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Original Article

Internal Medicine Section

A Cross-sectional Study to Assess Respiratory, Eye and Ear Health Problems among Traffic Police Personnel in Nashik City

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ABSTRACT

Introduction: Health of a person is largely affected by the environment in which they work, thus making occupation an important determinant of health. More than 80% of the global burden of occupational disease is borne by people in the developing countries. The health hazards get more severe when the duration of exposure increases and it is more important in situations among the personnel engaged in traffic duty.

Aim: To assess the prevalence and factors associated with respiratory, eye and ear morbidities among traffic police in Nashik city.

Materials and Methods: In this descriptive cross-sectional study, total 196 traffic police of Nashik city between 20-60 years age during February-April 2018 were included. Institutional ethics committee approval, informed consent from participants was taken. A semi-structured interview schedule, clinical examination and clinical tests were used to collect the data. Chi-square test was used for data analysis with the help of SPSS Inc. statistical software for Windows Version 18.0.

Results: Most (175; 89.3%) of the traffic police personnel were males and mean age of participants was 40.4 years. Prevalence of respiratory, eye and ear morbidity was 29.6%, 25.0% and 20.4% respectively. Restrictive lung disease (17.9%), was the most common respiratory morbidity. Refractive error (14.8%), was the most common eye morbidity while sensorineural hearing loss (Right ear: 21.6%; Left ear: 4.2%) was the most common ear morbidity. Old age (> 40 years), ≥10 years service duration and presence of co-morbidities (Diabetes, Hypertension etc.,) were significantly associated with respiratory and ear diseases. Eye disease was not associated with any factor studied.

Conclusion: The respiratory health problem was the most common morbidity in traffic police. Age (≥40 years) and long service duration were significantly associated with respiratory and ear diseases.

Keywords: Hearing loss, Refractive error, Restrictive lung disease, Traffic policemen

INTRODUCTION

Health is multi factorial and an individual's biological makeup influences health through interaction with social and physical environments as well as behaviour [1]. Health is not something that one possesses as a commodity, rather a way of functioning within one's environment (work, recreation, and living). Though several types of environment exists, it is the physical environment which plays an important bearing on health [2].

Health of a person is largely affected by the environment in which they work, thus making occupation an important determinant of health [3]. The physical factors in the working environment such as heat, cold, humidity, air movement, light, noise, vibrations, and ionising radiation have an impact on the health of the population. Occupational environment is the sum of external conditions and influences which prevail at work place. Occupational health is one of the environmental sciences, concerned broadly with the health effects of work and of working conditions [4].

The influence of work on health is shown by statistics on illnesses, injuries, and deaths associated with employment [5]. Occupational hazards cause early deaths to millions of people worldwide and also result in avoidable morbidity that adversely affect the quality of life. The World health report 2005 placed occupational risks as the tenth leading cause of morbidity and mortality [6]. More than 80% of the global burden of occupational disease as well as injury is borne by people in the developing countries [7].

The health hazards get more severe when the duration of exposure increases and it is more important in situations among the personnel engaged in traffic duty. They have to undergo physical strain in an environment polluted by fumes, exhaust of vehicles, use of blowing horns, blow of dust in the air by a speeding vehicle, etc. These personnel also pursue a near-sedentary type of work as they only stand at one place for long hours or just walk a few meters, only when necessity arises [2].

The traffic policemen in metropolitan cities posted at busy intersections are exposed to very high levels of pollution. The particulate matter can penetrate into the respiratory system causing lung tissue irritation and long term disorders [8]. Occupational lung diseases rates as one of the most common work related illnesses and therefore an issue of great priority in the industrialized countries and also increasing in the developing countries [9].

Gaseous pollutants which is formed as a result of reaction between hydrocarbons and organic compounds causes, eye, nose, and throat irritation and may increase the susceptibility to infectious and pulmonary diseases. As a result of this, a higher percentage of policemen suffer from lung disorders such as tuberculosis.

The prevalence of lung disorders among those exposed for more than eight years to busy traffic conditions was 2.7 times more than those exposed for a lesser period. The traffic policemen who were exposed were found to have more risk of impaired hearing due to noise pollution. Furthermore, the maximum allowable duration of noise exposure at these traffic crossings is two hours while the traffic cops have to put in a minimum of eight hours [5]. Exposure to (fine) particulate matter from traffic affects heart rate variability, thrombosis, and inflammation [10].

Traffic police as well as law and order police personnel are the worst sufferers because of the nature of their job [11], they are

continuously exposed to the toxic pollutants emitted from the automobiles. They have to work in the traffic for a minimum of eight hours per day doing traffic control as well as do patrolling duties 6-7 days a week. This is carried throughout the year which mainly predisposes them to severe respiratory morbidities like bronchitis, pneumonia, decreased lung function and even other health problems which include hearing impairment, eye related problems, etc., [12].

Hence, it was decided to include following definitions for the outcome of this research. The respiratory health problem was defined as a measure of the burden of all types of respiratory morbidity in the traffic policemen and included allergic sinusitis, asthma, chronic or acute bronchitis, emphysema, chronic airway obstruction or Chronic Obstructive Pulmonary Disease (COPD), and restrictive lung diseases. The eye health problem was defined as range of eye diseases which included both visually impairing and non-visual impairing conditions experienced by the traffic police while the ear health problem was defined as ear illnesses related to hearing mainly conductive and sensorineural hearing impairments.

The traffic policemen are toiling their health for the general public and are more exposed to occupational hazards. They work in an extremely bad working condition, standing for 8-12 hours in sun, rain, pollution and smoke of the vehicles. It is the responsibility of the health personnel to help them in turn to take care of their health, as many of these health problems are preventable. During the process of review of literature, it was observed that the number of studies [2,11-13] on assessing the health problems among traffic police in India is less. The researcher being a physician is hence motivated to assess the occupational health problems among traffic police to create awareness about health problems with its prevention.

The study will be helpful in identifying the common health problems among traffic policemen in Nashik city. Most of the health problems can be prevented if the vulnerable group are informed and motivated for its practice.

MATERIALS AND METHODS

A descriptive cross-sectional research design was used. The study was conducted on the traffic police of Nashik city, with the permission of Commissioner of Police. The study population consisted of traffic police personnel within the age group of 20-60 years. The study was undertaken during February to April 2018. Total 284 traffic police were posted in Nashik city during this period. It was decided to include all the traffic police in this study. Out of 284, 196 traffic policemen were included in present research after satisfying inclusion and exclusion criteria.

Operational Definitions

1. **Health problems:** In this research it was referred to respiratory, visual, auditory and other common problems experienced by the traffic policemen who were assessed by questionnaire, clinical examination and appropriate clinical tests.
2. **Traffic police:** It is defined as police personnel of either gender between age group of 20-60 years working in the Nashik city traffic zone.

Traffic police who were working within the 10 km radius of Nashik City, having continuous service since last one year and able to communicate in Marathi or Hindi were included in the present research. Traffic policemen who refused to give consent and presently working at the non-traffic zone (police head quarter constabulary, class-1 police officers, administrative officers, clerks) were excluded from this study.

Institutional ethics committee approval (Letter No: EC/Aca/2018-1/AB) and permission from the respective authority was taken prior the selection of participants for this study. Informed consent was also taken from the subjects after explaining the study. A face to face interview was conducted in OPD of one of the healthcare institute in Nashik City. A semi-structured pre-designed, pre-validated interview schedule was used. Interview schedule validation was done with 3-4 subject experts. A pilot study was conducted with 20 traffic policemen who were not included in sample size of this study. The data were obtained in three sections namely demographic data, questionnaire for assessment of signs and symptoms (acute or chronic cough, wheezing, breathlessness, chest tightness, haemoptysis, chest pain, nasal allergy, diminution of vision, redness and pain in eyes, pain and discharge from ear) of selected health problems and clinical tests such as Electrocardiogram, Pulmonary Function Test, Chest X-Ray, Audiometry, Refraction and Fundoscopy.

Clinical examination of participants consisted of general and systemic examination which included signs such as clubbing, cyanosis, barrel chest, ronchi (wheeze), rales (crepitations) visual acuity, fundus examination, Rinne and Weber tests.

With the help of a questionnaire, clinical examination and appropriate tests the respiratory, visual and auditory morbidities were assessed.

Chi-square test was used for data analysis according to the objectives with the help of statistical software SPSS 18.0 version and p-value <0.05 was considered as statistically significant.

No invasive procedures were administered as a part of the study.

RESULTS

Out of 284 traffic police personnel under six police stations (which were randomly selected out of total 13 in Nashik city area), 212 traffic police personnel were eligible during the study period. Out of 212, 196 traffic policemen participated for respiratory and eye examination while only 167 traffic policemen participated in ear examination. There were reasons like participants not able to give sufficient time for clinical examination of ears, non-availability of participant due to their duty work, prior ear check-up done elsewhere, etc. So, for ear diseases only 167 traffic police were included. Mean age of participant was 40.4±10.241 years, 101 (51.5%) were below or equal to the age of 40 years while 95 (48.5%) were above the age of 40 years. Most (175; 89.3%) of the traffic police personnel were males as compared to females (21; 10.7%).

Prevalence of respiratory disease was 58 (29.6%), while 49 (25.0%) traffic police were suffering from eye disease and 34 (20.4%) from ear disease [Table/Fig-1]. The distribution of these diseases showed that, restrictive lung disease (35; 17.9%), sleep disordered breathing (20; 10.2%) and obstructive lung disease (17; 8.7%) were common respiratory disorders among traffic police [Table/Fig-2]. Similarly, refractive error (29; 14.8%), allergic conjunctivitis (18; 9.2%) and cataract (14; 7.1%) were common eye disorders while sensorineural hearing loss (Right ear-36; 21.6% and Left ear-07; 4.2%) was the most common ear disorder among them [Table/Fig-3].

Sr. No.	Health Problem	Present (%)	Absent (%)	Total No. (%)
1	Respiratory morbidity	58 (29.6%)	138 (70.4%)	196 (100.0%)
2	Eye morbidity	49 (25.0%)	147 (75.0%)	196 (100.0%)
3	Ear morbidity	34 (20.4%)	133 (79.6%)	167 (100.0%)

[Table/Fig-1]: Prevalence of common health problem among traffic police personnel.

Other common symptoms found were snoring, red eyes, pain in eyes, cough and expectoration [Table/Fig-4]. Ninety seven (49.5%) traffic police were overweight (BMI 25-29.9) while 33 (16.8%) were obese (BMI≥30). Out of these 33 obese traffic police, 31 (93.9%) were belonging to male gender. A total of 115 (58.7%) traffic policemen had more than 10 years as duration of working in this department, while 46 (23.5%) had less than five years service duration and 35 (17.9%) had service duration of 5-10 years.

Sr. No.	Health problem	No. of Respondents	Percentage
A	**Respiratory morbidity**		
1	No respiratory disease	138	70.4
2	Restrictive lung disease	35	17.9
3	Sleep disordered breathing	20	10.2
4	Obstructive lung disease	17	8.7
5	Restrictive+Obstructive lung disease	06	3.1
6	Chronic sinusitis	04	2.0
7	Allergic sinusitis	02	1.0
B	**Eye morbidity**		
1	No eye disease	147	75.0
2	Refractive error	29	14.8
3	Allergic conjunctivitis	18	9.2
4	Cataract	14	7.1
5	Pterygium	06	3.1
6	Pinguecula	04	2.0
7	Presbyopia	04	2.0
8	Myopic astigmatism	03	1.5
9	Myopia	02	1.0
10	Amblyopia	01	0.5
11	Chronic dacryocystitis	01	0.5
12	Meibornitis	01	0.5
13	Pseudophakia	01	0.5
14	Re-concretion	01	0.5

[Table/Fig-2]: Distribution of respiratory and eye diseases among traffic police personnel (n=196).

Sr. No.	Ear morbidity	Right ear (%)	Left ear (%)
1	No ear disease	121 (72.5%)	154 (92.2%)
2	Sensorineural hearing loss	36 (21.6%)	07 (4.2%)
3	Conductive hearing loss	08 (4.8%)	03 (1.8%)
4	Mixed hearing loss	02 (1.2%)	03 (1.8%)

[Table/Fig-3]: Distribution of ear diseases among traffic police personnel (n=167).

Sr. No.	Health Problem	No. of Respondents having symptoms (%)
1	Cough	32 (16.3%)
2	Breathlessness	27 (13.8%)
3	Expectoration	28 (14.3%)
4	Haemoptysis	03 (1.5%)
5	Wheezing	07 (3.6%)
6	Diminished vision	51 (26%)
7	Redness in eyes	38 (19.4%)
8	Pain in eyes	37 (18.9%)
9	Snoring	134 (68.4%)
10	Apnoea	11 (5.6%)
11	Diabetes mellitus	14 (7.1%)
12	Hypertension	24 (12.2%)
13	Chest pain	17 (8.7%)
14	Ischemic heart disease	03 (1.5%)
15	Obesity	33 (16.8%)
16	Hypothyroidism	07 (3.6%)

[Table/Fig-4]: Distribution of other symptoms among traffic police personnel (n=196).

A total of 85 (43.4%) participants were having addiction of tobacco smoking/chewing and alcohol.

Study of different socio-demographic factors in traffic police personnel suffering from various diseases revealed that, old (>40 years) age, 10 years or more service duration and presence

Sr. No.	Factor		Respiratory Morbidity		χ^2	df	p-value
			Yes (%)	No (%)			
1	Age groups	20-40 years	21 (20.8%)	80 (79.2%)	7.75	1	0.005*
		>40 years	37 (38.9%)	58 (61.1%)			
2	Gender	Male	51 (29.1%)	124 (70.9%)	0.16	1	0.691
		Female	07 (33.3%)	14 (66.7%)			
3	Duration of work	<10 years	13 (16.0%)	68 (84.0%)	12.15	1	<0.001*
		≥10 years	45 (39.1%)	70 (60.9%)			
4	Addiction	Yes	28 (32.9%)	57 (67.1%)	0.81	1	0.369
		No	30 (27.0%)	81 (73.0%)			
5	Co-morbidity	Yes	15 (53.6%)	13 (46.4%)	9.02	1	0.003*
		No	43 (25.6%)	125 (74.4%)			

[Table/Fig-5]: Association of different factors with Respiratory morbidity among traffic police (n=196).
Chi-square test; *indicates that p-value is Significant

Sr. No.	Factor		Eye Morbidity		χ^2	df	p-value
			Yes	No			
1	Age groups	20-40 years	24 (23.8%)	77 (76.2%)	0.17	1	0.680
		>40 years	25 (26.3%)	70 (73.7%)			
2	Gender	Male	43 (24.6%)	132 (75.4%)	0.16	1	0.689
		Female	06 (28.6%)	15 (71.4%)			
3	Duration of work	<10 years	19 (23.5%)	62 (76.5%)	0.18	1	0.675
		≥10 years	30 (26.1%)	85 (73.9%)			
4	Addiction	Yes	25 (29.4%)	60 (70.6%)	1.56	1	0.212
		No	24 (21.6%)	87 (78.4%)			
5	Co-morbidity	Yes	10 (35.7%)	18 (64.3%)	2.00	1	0.157
		No	39 (23.2%)	129 (76.8%)			

[Table/Fig-6]: Association of different factors with eye morbidity among traffic police (n=196).
Chi-square test; *indicates that p-value is Significant

Sr. No.	Factor		Ear Morbidity		χ^2	df	p-value
			Yes	No			
1	Age groups	20-40 years	04 (4.7%)	81 (95.3%)	26.16	1	< 0.001*
		>40 years	30 (36.6%)	52 (63.4%)			
2	Gender	Male	33 (22.3%)	115 (77.7%)	3.01	1	0.083
		Female	01 (5.3%)	18 (94.7%)			
3	Duration of work	<10 years	10 (12.7%)	69 (87.3%)	5.48	1	0.019*
		≥10 Years	24 (27.3%)	64 (72.7%)			
4	Addiction	Yes	22 (24.4%)	68 (75.6%)	2.01	1	0.156
		No	12 (15.6%)	65 (84.4%)			
5	Co-morbidity	Yes	31 (21.5%)	113 (78.5%)	0.88	1	0.348
		No	03 (13.0%)	20 (87.0%)			

[Table/Fig-7]: Association of different factors with Ear morbidity among traffic police (n=167).
Chi-square test; *indicates that p-value is Significant

of co-morbidities (Diabetes, Hypertension etc.) were significantly associated with respiratory diseases [Table/Fig-5]. There was no factor significantly associated with eye diseases [Table/Fig-6]. Ear diseases were associated with factors like old age (>40 years) and 10 years or more service duration [Table/Fig-7].

DISCUSSION

Present study was done among 196 traffic police personnel in Nashik city, to assess the prevalence of respiratory, eye and ear morbidities as well as the factors associated with them.

The prevalence of respiratory morbidity was 29.6% among traffic policemen. This overall respiratory morbidity among the study population was in line with previous studies done by Phani Kumar B et al., and DeToni A et al., who found that respiratory symptoms

were seen in 31% and 28% traffic policemen respectively [13,14], while prevalence was higher as compared to Patil PJ et al., who found that 19% traffic police experienced respiratory symptoms, 18% prevalence of respiratory disorders among traffic police in Kochi city [15,16], 16.66% prevalence of respiratory disorders in study by Satapathy DM et al., [2], and study done in Jalgaon city reported 40% of traffic police had frequent cough [12], 10% had shortness of breath and 29% suffered from irritation in respiratory tract while study done at Bangkok reported the prevalence of cough and phlegm was 18.6% [17]. This difference could be due to the long duration of exposure (≥10 years), more number of working hours (≥10-12 hours) and less use of personal protective equipments (face mask) in the present study. Many studies have examined the prevalence of chronic respiratory morbidities in India among industrial workers [18-21]. The prevalence of chronic respiratory morbidity have been high ranging from 12% to 42%. The morbidity found among traffic personnel in present study seems to be as high as found in some of the studies done among industrial workers in India [19-21]. This highlights the burden of respiratory morbidity among traffic policemen in the current study that warrants attention.

This study found that respiratory morbidity was comparable with respect to gender. This was in line with the Makarani MA et al., [22] finding who found that there was no association in age, sex and reduction in peak expiratory flow rate (respiratory problem) while study done in Kochi city [16] reported that, chronic respiratory morbidity among women traffic personnel was found to be three times as higher when compared to males. In the present research less number of female traffic police participants could be the reason for low morbidity in them.

It was also found that, respiratory morbidity was significantly associated with the long duration of service (≥ 10 years) by traffic police personnel. This finding was in line with Gupta S et al., study which reported a long-term exposure to air pollution was the reason for higher incidence of respiratory symptoms and impairment of pulmonary function in traffic police [23], findings were also in line with Makarani MA et al., who reported that there was association in duration of exposure (> 60 months) and reduction in peak expiratory flow rate (respiratory problem) in traffic Policemen [22], as well as the study done in Kochi city [16] showed that the police personnel who worked in the city for more than six years had 2.98 times higher odds of having chronic respiratory morbidity when compared to those who worked in the city for less than or equal to six years.

The prevalence of eye morbidity found was 25.0% and that of ear morbidity was 20.4%. The hearing loss observed in 34 (20.4%) subjects of this study was in accordance with study conducted earlier by Sharma M et al., who examined the traffic police and observed a high prevalence of 22% noise induced hearing loss [24] while study done by Win KN et al., observed a prevalence of 34.2% and 24% by Sharif A et al., [25,26]. Our study was not in agreement with the study conducted by Thomas N et al., who found that 80% were positive for noise induced hearing loss [27]. The low prevalence may be due to less awareness, attitude towards ear examination among traffic police, different ethnicity and noise exposure level for traffic police personnel in our study.

In our study, it was also found that, hearing loss was significantly associated with the long duration of exposure (≥ 10 years service) by traffic police and this was in line with Sharma M et al., and Sharif A et al., [24,26].

The findings of other morbidities showed that obesity was prevalent in 16.8%, hypertension in 12.2%, diabetes in 7.1%, and snoring in 68.4%. The prevalence of other self morbidities was reported as hypertension 21%, and diabetes 14% in studies done in Kochi city [16]. Obesity (8.5%), hypertension (25%), diabetes mellitus (6.25%) in study done by Satapathy DM et al., and other studies in India [2,28] conducted among traffic police where the prevalence of hypertension ranged from 17.9%-25%. This stressed the need to give attention to the risk of specific occupational morbidity that the traffic police personnel were vulnerable to due to the nature of their occupation.

LIMITATION

The study was limited to traffic police personnel in the selected traffic zone and the responses given by participants were relied upon.

CONCLUSION

The respiratory health problem was the most common (29.6%) morbidity in traffic police personnel followed by eye (25.0%) and ear (20.4%) health problems. Other symptoms found were snoring (68.4%), red eyes, pain in eyes, cough and expectoration. Restrictive lung disease, refractive error and sensorineural deafness were the most common morbidity in respiratory, eye and ear health problems respectively. Old (> 40 years) age, 10 years or more service duration and presence of co-morbidities (Diabetes, Hypertension etc.,) were significantly associated with respiratory and ear diseases. There was no factor significantly associated with eye diseases.

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REFERENCES

[1] Stanhope Marcia, Lancaster Jeanetta. Community and public health nursing. 6th ed. Missouri, USA: Mosby Publications; 2000. Pp. 249-50.
[2] Satapathy DM, Behera TR, Tripathy RM. Health status of traffic police personnel in Brahmapur city. Indian J Community Med. 2009;34(1):71-72.
[3] Nelson DI, Concha-Barrientos M, Driscoll T, Steenland K, Fingerhut M, Punnett L, et al. The global burden of selected occupational diseases and injury risks: Methodology and summary. Am J Ind Med. 2005;48:400-18.
[4] Park K. Text book of Preventive and Social Medicine. 18th ed. Jabalpur: M/s Banarsidas Bhanot Publishers; 2005. Pp. 13, 606.
[5] Gupta C, Mahajan BK. Textbook of Preventive and Social Medicine. 3rd ed. New Delhi: Jaypee publications; 2005. Pp. 75.
[6] World Health Organization. Regional strategy on occupational health and safety in SEAR countries. Regional office for South-East Asia New Delhi, 2005. Available from: http://apps.searo.who.int/pds_docs/B0053.pdf; accessed 9th July 2018.
[7] Disease control priorities project. Developing countries can reduce occupational hazards. October 2007. Available from: http://pria-academy.org/pdf/OHS/DCPP-OccupationalHealth.pdf; accessed 9th July 2018.
[8] Lewis Sharon L, Heitkemper Margaret Mclean, Dirken Shannon Ruff, O'Brien Patricia Graber, Bucher Linda. Medical Surgical Nursing assessment and management of clinical problems. 7th ed. Missouri, USA: Mosby, an imprint of Elsevier publications; 2007. Pp. 631.
[9] Jeebhay MF, Quirce S. Occupational asthma in the developing and industrialized world: a review. Int J Tuberc Lung Dis. 2007;11(2):122-33.
[10] Riediker M. Cardiovascular effect of particulate matter components in highway patrol officers. Inhal Toxicol. 2007;19:99-105.
[11] Sreedevi V, Rao VD, Gopal HVV, Prasad SV, Devi S, Jyothi A, et al. Cytogenetic evaluation of traffic policemen occupationally exposed to vehicular exhaust. Indian J Med Res. 2009;130:520-25.
[12] Ingle ST, Pachpande BG, Wagh ND, Patel VS, Attarde SB. Exposure to vehicular pollution and respiratory impairment of traffic policemen in Jalgaon City, India. Ind Health. 2005;43(4):656-62.
[13] Phani Kumar B, Ramesh K, Yugandhar, Bhanurekha. Spirometric evaluation of traffic police constables in Vijayawada-exposed to automobile pollution. Scholars Journal of Applied Medical Sciences. 2016;4(12A):4180-81.
[14] DeToni A, Larese Filon F, Finotto L. Respiratory diseases in a group of traffic police officers: results of a 5-year follow-up. G Ital Med Lav Ergon. 2005;27(3):380-82.
[15] Patil PJ, Thakare GV, Patil SP. Comparative study of lung function test of policemen in traffic control with those in general duty. Natl J Physiol Pharm Pharmacol. 2013;3:162-66.
[16] Elsa Mary. Assessment of Respiratory Morbidities among Police Personnel in Kochi city, Ernakulam. MPH [dissertation]. Trivandrum: Sree Chitra Tirunal Institute for Medical Sciences & Technology; Oct-2013. Available from: http://dspace.sctimst.ac.in/jspui/handle/123456789/2264; accessed 9th July 2018.
[17] Wongsurakiat P, Maranetra KN, Nana A, Naruman C, Aksornint M, Chalermsanyakorn T. Respiratory symptoms and pulmonary function of traffic policemen in Thonburi. J Med Assoc Thai. 1999;82(5):435-43.

[18] Singh MB, Fotedar R, Lakshminarayana J. Occupational morbidities and their association with nutrition and environmental factors among textile workers of desert areas of Rajasthan, India. J Occup Health. 2005;47(5):371-77.
[19] Ajeet S, Aniruddha D, Meenal K, Jaydeep N, Abhay M. To study the prevalence of chronic respiratory morbidities and related epidemiological factors among spinning mill workers. Global Journal of Health Science. 2010;2:111-16.
[20] Prakash S, Manjunatha S, Shashikala C. Morbidity patterns among rice mill workers: A cross sectional study. Indian J Occup Environ Med. 2010;14(3):91-93.
[21] Kesavachandran C, Rastogi SK, Mathur N, Bihari V, Singh A. A study of the prevalence of respiratory morbidity and ventilatory obstruction in beauty parlour workers. Indian J Occup Environ Med. 2006;10:28-31.
[22] Makarani MA, Bhardwaj G, Singh J, Narwal A. An exploratory study to assess the effect of air pollution on respiratory status among traffic police personnel in selected areas of Pune city. Inte J Nursg Sci Practice. 2016;1(1):9-15.
[23] Gupta S, Mittal S, Kumar A, Singh KD. Respiratory effects of air pollutants among non-smoking traffic policemen of Patiala, India. Lung India. 2011;28:253-57.
[24] Sharma M, Dhar U, Kapoor M. A Study of effect of noise exposure on the hearing level of traffic personnel. Int J Oral Health Med Res. 2015;2(1):19-22.
[25] Win KN, Balalla NBP, Lwin MZ, Lai A. Noise-induced hearing loss in the police force. Safety and Health at Work. 2015;6(2):134-38.
[26] Sharif A, Taous A, Siddique BH, Dutta PG. Prevalence of noise induced hearing loss among traffic policemen in Dhaka Metropolitan City. Mymensingh Med J. 2009;18(1):24-28.
[27] Thomas N, Mariah AN, Fuad A, Kuljit S and Philip R. Noise exposure and noise induced hearing loss among Kuala Lumpur traffic point duty personnel. Med J Malaysia. 2007;62(2):152-55.
[28] Johns F, Kumar A, Alexander AV. Occupational hazards vs morbidity profile among police force in Kerala. Kerala Medical Journal. 2012;5(3):63–66.

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