

Occupational health hazards among automobile mechanics working in an urban area of Bangalore – a cross sectional study

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Abstract

Background: Occupational health deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards. Road side automobile mechanics belong to the informal sector of a developing country like India. There are various hazards in the occupational environment to which mechanics may be exposed, like work-related injuries, chronic illness, stress and, disability because of their low literacy rates, following unsafe practices, unfamiliarity with work process and exposures, and inadequate training.

Objectives: 1. To assess the occupational health hazards among roadside automobile mechanics in an urban area of Bangalore 2. To assess the awareness of personal protective equipments among automobile mechanics.

Materials and Methods: A cross sectional study was carried out for a period of 3 months, during September, October and November 2015 among 150 mechanics working at the automobile workshops in an urban area of Bangalore. Data was collected using a pre-tested, validated, semi-structured, indigenous, interviewer based questionnaire. Data was entered in Microsoft excel sheet and analyzed using SPSS 21 software. Descriptive statistics such as frequency tables, pie diagrams and bar charts were used wherever necessary.

Result: Musculoskeletal diseases were the most commonly reported health problems by the mechanics ($n = 93$, 62%), followed by cuts and injuries ($n = 87$, 58%). The commonest known personal protective equipment (PPE) were eye goggles ($n = 131$, 87.3%) and hand gloves ($n = 120$, 80%).

Conclusion: Proper education of this economically viable group on workplace hazards, the types and properties of the different protective devices in order to safeguard their health is needed.

KEY WORDS: Occupational hazards, automobile mechanics, personal protective equipment (PPE), health problems

Introduction

Occupational health deals with all aspects of health and safety in the workplace and has a strong focus on primary prevention of hazards.^[1] Occupational health hazards present a major public health problem resulting in serious social and

economic consequences.^[2] Occupational diseases occur as a result of physical, chemical, social, biological, and psychosocial factors present at work as encountered in the course of employment.^[3]

The report, entitled 'The Prevention of Occupational Diseases', issued for the World Day for Safety and Health at Work, the International Labor Organization said that despite the fact that occupational diseases kill 6 times as many people, accidents attract greater attention. Of the estimated 2.34 million annual work-related deaths, the vast majority – approximately 2.02 million – are due to work-related diseases. This represents a daily average of 5,500 deaths. The ILO also estimates that 160 million cases of non-fatal work-related diseases and 317 million non-fatal occupational accidents occur annually. This means that, every 15 s, 1 out of 151 workers dies with a work-related accident.^[4]

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Road side automobile mechanics belong to an informal sector of a developing country like India.^[3] There are various hazards in the occupational environment to which mechanics may be exposed like work-related injuries, chronic illness, stress, and disability because of their low literacy rates, following unsafe practices, unfamiliarity with work process and exposures, and inadequate training.^[2] Musculoskeletal trauma due to poor ergonomics at work places is also included. Exposure to physical, mechanical and chemical hazards, and the performance of unsafe practices by workers are the leading causes of work-related injuries. Encouraging practices of occupational safety through health education is the practicable and feasible means of reducing or preventing the exposure of welders to various hazards.^[5]

In the context of legislations, the major legal provisions for the protection of health and safety at workplace are the Factories Act and Mines Act. However, more than 90% of the Indian labour force does not work in factories; hence, they fall outside the purview of the Act. A broad insight into the existing occupational health laws in India explicably brings out the variety of non-implementation of such laws, considering the present scenario with respect to the workers' health conditions.^[6]

Furthermore, they do not have any organized occupational health services and very little is done to cater to their health needs and incorporate them into delivery system. Only few attempts have been made to study occupational exposure and health profile of this population in India. In light of this, this study aims to assess the occupational health hazards and the awareness of personal protective devices among roadside automobile mechanics in an urban area of Bangalore.

Materials and Methods

A cross sectional study was carried out for a period of 3 months, during September, October and November 2015 among mechanics working at the automobile workshops in an urban area of Bangalore. Informed consent for the study was taken from the mechanics. A total of 150 mechanics were included in the study. Data was collected using a pre-tested, validated, semi-structured, indigenous, and interviewer based questionnaire. The questionnaire was organized into 4 major headings to collect information pertaining to respondents' socio-demographic profile, work profile, various occupational health hazards experienced in the last 1 year, and awareness regarding the use of personal protective devices. Confidentiality was maintained.

Data was entered in Microsoft excel sheet and analyzed using SPSS 21 software. Descriptive statistics such as frequency tables, pie diagrams and bar charts were used wherever necessary.

Result

A total of 150 mechanics gave consent to participate in the study. They were all males with 37.33% ($n = 56$) belonging to age group between 20 and 30 years and 30.66% ($n = 46$)

belonging to age group between 30 and 40 years. Majority of the mechanics ($n = 132$, 88%) were Muslims. When asked about their marital status 66% ($n = 99$) were married and 28.6% ($n = 43$) were unmarried. About 30.6% ($n = 46$) and 24.6% ($n = 37$) had studied up to high school and secondary level, respectively (Table 1).

More than half of the mechanics ($n = 88$, 58.6%) worked more than 8 h per day and 30% ($n = 45$) had work experience of 10–20 years. Majority of the respondents reported that their work was physically hard ($n = 113$, 75.3%); involves much lifting of weight ($n = 122$, 81.3%); was dangerous ($n = 76$, 50.6%) and nature of work is manual ($n = 89$, 59.3%). About 74% ($n = 111$) were satisfied with their job (Table 2).

Musculoskeletal diseases were the most commonly reported health problems by the mechanics ($n = 93$, 62%), followed by cuts and injuries ($n=87$, 58%). Nearly half of them ($n = 72$, 48%) were stressed due to their work, while 26% ($n = 39$) experienced sleeping disorders (Figure 1).

The commonest known personal protective equipment (PPE) were eye goggles ($n = 131$, 87.3%) and hand gloves ($n = 120$, 80%) (Figure 2).

In spite of the awareness, only 22.5% ($n = 27$) of the mechanics were observed using hand gloves during their work. Approximately, 15.26% ($n= 20$) used eye goggles during welding and safety boot was used by 13.68% ($n = 13$) of them (Figure 3).

Discussion

Roadside mechanical activities especially in India are predominantly a masculine job, pointing towards the gender

Table 1: Socio-demographic profile of mechanics ($n = 150$)

Parameter	Variable	N	Percentage (%)
Age	<20 years	21	14.0
	20–30 years	56	37.3
	30–40 years	46	30.6
	>40 years	27	18.0
Religion	Muslims	132	88.0
	Hindu	18	12.0
	Others	00	00.0
Marital status	Unmarried	43	28.6
	Married	99	66.0
	Divorced	06	04.0
	Widower	02	01.3
Educational status	Illiterate	29	19.3
	Primary education	27	18.0
	Secondary education	37	24.6
	High school	46	30.6
	PUC	09	06.0
	Graduation	02	01.3

Table 2: Work profile of the mechanics (*n* = 150)

Parameters	Variables	N	Percentage (%)
Number of working hours per day	< 6 hours	7	04.6
	6–8 hours	55	36.6
	>8 hours	88	58.6
Duration of job	< 2 years	31	20.6
	2–5 years	24	16.0
	5–10 years	29	19.3
	10–20 years	45	30.0
	>20 years	21	14.0
	Work physically hard	Yes	113
No		37	24.6
Lifting of much weight	Yes	122	81.3
	No	28	18.6
Work dangerous	Yes	76	50.6
	No	74	49.3
Nature of work	Mechanical	61	40.6
	Manual	89	59.3
Mobility during work	Sitting most of the time	60	40.0
	Standing most of the time	43	28.6
	Moving most of the time	21	14.0
	Nothing particular	26	17.3
Satisfaction with the current job	Yes	111	74.0
	No	39	26.0

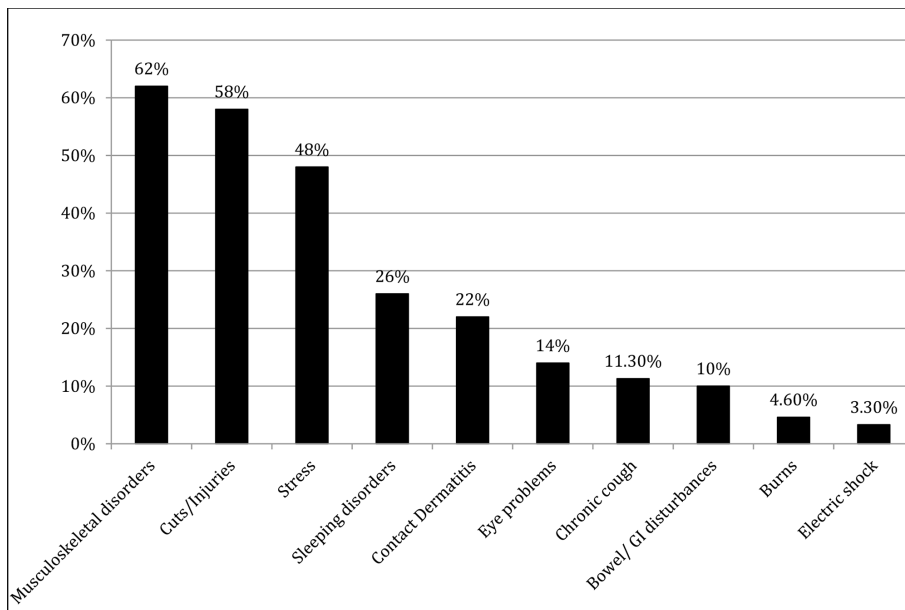


Figure 1: Occupational Health hazards among mechanics (*n* = 150).

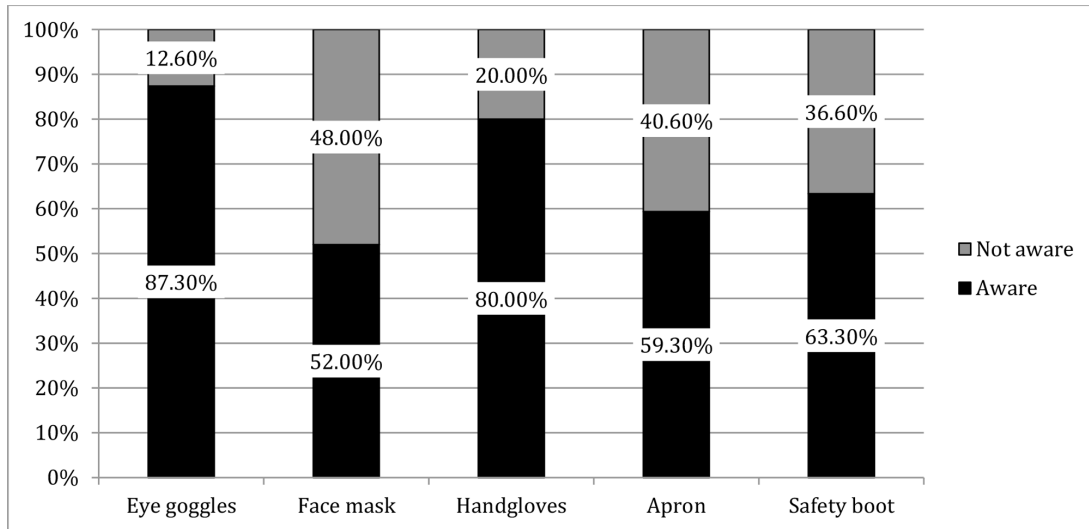


Figure 2: Awareness of personal protective equipment.

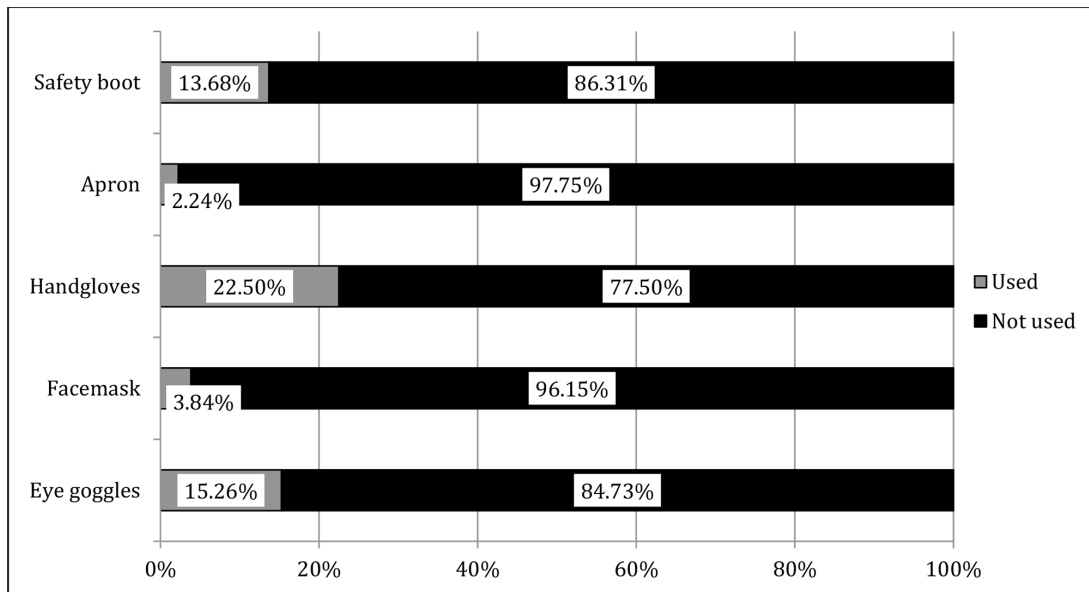


Figure 3: Use of personal protective equipment.

predisposition towards this occupation. Also, males tend to select themselves into more hazardous jobs and females are assigned less physically demanding jobs. Majority of these men are young belonging to age group between 20 and 40 years and two-third of them were married. This is in agreement with the findings of Chauhan et al.^[7] that 79% of the respondents belonged to age group between 15 and 39 years and 64% of them were married. Out of all, 30% of the mechanics had received education up to high school and nearly one quarter up to secondary school, while 19% attested to be illiterate. These findings differed from a similar study by Philip M et al.^[8] in South Delhi where only 77% were dropouts from high school and only 23% completed high school.

Notably three-fourth of them found that their work was physically hard involving much lifting of weight and half of them reported that their work was dangerous. This proportion was much higher than observed among the respondents of Delhi in a study by Chauhan et al.^[7] regarding work to be physically hard (53%), lifting of much weight (57%) and lower when results were compared for the work being dangerous (56%).

More than half of the respondents (58%) were working more than 8 h daily and doing their work manually (59%). Further, less than half of the respondents (40%) were sitting and doing their work. This finding can be correlated with the high incidence of musculoskeletal problems, where prolonged sitting (usually in squatting position) or standing may cause

low back ache or joint problems. Another important finding noted was that majority (74%) of the workers were satisfied by their current job.

The most commonly reported occupational health problems by the mechanics were musculoskeletal diseases (62%), and this could be due to the discomforting positions they are forced to adapt in the process of their work. This is in agreement with the findings of a study conducted by Monney *et al.*^[9] in urban areas of Ghana, in which musculoskeletal diseases were common work related illness (95%). Cuts and injuries due to sharp metals accounted for a significant total of 58% of the health complaints among the study group. This is not surprising considering that only one-fifth (21%) of the respondents used hand gloves regularly. Thus, it highlights the need for the use of proper personal protective devices while working.

In this study, there was high awareness among respondents on personal protective equipments as 80% were aware of hand gloves. There is a gap between awareness and usage as only 21% of the respondents made use of it. The awareness of face mask (52%), apron (59%), and safety boot (63%) as safety gadgets for protection was less when compared to hand gloves and eye goggles. In spite of the awareness among the respondents, less than half (44%) of them were using the personal protective equipments for their safety. These results concurred with a study done by Sabitu *et al.*^[10] where the awareness among the respondents made them use hand gloves (85%), apron (53%), eye goggles (87%), face mask (52%), and safety boot (81%) while only 34% of the respondents used one or more types of protective device. This necessitates the health education intervention for the use of safety gadgets to protect themselves from the various occupational health hazards.

Occupational health not only deals with work-related disorders or diseases, but it also encompasses all factors that affect workers' health. With changing scenario, there is need to understand the risk factors of occupational health hazards. Proper education of this economically viable group on workplace hazards, the types, and proper use of the different protective devices in order to safeguard their health is needed. The control of occupational hazards decreases the incidence of accidents and work related diseases as well as improves the health and general morale of the workplace. This in turn leads to increased workers efficiency and decreased absenteeism from work. There is high level of awareness but low usage of protective device among respondents. Therefore, there is need for emphasis on health education through programs promoting work place safety by using personal protective equipments among automobile workers.

Conclusion

Proper education of this economically viable group on workplace hazards, the types and properties of the different protective devices in order to safeguard their health is needed.

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