Knowledge on the Environmental Factors Affecting Health of Traffic Police in Kathmandu Valley

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Keywords

Air pollution, food and water borne diseases, microbes, noise pollution

Online Access

DOI 10.3126/mjsbh.v22i1.53671

Date of submission - 2023 Mar 29
Date of acceptance - 2023 Oct 09

Abstract

Introduction: Traffic police are the officers who play a vital role in maintaining laws and regulations on the road 24 hours a day. They are exposed to dust, fumes, noise, UV rays, germs and other factors which may have serious potential to cause health problems, which is preventable but may be unaware of it. Hence, this study aims to assess the knowledge of the environmental factors affecting health among traffic police.

Methods: A cross-sectional study was conducted among the traffic police of Kathmandu Metropolitan city from December 2021 to May 2022. The self-administrated questionnaire was provided in different traffic police stations with permission of Metropolitan Traffic Police, Kathmandu. The questionnaire was structured with each separated section of environmental factors. Epi-data was used for data entry and analyzed through IBM SPSS. Chi square test was used to measure the significant association of dependent and independent variables.

Results: A survey of 352 respondents found that the majority had fair knowledge on environmental factors such as air pollution, microbes, food and water borne diseases and 78.7% had fair knowledge about noise pollution. Dust from vehicular movement was reported as the main source of air pollution, while eye problems 46.6%and allergies 50.2% were the main health and skin problems respectively.

Conclusions: It is worrying that only a few traffic police officers have a good understanding of the environmental factors that can harm health. This poses significant public health issues. To address this problem, the study recommends raising awareness among authorities and providing education to traffic police officers and can facilitate change at the grassroots level.

INTRODUCTION

Traffic Police encompasses a wide range of duties, and there are numerous health and safety concerns associated with the profession.[1] Occupational health risks and hazards owing to contaminated environment have become a severe public health concern.[2] Traffic Police Officers assigned to direct traffic at busy intersections are exposed to both noise and air pollution, which can pose risk to their health. Unfortunately, many are unaware of the extent of these occupational health hazards, despite the fact that they can be prevented.[1]

The majority of Traffic Police have weight issues and respiratory illnesses as a result of their inconsistent and poor eating habits.[3] According to a study on benzene

exposure conducted in Rome, Italy, exposure levels for Traffic Police Officers were significantly greater compared to office workers.[4] Another, survey was carried out in Bangkok in order to assess the potential consequences of air pollution among Traffic Police Officers. The study involved the Traffic Police Officers who worked in the most polluted regions and they were more likely to experience respiratory problems.[5] The degree of pollution that Traffic Police Officers in big cities are exposed to is extremely high. The inhalation of the particulate matter can cause long-term problems and inflammation of the lung tissue.[6]

Traffic Police communicate with a large number of people on a regular basis. As a result, in addition to having negative health outcomes of traffic-related pollution, individuals are also exposed to a variety of other serious health risks, such as musculoskeletal disorders, stress, weariness, and infectious illnesses.[7] Since there is a chance to evaluate defined exposures, occupational research on Traffic Police Officers aid in our understanding of the consequences of environmental exposures and its specific negative effect.[8] Therefore, it is critical that many more studies on Traffic Police Officers' health issues should be encouraged. In order to reduce the danger of environmental factors of health hazards, the findings of this research can raise awareness, enhance knowledge, and promote good health practices among Traffic Police Officers. This can help in preventing them from experiencing severe consequences related to their work conditions and allowing them to lead healthy lives. This study was hence conceptualized to assess the knowledge about environmental factors affecting health among the Traffic Police Officers.

METHODS

A cross-sectional descriptive study was conducted in different police stations of Kathmandu valley, Nepal from December 2021 to May 2022. Written permission was taken for this study from Metropolitan Traffic Police, Kathmandu, Nepal. Ethical Clearance was taken from Annapurna Neurological Institute & Allied Sciences, Maitighar, Kathmandu, Nepal. The study data was collected by using structured questionnaires with sections from the different Traffic Police Stations. The sampling method was quantitative method and sampling technique was simple random sampling. According to Metropolitan Traffic Police, there are 1500 Traffic Police Officers working in Kathmandu valley. So, sample size was calculated by using the Taro Yamane formula, n = N/1 + N*e2 (Where n = the sample size, N = the population size, e = the acceptable sampling error) and total number of sample size was 352. The main traffic junction selection was performed by cluster sampling technique. To select the main traffic junction from Kathmandu valley, Equal Weighted Method was used where total sample was equally divided into three parts for Kathmandu, Bhaktapur and Lalitpur areas where major traffic junctions were taken conveniently and from each area. The exclusion criteria for this study were Traffic Police Officers who refused to take part in the study and Traffic Police Officers who were on leave as well as who were too busy in their work. The data were analyzed using a statistical application such as IBM SPSS 16. Chi-square test was used to study the relationship between dependent and independent variable.

RESULTS

Table 1: Socio-demographic characteristics of participants

Characteristics	Frequency	Percentage (%)
Age		
20 - 25	97	27.6%
26 - 30	134	38.1%
> 30	121	34.4%
Sex		
Male	314	89.2%
Female	38	10.8%
Educational status		
Secondary	83	23.6%
Higher Secondary	217	61.6%
Bachelor	49	13.9%
Master	3	0.9%
Marital Status		
Married	268	76.1%
Unmarried	80	22.7%
Divorced	4	1.1%
Religion		
Hinduism	326	92.6%
Buddhism	15	4.3%
Christianity	11	3.1%
Ethnicity		
Brahmin	87	24.7%
Chhetri	197	56%
Janjati	51	14.5%
Dalit	17	4.8%
Monthly income		
NRS 20000-30000	275	78.1%
NRS 30000-40000	75	21.3%
Above NRS 40000	2	0.6%

Table 1 represents the demographics of 352 respondents in a survey. The majority of respondents were males (89.2%). The age distribution showed that 38.1% of respondents were in the 26 to 30 years age group. In terms of educational qualifications, the majority of respondents, i.e., 61.6%, had completed a higher secondary level, only 13.9% of respondents had a bachelor's degree, and less than 1% had a master's degree. Regarding marital status, 76.1% of respondents were married. In terms of religious beliefs, 92.6% of respondents followed Hinduism. When it comes to monthly income, the majority of respondents (78.1%) reported earning between NRS 20,000 to 30,000. Overall, this data provides insights into the demographic distribution of respondents in the survey, highlighting trends related to age, gender, education, marital status, religion, and income.

Table 2: Knowledge on the different occupational related environmental hazard factors

knowledge regarding air pollution		
Problem caused by air pollution		
Eye problem	228	46.6%
Skin problem	150	30.7%
Respiratory problem	111	22.7%
Eye problems due to air pollution		
Dry eyes	198	45.2%
Redness/ burning	165	37.7%
Watering of eyes	75	17.1%
Skin problem		
Allergy	227	50.2%
Redness	100	22.1%
Itchiness	92	20.4%
Burning, sensation	33	7.3%
Knowledge regarding noise pollution		
Noise pollution is harmful		
Yes	346	98.3%
No	6	1.7%
Problem caused due to noise problem		
Hearing impairment	242	61.4%
Heart problem	106	26.9%
Dizziness	25	6.3%
Tinnitus	21	5.3%
Knowledge regarding microbes		
Microbes more prone to their occupation		
Virus	173	49.1%
Bacteria	150	42.6%
Fungi	25	7.1%
Parasite	4	1.1%
Viral disease		
common cold	174	34.40%
Flu	130	25.70%
Fever	67	13.20%

runny or stuffy nose	60	11.90%
viral hepatitis	45	8.90%
Covid-19	30	5.90%
Knowledge regarding food and water-borne disease		
Foodborne disease		
Diarrhea	262	68.60%
Dysentery	65	17.00%
Typhoid	55	14.40%
Water-borne disease		
Diarrhea	115	59.7%
Cholera	221	31.1%
Dysentery	34	9.2%

Table 2 shows that out of 352 respondents, 46.6% (n = 228) revealed that dust raised by vehicular movement was the main source of air pollution and eyes problems were the main health problem for and 50.2% (n = 227) reported allergies as the main skin problem. Almost all respondents have knowledge that noise pollution is harmful where 61.4% (n = 242) of the respondents reported noise pollution can cause noise impairments. Almost half respondents reported that they were more prone to viral diseases in their occupation which leads to common cold and flu as a major symptom. While assessing the knowledge regarding the food and water borne diseases diarrhea was seen as the major cause of occupational hazards.

Table 3: Knowledge on the Environmental factors

Variable	Frequency (n)	Percentage (%)
Air pollution		
Fair knowledge	318	90.3%
Good knowledge	34	9.7%
Noise pollution		
Fair knowledge	277	78.7%
Good knowledge	75	21.3%
Microbes		
Fair knowledge	322	91.5%
Good knowledge	30	8.5%
Food and water-borne disease		
Fair knowledge	335	95.2%
Good knowledge	17	4.8%

While computing the knowledge on environmental factors, Table 3 revels that the majority of the respondents have fair knowledge on the air pollution, microbes, food and water borne diseases where 78.7% have fair knowledge about noise pollution.

Table 4: Association seen with socio-demographic variable and environmental factors

Variable	Level of knowledge			
	Fair knowledge	Good knowledge	Chi-square	P-value
with air pollution				
Monthly income (NRS)				
20000 - 30000	243 (69%)	275 (78.1%)	10.9	0.004*
30000 - 40000	74 (21%)	75 (21.3%)		
Above 40000	1 (0.3%)	29 (0.6%)		
with noise pollution				
Religion				
Hinduism	259 (73.6%)	67 (19%)	12.265	0.002*
Buddhism	7 (2%)	8 (2.3%)		
Christianity	277 (78.7%)	0		
with microbes				
Sex				
Male	291 (84.1%)	18 (5.2%)	5.527	0.019*
Female	31 (9%)	6 (1.7%)		

[Note: "*" Signifies association (p-value = < 0.050)]

Table 3 shows that among all the demographic variables, monthly income range of 20000 to 30000 had fair knowledge of air pollution followed by a monthly income of 30000 to 40000 i.e., 21.3% and other remaining of

above 40000 i.e., 0.3%. With p-value = 0.004 (< 0.05), a significant association was seen between monthly income and knowledge of air pollution. The respondent follows Hinduism i.e., 73.6% had fair knowledge of noise pollution followed by Christianity 78.7% and 2% Buddhism. Likewise, 19% who follow Hinduism had good knowledge of noise pollution followed by Buddhism i.e., 2.3%. With p -value = 0.02 (< 0.05), it seems there is a significant relationship between religion and knowledge of noise pollution. 84.1% had fair knowledge on microbes were males and the remaining 9% were females. Similarly, 5.2% of the respondents having good knowledge about microbes were males and the remaining 1.7% were females. It seems that sex and knowledge on microbes are significantly associated (p-value = 0.019 < 0.05).

DISCUSSION

Globally, occupational hazards cause millions of premature deaths along with preventable morbidity that seriously affects the well-being of individuals. Traffic Police Officers are occupationally exposed to toxins from motor combustion when operating in outdoor metropolitan environments.[9]

According to the present study, the largest age group of respondents was 26 to 30 years old, comprising 38.1% of the sample. In contrast, a previous study conducted in Kathmandu Valley in 2016 found that the majority of respondents were aged 25 to 34 years, representing 57.4% of the study population.[1] Additionally, this study revealed that the majority of respondents (89.2%) were males, with the remaining 10.8% being females. This is consistent with the findings of the previous study, which reported that 87.6% of respondents were male Traffic Police Officers and 12.4% were female Traffic Police Officers.[1] In terms of ethnicity, the present study found that the largest group of respondents (56%) were from the Chhetri community, while the study conducted in 2016 found that the majority (59.9%) were from the Janajati community.[1] Finally, the present study highlights that most respondents had completed secondary education (61.6%), while the previous study conducted in Mangalore found that the majority of respondents had graduated or completed post-graduate studies (53.7%) which has shown a huge difference in the educational status.[11]

A study conducted on Nairobi, Kenya stated that vehicles were a pollution contributor, delivering huge measures of nitrogen oxides, carbon monoxide, and other contamination.[10] In another study conducted by Mishra PK et al. shows that 78.8% were affected by dust raised by vehicular movement.[11] We studied that traffic police knew dust from the vehicles i.e. 62.5% was main cause of air pollution affecting health.

In a research conducted on Kathmandu valley in the past, the results revealed that 75.7% had felt dryness on eyes, 78.8% of respondent had felt itching in eyes, 72.1% had felt redness on eyes, 66.7% of respondent had felt skin allergy, 56.8% of respondent had felt skin redness.[12] Similarly, another cross-sectional study was conducted among traffic personnel of Mangaluru City, India revealed that the symptoms of eye such as dry eyes, watering of eyes, redness with 20.2%, 29.7%, and 49.3% respectively.[11] In this research, the skin problems caused by air pollution in the Traffic Police Officers were 50.2% skin allergy, 22.1% redness, 20.4% itchiness and 7.3% burning sensation. A cross-sectional study concluded that most of the respondents said noise pollution is harmful for health i.e. 98.3% and similar supportive study conducted in 2016 shows that all of the respondents.[1] Likewise, the study showed that 19.2% of the traffic police consider noise pollution where as a study conducted in Dharan, Nepal stated that more than half Traffic Police Officers indicate that they are irritated while vehicles blow horn near to their working place (64.1%).[13]

CONCLUSIONS

Majority of the Traffic Police Officers had fair knowledge on the environmental factors affecting health is a matter of great concern as it possesses serious public health problems. The study emphasizes to make aware among the concern authorities and to educate the Traffic Police Officers as it helps to create a change from the ground level.

FUNDING None

ACKNOWLEDGEMENT

The authors would like to express gratitude to all the traffic police who participated and Metropolitan Traffic Police station, Kathmandu who gave permission to conduct this research.

CONFLICT OF INTEREST: None

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