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Assessment to identify the awareness and preventive measures of respiratory problems owing to air pollution among traffic police personnel in Bengaluru, Karnataka

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Abstract

Introduction: Air pollution has been identified as a major health problem of concern. Bengaluru being a metropolitan city witnesses a steep increase in population and hence immersed in long hours of traffic congestion. Hence, traffic police officers bear the maximum impact on their health.

Objective: This study aims to assess and understand the awareness and knowledge about the different respiratory problems that traffic police personnel are at risk of developing as well as the protective measures taken by them towards their prevention.

Method: A cross sectional study was conducted in Bengaluru among the traffic police officers of the city, data collection was done using a questionnaire which was prepared prior.

Results: Of the total 50 participants, 88% were aware of the vehicular emissions and their contribution to air pollution while 68% had known about ailments like lung cancer. 76% use mask during their work hours while 20% do not use any of the protective measures.

Conclusion: Traffic police officers being at risk for development of respiratory ailments, should undergo regular check-ups apart from using all kinds of protective measures for a healthy and a disease-free life.

Keywords: Traffic police personnel, air pollution, respiratory problems, respiratory ailments

Introduction

Civilization has witnessed a major drain of population from the rural areas to the so-called cities, which ultimately has to accommodate our ever increasing population. Booming urbanisation as well as exploding population has opened a new array of problems of which includes housing, industrialisation, poverty, joblessness, traffic congestion of which the latter owes a major mention. With the increasing demand of a well-developed transportation system to carry, our supply in terms of good road services and proper traffic control is not well enough to control air pollution.

India being the second most populous country in the world, showcases a wide range of traffic congestion problems, with increasing health issues at an alarming rate. Air pollution is by far one of the most challenging problem which our population is facing currently. Whereas The World Air Quality Report 2019 placed India as the 5th most polluted country in 2019 ^[1], according to the TomTom Traffic Index 2019 ^[2], released early this year, Bengaluru has been ranked first globally in terms of traffic congestion. Exposure of human beings to different air pollutants released by automobiles are well known to cause numerous health ailments. Carbon monoxide, nitrogen oxide, hydrocarbons are the ones majorly released by automobiles that depends on petrol and diesel as their source of energy. Consequently, this alarming increase in air pollution has undoubtedly increased the burden of health ailments including asthma, bronchitis, development of allergies and even lung cancer. In 2019, air pollution is considered by WHO as the greatest environmental risk to health ^[3].

Apart from channelizing the ever-dynamic traffic in the city to different routes, traffic police officers have also been at the receiving end of rising air pollution. They are at maximum exposure to the different air pollutants that are harmful for human body not only due to their prolonged working hours, but also due to the climatic factors. Therefore, this makes them highly prone to develop numerous occupational hazards and ailments.

Hence, a study was conducted to know how well do the traffic police personnel are aware of such ailments as well as their awareness regarding preventive measures towards the same.

Materials and Methods

A cross sectional study was conducted in Bengaluru, Karnataka on 5th February 2020 taking traffic police personnel as our target population for this study. Date, Venue and time of the study was informed well in advance. A questionnaire was prepared keeping the purpose of study in mind which includes our attempt to know their knowledge about air pollution, its harmful effects and their awareness regarding prevention and protective measures. A sample size of 50 traffic police officers of age group 20 – 50 years were taken into this study and informed consent was sought from each of them.

Results

Among the 50 participants included in the study, while none belonged to age less than 19 years, 27 (54%) belonged to the age group 40-49 years, 16 (16%) fall under 30 – 39 years and only 7 (14%) police officers come under the age group of 20 – 29 years.

Table 1: Distribution of participants by age group

Age group	Frequency	Percentage
< 19	0	0
20-29	7	14
30 – 39	16	32
40 – 49	27	54
Total		

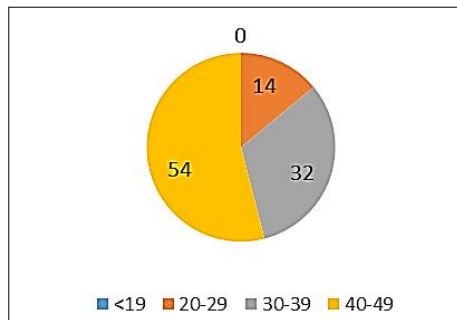


Fig 1: Distribution of participants by age group

When it comes to their knowledge and awareness about the different sources of air pollution, majority of the participants were aware about motor vehicles and their emissions causing air pollution which includes 44 (88%) participants. Their perception about industrial smoke and construction site pollution is also noteworthy which includes 32 (64%) and 38 (76%) personnel respectively. 14 (28%) among total participants were aware about the release of toxic gases and their effect on air pollution while only 1 (2%) among the whole group was unaware of any such sources of air pollution.

Table 2: Knowledge on source of air pollution

Sources	Frequency	Percentage (%)
Motor vehicles	44	88
Industrial smoke	32	64
Road construction	38	76
Toxic gases	14	28
Don't know	1	2

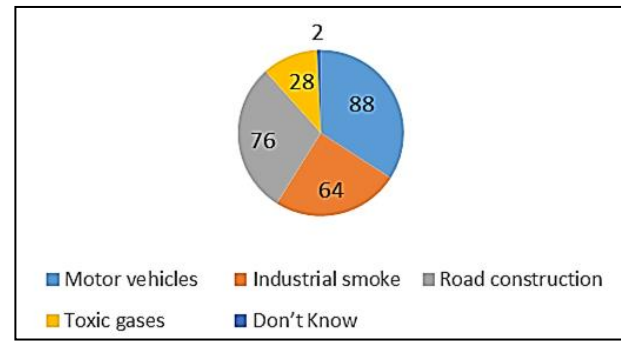


Fig 2: Knowledge on source of air pollution (by %)

Present study also explored their knowledge on the possible respiratory problems or ailments that they can end up with, as a consequence of air pollution. Maximum police officers were well aware of the risk of lung cancer which comprises 34 (68%) of the participants, followed by bronchial asthma and pneumonia which was also known to 32 (64%) and 23 (46%) traffic police officers respectively. Among the total group, 7 (14%) police officers did not know anything about the hazards that they are at risk to acquire.

Table 3: Knowledge on the type of respiratory problem caused by air pollution

Respiratory problem	Frequency	Percentage (%)
Pneumonia	23	46
Bronchial asthma	32	64
Lung Cancer	34	68
Don't know	7	14

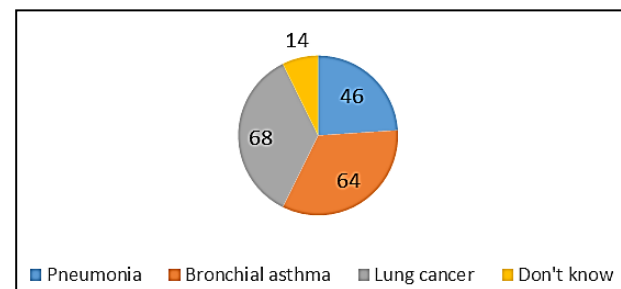


Fig 3: Knowledge on the type of respiratory problem caused by air pollution (by %)

Among them, 12 (24%) officers had common cold, 9 (18%) had cough and chest pain, 5 (10%) had throat allergy, none had tonsillitis and rest 23 (46%) did not have any ailments. The study also involved the enquiry into the use of protective measures by the traffic police officers. 33 (66%) officers use mask regularly, 3 (6%) use mask and gloves together, only 1 (2%) among them use mask, gloves as well as jacket. Mask, gloves, jacket, boots and goggles all together is also used only by 1 (2%) traffic police officer. Mask along with boots together is not used by any traffic police officer and 12 (24%) officers do not use any protective measures at all.

Table 4: Respiratory diseases among participants

Respiratory diseases	Frequency	Percentage (%)
Common cold	12	24
Throat Allergy	5	10
Cough and chest pain	9	18
Tonsillitis	0	0
None	23	46

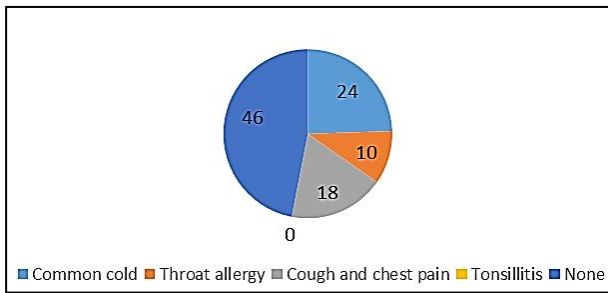


Fig 4: Respiratory diseases among participants (by %)

Table 5: Protective device used by participants

Type of protective device	Frequency	Percentage (%)
Mask, gloves, boots, jacket, goggles	1	2
Mask	33	66
Mask, gloves	3	6
Mask, gloves, jacket	1	2
Mask, boot	0	0
None	12	24

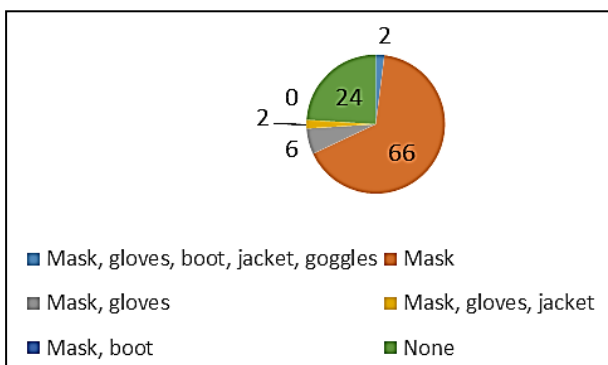


Fig 5: Protective device used by participants (by %)

This study also explored the preventive measures used by the traffic police officers. 38 officers wear mask during their work hours and 12 (24%) officers undergo regular health check-up. 10 (20%) among them refrain from smoking and 10 (20%) others do not undertake any kind of preventive measures

Table 6: Preventive measures followed by participants

Preventive measures	Frequency	Percentage (%)
Wearing mask during work	38	76
Avoid smoking	10	20
Regular health check up	12	24
None	10	20

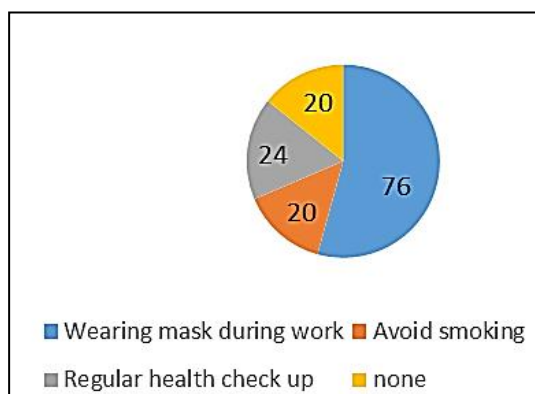


Fig 6: Preventive measures followed by participants (by %)

Discussion

In our present study, 24% police officers suffered from common cold while 18% suffered from cough and chest pain. A similar study on respiratory morbidities and pulmonary functions among traffic policemen in Bengaluru [5] was conducted in 2019 which revealed allergic rhinitis in 17.5% and 12.9% suffered from chest symptoms including cough, wheeze and chest tightness. Another study conducted in Kathmandu, that aimed to identify the knowledge and practice regarding prevention of respiratory problems among traffic police [4] showed results where 45.2% officers suffered from common cold and 12.9% suffered from cough and chest pain.

This study also reveals that traffic police personnel’s are well aware about the hazards that they are at risk for due to their occupation. 68% among them, knew about lung cancer as one of the major health ailment, 64% had awareness about bronchial asthma and 46% about pneumonia. Similar study conducted in Kathmandu revealed that 84.3% had knowledge about lung cancer, 78.3% about bronchial asthma, 71.1% about common cold and 43.4% about pneumonia.

Present study conducted shows 76% use mask during their work hours as a preventive measure, while 24% attend regular health check-up. Similar results were obtained in the studies conducted in Kathmandu which says 86.1% wear mask during work as a measure of protection and prevention while another study conducted in Puduchery [6] revealed that only 7% of traffic policemen were following some protective measure (mask or handkerchief over face to cover nose and mouth)

Conclusion

As understood, traffic police officials spend considerable hours per day on the roads and inevitably bear the brunt of the rising air pollution levels. Hence, they are at more risk of developing respiratory ailments at a higher frequency than anyone else taking into account the vehicular emissions, the hours of exposure to the same as well as non-usage of protective measures. Hence it is always advisable, to get regular health check-ups done, using good quality N95 masks and deviating to other forms of energy like electric vehicles rather than depending on fuels like petrol and diesel which on combustion emits particulate matter and harmful gases.

Conflicts of interest

There are no conflicts of interest.

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