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

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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
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. 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. 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. 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. 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. 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:**

- 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).
The table 1, 2, 3, 4 clearly mention 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

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Number (75)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aprons/ uniform</td>
<td>75</td>
<td>100</td>
</tr>
<tr>
<td>Boots</td>
<td>69</td>
<td>92</td>
</tr>
<tr>
<td>Goggles</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gloves</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mask</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 4, Blood pressure of the study subjects

<table>
<thead>
<tr>
<th>Blood pressure</th>
<th>Number (N)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (&lt; 120/80 mm Hg)</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>Pre hypertension (120-139/80-89mm Hg)</td>
<td>34</td>
<td>45.3</td>
</tr>
<tr>
<td>Stage 1 hypertension (140-159/90-99mm Hg)</td>
<td>11</td>
<td>14.7</td>
</tr>
<tr>
<td>Stage 2 hypertension (&gt; 160/100mm Hg)</td>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

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.

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.
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
