the respondents in this study were found to have normal lung function. The public health implication of this finding is that there will be less instances of absenteeism and lowered productivity, which negatively affects work output. This result is in agreement with findings of a study carried out in Ethiopia, where a majority of the pump attendants were found to have normal lung function. The results however vary from those obtained in studies carried out in Oyo and Kano States, Nigeria, where most of the pump attendants had abnormality of lung function.[21,37] This variation may be due to differences in measurement methods, selection of participants, climactic conditions as well as use of different

reference values (there is an overestimation of PEFR by 12-15% when prediction formulae derived from Caucasian populations are used for Africans). Having abnormal lung function with continuous exposure to the harmful petrol fumes is likely to lead to worsening of lung function. [37]

Sex was found to be a predictor of lung function status. Male pump attendants in this study had significantly higher odds of having abnormal lung function than their female counterparts. This is in agreement with findings of studies carried out in Imo State-Nigeria, and India where a statistically significant relationship was found between sex and lung function. [44,45] This finding however varies from those of similar studies where no association was demonstrated between the lung function and sex. [46,47] The variation could be due to differences in methods used, and selection of participants. The higher odds of abnormal lung function in males in this study could be due to exposure of the male attendants to harmful substances in other vocations, as many male workers sometimes have more than one place of work. It then becomes necessary to pay more attention to male pump attendants by ensuring that their lung function status is ascertained before employment and placement, and their work shifts adjusted to reduce their exposure to the volatile substances found in petrol.

Knowledge was also found to be a predictor of lung function. In this study, there were lower odds of having abnormal lung function in those with good knowledge. Interventions therefore need to be targeted at improving their knowledge and safety policies should also implemented and enforced, to ensure the safety and health of these workers.

CONCLUSION

The strength of this study includes the use of total sampling which provides useful data on all registered stations that can be used in policy formation. The limitations of this study include its being carried out within the metropolis alone. Further studies could be carried out to cover a wider area within the state.

This study assessed the knowledge, practices and lung function among petrol pump attendants in Jos metropolis. Overall knowledge of the hazards of working with petrol was found to be poor among the pump attendants and majority of them had inappropriate safety practices. The lung function status was found to be normal in majority of the attendants.

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CONFLICT OF INTEREST

There were no conflicts of interest in the carrying out of this study.

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