

Research Article

A Cross Sectional Study of Occupational Hazards among Petrol Pump Attendants of Panjim City in Goa

Akshaya V Naik¹, AM Ferreira²

¹Post Graduate Student, ²Associate Professor, Department of Preventive and Social Medicine, Goa Medical College, Goa, India.
DOI: <https://doi.org/10.24321/2454.325X.202002>

I N F O

Corresponding Author:

Akshaya V Naik, Department of Preventive and Social Medicine, Goa Medical College, Goa, India.

E-mail Id:

naikakshaya3@gmail.com

Orcid Id:

<https://orcid.org/0000-0001-7820-7392>

How to cite this article:

Naik AV, Ferreira AM. A Cross Sectional Study of Occupational Hazards among Petrol Pump Attendants of Panjim City in Goa. *Int J Preven Curat Comm Med* 2020; 6(1): 15-19.

Date of Submission: 2020-06-30

Date of Acceptance: 2020-07-28

A B S T R A C T

Introduction: Occupational hazards are the risks to life or functioning of an individual that is inherently associated with his occupation or working environment which can have deleterious effect on the individual's health and his working efficiency. Petrol pump attendants are one such category of workers who are constantly exposed to various hazards at their workplace.

Methodology: A cross sectional study was conducted from November-December 2018 among 7 petrol pumps located in the Panjim city. Census method was used for sampling. Ethical approval was obtained from the Institutional Ethics Committee. Data was collected using pre-designed semi structured questionnaire. Data was collected using Epicollect 5 mobile app and analyzed using SPSS version 22.

Result: Musculoskeletal pain was the most common health problem perceived by the study participants (49.3%) followed by frequent headaches (26.7%), eye irritation (22.7%) and stuffy nose (18.7%). Fuel spillage over skin (68%), extreme weather conditions (37.3%), fuel spillage in the eyes (32%) were the common hazards reported by the participants. None of the study participant was seen wearing goggles, mask or gloves for their personal safety. 73% of the study participants felt that the Personal Protective Equipment (PPE) should be made available for their safety. 22.7% of the study participants had high blood pressure (>140/90mmHg) at the time of interview.

Conclusion: This study highlights the most common illnesses experienced by the study subjects at their work place. Provision of PPE to every worker working on the petrol station with periodic medical checkups is required.

Keywords: Petrol Pump Attendants, Occupational Hazards, PPE

Introduction

According to Joint International Labor Organization and

World Health Organization Committee, occupational health is defined as "Occupational health should aim at the promotion and maintenance of the highest degree

of physical, mental and social wellbeing of workers in all occupations, the prevention among workers of departures from health caused by their working conditions, the protection of workers in their employment from risks resulting from factors adverse to health, the placing and maintenance of the workers in an occupational environment adapted to his physiological and psychological equipment and, to summarize, the adaptation of work to man and of each man to his job.¹ A hazard is a substance or situation that has the potential of causing adverse health effect to a person. Occupational hazards are the risks to life or functioning of an individual that is inherently associated with his occupation or working environment. Petrol pump attendants are one such category of workers who are constantly exposed to various physical, chemical hazards, psychological stress at their workplace which has been also reported by various studies.² One of the physical factors is extremes of temperature depending on the season. Exposure to excessive heat can lead to heat stress which may affect mental and physical health and may lead to anger, depression, giddiness and low work performance, while repeated exposure to cool temperature can cause hypothermia and chilblains.³ Petrol station attendants are also exposed to loud sounds from vehicles which can cause decreased hearing which could lead to either temporary or permanent hearing loss. Petrol pump attendants are engaged in long hours of standing while at work. Chemical hazards can occur mainly due to contact and inhalation of the volatile gasoline at the work station. These workers are exposed to both the volatile hydrocarbon in fuel and the fumes from the exhaust of vehicles leading to genotoxicity.⁴ These, besides affecting the genetic material, can also affect the respiratory function leading to cough, breathlessness, etc. Gasoline vapors can be irritant to the eyes and skin. Inhalation of petrol on regular basis can trigger migraine headache in some individuals.⁵ Due to flammable substance present at the work station, there is always a risk of fire explosion. Population increase has led to increase in the automobiles which in turn has led to increased usage of diesel and petrol. These hazards if not controlled can have deleterious effect on the worker's health and his working efficiency. The use of Personal Protective Equipment (PPE) is an important safety measure which should be common practice among petrol station attendants to safeguard their health from various hazards to which they are exposed. Hence, this study was carried out among various petrol pump attendants from Panjim area with the following objectives in mind:

- To study various kinds of hazards faced by the attendants at the petrol pump stations.
- To find the prevalence of use of Personal Protective Equipment (PPE) by the participants.

- To suggest suitable recommendations based on the findings of the study.

Methods

Study Design: Cross sectional study.

Study Setting: 7 petrol pumps located in the Panjim city.

Study Duration: November 2018 to December 2018.

Permissions

- Ethical approval from the Institutional Ethics Committee.
- Permission was obtained from the respective managers of various petrol pump stations.

Sampling Method: Census method.

Study Participants

Inclusion Criteria

- All the attendants from the various petrol pump stations in Panjim city consenting to participate in the study.

Exclusion Criteria

- Workers not giving consent for the study.
- Workers not available for the interview even after 3 visits.

Study Tool

- A pre designed semi structured questionnaire was used to assess the various health hazards faced by the participants at their workplace. Utilization of Personal Protective Equipment (PPE) by the participants was also assessed.
- Data was collected and entered using Epicollect 5 mobile app and analyzed using SPSS version 22.

Result

A total of 75 petrol pump attendants participated in the study out of which half of them belonged to the age group of 20 to 29 years (50.7%). Majority were Hindus (90.7%), followed by Christians (8%) and Muslims (1.3%). Most of the study participants (70.7%) had completed their secondary education. 53% of the participants were married.

As seen from Figure 2, the most common symptoms experienced by the petrol pump attendants included musculoskeletal pain (49.3%), followed by frequent headaches (26.7%), eye irritation (22.7%), stuffy nose (18.7%), dizziness (17.3%), cough (16%) and others (body itching, breathlessness, rash, nausea).

As seen from Table 2, the most common hazard experienced by the study participants were fuel spillage over skin (68%), extreme weather condition (37.3%), fuel spillage in the eyes (32%), inhalation of petrol fumes (22.7%), inhalation of exhaust fumes (20%) and others (noise exposure and accidental trauma from automobiles).

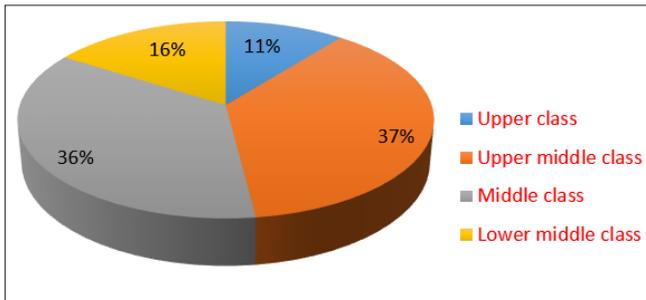


Figure 1. Distribution of study participants as per their socio economic status (N=75)

Table 1. Distribution of study participants as per their working duration

Duration of work	Number (%)
< 1 year	20 (26.7%)
1-5 years	24 (32%)
> 6 years	31 (41.3%)

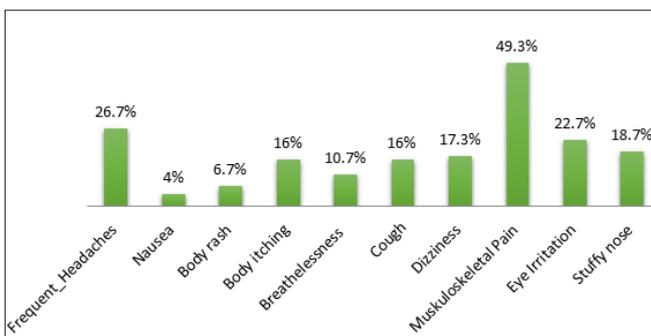


Figure 2. Health problems as perceived by the study participants at the work place

Table 2. Hazards experienced by the study participants at their place of work (N=75)

Events	Number	Percentage (%)
Fuel spillage over skin	51	68
Fuel spillage in the eyes	24	32
Trauma due to automobiles	9	12
Accidental fire	0	0
Noise exposure	10	13.3
Inhalation of Petrol/ Diesel fumes	17	22.7
Inhalation of Exhaust fumes from automobiles	15	20
Extreme weather conditions	28	37.3

Table 3, clearly mentions that although the majority of the study participants used apron and boots while at work,

however, none of them used goggles, masks, and gloves as they were not provided with the same.

Table 3. Usage of Personal Protective Equipment (PPE) by the study participants

Equipment	Number (75)	Percentage (%)
Aprons/ uniform	75	100
Boots	69	92
Goggles	0	0
Gloves	0	0
Mask	0	0

Table 4. Blood pressure of the study subjects

Blood pressure	Number (N)	Percentage (%)
Normal (< 120/80 mm Hg)	24	32
Pre hypertension (120-139/80-89mm Hg)	34	45.3
Stage 1 hypertension (140-159/90-99mm Hg)	11	14.7
Stage 2 hypertension (> 160/100mm Hg)	6	8

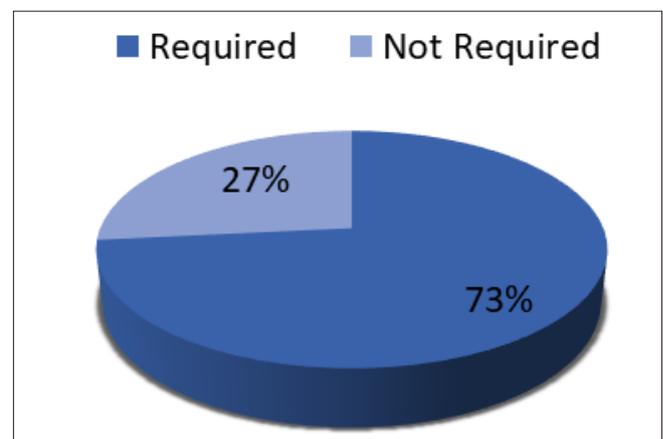


Figure 3. Distribution of study participants as per their perceived need for PPE

Table 4, shows that nearly 45.3% had blood pressure in the range of 120-139/80-89mmHg, 14.7% were having blood pressure in the range of 140-159/90-99mm Hg and only 8% had blood pressure in the range of (> 160/100mm Hg).

Discussion

This study was carried among workers from 7 petrol pump station located in Panjim. Most of the study participants were young (less than 30 years). This was consistent with the study conducted by Moke E.G. where majority of the study participants were in the age group of 21 to 30 years

(51.4 %).⁶ More than half were married. Nearly 70.7% had completed their secondary education. Nearly 58.7% had worked for less than 5 years. This shows that there may be fresh recruitment required on time to time. This could be partly due to the work hazards considering the nature of work and risk at the petrol station. This study highlights the most common illnesses experienced by the study subjects at their work place. The most commonly reported symptoms were musculoskeletal pain which could be attributed to the prolonged standing at work. Similar finding was seen in a study conducted by Dohare P et al where musculoskeletal pain was reported as the commonest illness by the study participants.⁷ Frequent headaches, eye irritation, dizziness, stuffy nose, cough were among other symptoms as reported by the workers. This is most likely due to the gasoline vapors which is bound to cause such symptoms. In a study conducted by Johnson and Umoren⁸ the health problems reported included headache, low back pain, eye irritation, cough and nausea. It was also seen that there was no periodic examination conducted for the workers. It was also noted that almost all the workers were provided with apron, and majority of them were provided with boots. Besides these, they were not provided with any other protective gears like gloves, goggles, and masks. Various untoward incidents like spillage of fuel on skin and eyes, inhalation of petrol/diesel fumes, inhalation of exhaust fumes from vehicles were commonly reported by the participants which can be life threatening at times. Also, it has been reported in various studies that petrol pump attendants have a higher risk of developing cancer from daily exposure to chemicals such as benzene and formaldehyde.⁹ This warrants the use of personal protective equipment by every individual working at the petrol pump station for their own safety. On examination, 45.3% had their blood pressure ranging between 120-139/80-89 mm Hg indicating pre-hypertensive stage according to JNC 8 guidelines for hypertension. In a study conducted by Mistry et al in 2016, it was concluded that the study participants had raised mean arterial pressure attributing to the adverse effects of air pollutants on autonomic nervous system.¹⁰ Also it was seen that these workers do not undergo any periodic medical checkups and, hence, they are at more risk for deteriorating health conditions in future. Hence, regular monitoring is required so that there is no further rise in blood pressure and non-pharmaceutical intervention can be initiated at the right time so that the blood pressure can be kept under control. Nearly 73% of the study participants felt that there was a need of personal protective equipment (PPE) and they should be provided with the same while at work.

Conclusion

Petrol pump attendants in this study were exposed to various

health problems. Use of PPE was lacking and no periodic medical examinations were carried out for the workers. Efforts should be made by the independent petroleum association and government to make sure that the owners of filling stations take responsibility for the health and safety of their workers. Good Health of the workers lie in providing a better and safe working environment. Provision of personal protective equipment to every worker working on the petrol station should be provided. Mandatory periodic medical checkups must be done at regular intervals and the examination findings should be entered in the register which should be maintained at every work station. Government can consider making provision of health insurance policies to the employees working at petrol pump station.

Acknowledgement

We would like to acknowledge all the owners of various petrol pumps located in Panjim city for giving us permission to examine their staff and helping us in smooth conduct of this study.

Conflicts of Interest: None

References

1. Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: Bhanot; 2015. 840.
2. Monney I, Dramani J, Aruna A, Tenkorang A, OseiPoku F. Health and safety in high-risk work environments: A study of fuel service stations in Ghana. *J Environ Occup Sci* 2015; 4(3): 132.
3. Xiang J, Bi P, Pisaniello D, Hansen A. Health impacts of workplace heat exposure: an epidemiological review. *Ind Health* 2014; 52(2): 91-101.
4. Rekhadevi PV, Rahman MF, Mahboob M, Grover P. Genotoxicity in Filling Station Attendants Exposed to Petroleum Hydrocarbons. *Ann Occup Hyg* 2010; 54(8): 944-954.
5. Silva-Néto RP, Peres MFP, Valença MM. Odorant substances that trigger headaches in migraine patients: *Cephalalgia* 2013; 34(1): 14-21.
6. Moke EG. Adherence to safety practices and the effect of petroleum products on petrol station attendants in Abraka, Delta State, Nigeria. *J Appl Sci Environ Manag* 2020; 23(11): 2009.
7. Dohare P, Dandotiya D, Toppo M. To Study Occupational Hazards and Knowledge of Safety Measures in Filling Attendants at Petrol Pumps of Bhopal City -. *IJAR - Indian J Appl Res [Internet]* 2019; 9(1). Available from: [https://www.worldwidejournals.com/indian-journal-of-applied-research-\(IJAR\)/fileview/January_2019_1546340295__07.pdf](https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/fileview/January_2019_1546340295__07.pdf).
8. Johnson OE, Umoren QM. Assessment of occupational hazards, health problems and safety practices of petrol station attendants in Uyo, Nigeria. *J Community Med*

Prim Health Care 20181 ;30(1): 47-57–57.

9. Tunsaringkarn T, Prueksasit T, Kitwattanawong M, Siriwong W, Sematong S, Zapuang K et al. Cancer risk analysis of benzene, formaldehyde and acetaldehyde on gasoline station workers. *J Environ Eng Ecol Sci* 2012; 1.
10. Mistry H, Mathur A, Parmar D, Dixit R. Study of Leucocyte Count and its Association with Blood Pressure in Petrol Pump Workers of Surat City. *Int J Basic Appl Physiol* 2016; 5(1): 8.