International Journal of Community Medicine and Public Health
Mishra PK et al. Int J Community Med Public Health. 2019 Aug;6(8):3608-3613
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20193496

Original Research Article

Occupational hazards and health problems among traffic personnel of Mangaluru city

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Received: 15 June 2019
Accepted: 18 July 2019

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ABSTRACT

Background: Occupational health risks and hazards due to the polluted environment have become a serious public health concern. Thus, the duty-bound personnel like traffic police who are continuously exposed, may be at high risk and badly suffer from related health problems. This study was conducted to determine the prevalence of occupational hazards and related health problems among traffic personnel in Mangaluru city. It also aimed to determine the association between occupational hazards and health problems.
Methods: This cross-sectional study was conducted among traffic personnel of Mangaluru city. A semi-structured questionnaire with established reliability and validity was used to measure occupational hazards, protective measures, and health problems.
Results: The prevalence of respiratory morbidity, eye symptoms, and auditory symptoms was found to be 51.2%, 61.6%, and 47.5% respectively. Respiratory morbidity and duration of use of protective measures against air pollution are found to be significantly associated. The duration of exposure to noise pollution was also significantly associated with the auditory symptoms.
Conclusions: Police personnel suffer from significant occupational health problems, due to hazards like air pollution and noise. Necessary protective measures should be taken to ensure the safety of traffic personnel. This study showed an association between occupational hazards and related health problems.

Keywords: Traffic police, Mangaluru city, Occupational hazards, Health problems, Protective measures

INTRODUCTION

Environmental air pollution is one of the global problems and is a common problem for both developing as well as developed countries, which attracts the attention of human beings for their severe long-term consequence.[1,2] The occupational environment constitutes an important part of man's total environment. So to a large extent, their health is mostly affected by work surroundings. Though numerous types of environment exist, it is the physical environment, which plays an important bearing on health.[3]

Air quality crisis in cities of India is mainly due to emission from the vehicles. Increase in use of motor vehicles leading to the subsequent rise in the levels of air pollution. This has, especially affected the traffic personnel who have to spend long duty hours at busy traffic signals.[4] The personnel has to undergo physical strain in an environment polluted with fumes, the exhaust of vehicles, use of blowing horns, blow off dust in the air by the speeding vehicles, etc..[5] Traffic personnel are exposed to higher health risk, to ensure steady traffic among hundreds of noisy and polluting vehicles throughout their duty period. The duration of exposure increases the chance of health hazard and becomes more

severe.[6] Environmental pollution escalates occupational hazards in this group. In urban areas, industrial or vehicular pollution is predominant and significantly contributes to air quality problems.

METHODS

This study is a cross-sectional study. The study was conducted in the four traffic police stations in Mangaluru city, Karnataka, India. The study period for this study was from January - April 2019. The study population comprised of all operational traffic personnel of Mangaluru city, Karnataka. In this study the traffic personnel willing to participate with a written consent are included. The traffic personnel with less than one-year work experience and traffic personnel posted in police station/non-traffic duty were excluded from the study. Sample size was taken as 80% of total 297 traffic personnel.

Study instrument

In this study, self-administered (semi-structured) questionnaires were used to collect the information. The questionnaire includes socio-demographic details, American Thoracic Society-Division of Lung (ATS-DLD) respiratory morbidity assessment, eye problems and safety measures, noise pollution and its related health problem and protective measures. Descriptive data were analyzed using frequency, percentage, mean, median and standard deviation (S.D). For the association between variables, appropriate bivariate was done. For the association between variables, chi-square was used p value less than 0.05 was considered as statistically significant.

RESULTS

In this study the minimum age was 20 years, and the maximum age was 60 years with a mean of 33.42±8.98 years. In this study, most (86.2%) of the respondents were males. The work experience of the respondents ranged between 1 to 34 years with mean 9.20±7.944 years. Other demographic details are described in (Table 1). In the study, the prevalence of respiratory symptoms was 51.2%, eye symptoms (61.6%) and auditory symptoms (47.5%). The majority (49.6%) of the respondents had cough while on outdoor traffic duty or after that. Among them, the majority (68.1%) had frequent cough while 31.9% of the respondents reported chronic cough. From the total respondents of 240, 45% of the respondents reported they bring up phlegm. Of these 108 respondents, 63% and 37% reported frequent phlegm and chronic phlegm respectively (for details go to Table 2 and Table 3). In the study, 34.2% of the respondents reported that people often indicate they talk loudly. Similarly, 28.8% of the respondents reported they would ask others to talk loudly (Table 4). The prevalence of respiratory morbidity and duration of use of protective measures were compared. An association with statistical significance was found (p=0.027) between the prevalence of respiratory morbidity and duration of use of protective measures against air pollution. Similarly, an association with statistical significance (p=0.05) was found between the duration of exposure to air pollution and eye symptoms. Significant association (p=0.028) was found between the duration of exposure to noise with the prevalence of auditory symptoms (Table 5).

Table 1: Socio-demographic details.

Characteristics (n=240)	Frequency	Percentage (%)
Age (in years)		
20-30	114	47.5
30-40	72	30.0
40-50	40	16.7
≥50	14	5.8
Gender		
Male	207	86.2
Female	33	13.8
Level of education		
Graduate or postgraduate	129	53.7
Intermediate or post high school diploma	81	33.8
High school certificate	28	11.7
Middle school certificate	2	0.8
Designation		
Traffic inspector	2	0.8
Traffic sub-inspector	8	3.3
Assistant sub-inspector	9	3.8
Head constable	56	23.3
Constable	145	60.5
Home guard	20	8.3

Table 2: Sources of air pollution and respiratory morbidity.

Characteristics (n=240)	Frequency	Percentage (%)
Sources of traffic air pollution*		
Vehicle smoke	190	79.2
Dust raised from vehicular movement	189	78.8
Others	12	5.0
Hours of exposure		
Less than 2 hrs/day	4	1.7
2-4 hrs/day	31	12.9
Over 4 hrs/day	205	85.4
Respiratory morbidity		
Wheezing (n=240)		
Yes	81	33.8
No	159	66.2
Cough (n=240)		
Yes	119	49.6
No	121	50.4
Phlegm (n=240)		
Yes	108	45.0
No	132	55.0
Protect from air pollution		
Yes	174	72.5
No	66	27.5
Protective measures* (n=174)		
Facemask	148	85.1
Handkerchief	43	24.7
Others	9	5.1
Duration of use		
Less than 2 hrs/day	28	16.1
2-4 hrs/day	75	43.1
Over 4 hrs/day	71	40.8
Reasons for nonuse of protective measures* (n=66)		
Unavailable	6	9.1
Uncomfortable	33	50.0
Unnecessary	46	69.7
Unaffordable	13	19.7
Other reasons	2	3.0

* Multiple response.

Table 3: Distribution of respondents according to eye symptoms.

Characteristics	Frequency	Percentage (%)
Symptom of eye (n=240)		
Yes	148	61.7
No	92	38.3
Type of eye symptoms* (n=148)		
Dry eyes	30	20.2
Watering of eyes	44	29.7
Redness	73	49.3
Burning or itching	41	27.7
Protective eyewear (n=240)		
Yes	79	32.9
No	161	67.1
Duration (n=79)		
Less than 2 hrs/day	5	6.3
2-4 hrs/day	41	51.9
Over 4 hrs/ day	33	41.8

Continued.

Characteristics	Frequency	Percentage (%)
Reasons for nonuse of protective eyewear* (n=161)		
Unavailable	16	9.9
Uncomfortable	73	45.3
Unnecessary	99	61.5
Unaffordable	9	5.6

* Multiple response.

Table 4: Distribution of respondents according to exposure to noise and related health problem.

Characteristics (n=240)	Frequency	Percentage (%)
Sources of noise*		
Heavy motor vehicle	204	85.0
Light motor vehicle	125	52.1
Two-wheeler	129	53.8
Three-wheeler	60	25.0
Other	6	2.5
Type of noise*		
Blowing horn	170	70.8
Engine sound	115	47.9
Public noises	7	2.9
Others	5	2.1
Duration of exposure to noise		
Less than 2 hrs/day	1	0.4
2-4 hrs/day	42	17.5
Over 4 hrs/day	197	82.1
Types of auditory symptoms* (n=114)		
Difficulty in hearing	18	15.8
Tinnitus (ringing in the ear)	50	43.9
Sleep disturbance	58	50.9
others	2	0.8
Types of protective device used (n=15)		
Earplugs	13	86.7
Earmuffs	2	13.3
Reason for nonuse of protective device* (n=225)		
Unavailable	24	10.7
Uncomfortable	95	42.2
Unnecessary	116	51.6
Dislike	26	11.6
Others	14	5.8

* Multiple response.

Table 5: Association between duration of exposure to air pollution with prevalence of respiratory symptoms and duration of exposure to noise with auditory symptoms.

Characteristics (n=240)	Present (%)	Absent (%)	P value
Duration of exposure air pollution (n=240)	**Respiratory symptoms**		
<2 hrs/day	3 (1.2)	1 (0.4)	
2-4 hrs/day	15 (6.2)	16 (6.7)	0.591
>4 hrs/day	105 (43.8)	100 (41.7)	
Duration of use of protective measures (n=174)			
<2 hrs/day	19 (10.9)	9 (5.2)	
2-4 hrs/day	30 (17.2)	45 (25.9)	0.027*
>4 hrs/day	39 (22.4)	32 (18.4)	

Continued.

Characteristics (n=240)	Present (%)	Absent (%)	P value
Duration of exposure to air pollution (n=240)	**Eye symptoms**		
<2 hrs/day	3 (1.3)	1 (0.4)	
2-4 hrs/day	13 (5.4)	18 (7.5)	0.05*
>4 hrs/day	132 (55.0)	73 (30.4)	
Duration of exposure to noise (n=240)	**Auditory symptoms**		
<2 hrs/day	0 (0)	1 (0.4)	0.028*
2-4 hrs/day	13(5.4)	29 (12.1)	
>4 hrs/day	101(42.1)	96 (40.0)	

* p≤0.05, **p<0.001.

DISCUSSION

The present study was conducted to determine the prevalence of occupational hazards and related health problems, using a self-administered questionnaire, among traffic personnel of Mangaluru city, Karnataka, India. In the present study, respondents belonged to the age group of 20 to 60 years with the mean age of 33.42±8.98 years. A study conducted in Kolkata by Ganthi et al showed that the mean age of traffic personnel was 39.2±7.8 years.[7] This variation in the mean age of the respondents in both the groups may be due to the recruitment of senior personnel in metro cities when compared to non-metro cities.

In this study, the prevalence of respiratory morbidity was found to be 51.2%. In a study conducted by Saravana Ganthi et al., in 2012, to assess the exposure to vehicular pollution and its impact on traffic policemen, the prevalence of respiratory symptoms was found to be 57.69%.[7] Similarly, a study conducted by Sharat et al., on respiratory effects of air pollutants among traffic policemen in Patiala showed the prevalence of respiratory symptoms for frequent coughing as 68% and shortness of breath as 22%.[9] This shows the prevalence of respiratory morbidity is a common phenomenon among traffic police personnel, across various geographic locations in India, owing to similar occupational characteristics and prolonged exposure to vehicular air pollution.

In the present study, the prevalence of eye symptoms was 61.7%. A study conducted by Prajapati et al, in Ahmedabad City, stated the prevalence of eye problems as 44.81%.[10] In the present study, prevalence of eye symptoms was higher when compared to the Ahmedabad contemporaries. Cleanliness of streets and density of traffic are also important factors, apart from long term exposure to vehicular air pollution.

In the present study, the prevalence of ear problems was found to be 47.5%. In addition, a study conducted by Tripathi et al on hearing quality of traffic policemen in Ahmedabad, in 2006, showed that 11.6% complained of regular tinnitus and 62.8% reported work-related tinnitus.[8] The reported ear problems in the present study is higher in comparison to the study conducted by Tripathi et al.[8] The possible reason could be the use of shrill horns and inadvertent honking behavior among motorists in Mangaluru. Lack of awareness about noise pollution and its effect on health, lack of information about protective measures may be the cause of low prevalence of auditory protective measures among the traffic personnel. However, the reasons for non-usage of protective measures were found similar in both studies. These reasons are mostly attitude-driven than knowledge factors.

CONCLUSION

The study found that the prevalence of respiratory morbidity, eye symptoms, and ear problems were 51.2%, 61.6%, and 47.5% respectively. The observed result is due to the prolonged exposure to vehicular pollution and not using personal protective measures. Health problems can become the barriers for performing their duties efficiently.

ACKNOWLEDGEMENTS

The authors thank the Deputy Commissioner of Police of the Mangaluru for giving permission to carry out the study and to the traffic personnel for giving their consent to participate in the study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee of K.S. Hegde Medical Academy (KSHEMA), Nitte (Deemed to be University)

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Cite this article as: Mishra PK, Purushothama J. Occupational hazards and health problems among traffic personnel of Mangaluru city. Int J Community Med Public Health 2019;6:3608-13.