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ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICES OF TRAFFIC POLICEMEN REGARDING THE AUDITORY EFFECTS OF NOISE

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Abstract : The objectives of the present study were to (i) estimate noise levels at major traffic junctions in Bengaluru City, and (ii) assess the knowledge, attitude and practices of traffic policemen deputed at those junctions towards the auditory effects caused by noise pollution. The present questionnaire based study was carried among 60 traffic policemen. Road traffic noise was measured at different places in Bengaluru city using Sound level meter and it ranged from 71.2 to 91 dB. The questionnaire included the questions regarding the self assessment of the policemen about their hearing ability, past and present exposure to loud sound and the use of personal protective devices such as ear plugs and ear muffs. The questionnaire was filled by the subjects and the data was analyzed. The mean age was 42.2±7.4 years and the mean year of exposure was 10.82±8.53 yrs. Only 3.33% of the subjects felt that their hearing ability was below average. Thirteen subjects reported that they usually missed some conversation over phone while 25% reported similar condition while talking to someone in crowd. 16.66% had work related tinnitus (> once a day) and experienced it more during working hours. None of them used ear plugs/ ear muffs and the reason for non-usage was nonavailability (100%). The self assessment of hearing by traffic policemen suggests that most of the traffic policemen have normal hearing. However, a systematic study with Audiometry of these subjects is recommended.

Key words : bengaluru noise levels traffic policemen

INTRODUCTION

Noise has been a bane and seems to have altered the ecological balance. Noise pollution in mega cities is considered to be one of the most important and pressing problems. A major contribution to the noise is vehicular noise (1). The IT capital of India, Bengaluru in 21st century has seen an unprecedented increase in the vehicular noise caused by exponential increase in the number of vehicles. The traffic policemen

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engaged in controlling traffic noise, particularly at heavy traffic junctions, belong to the high risk group to be affected by health hazards of noise and air pollution. Most of the traffic policemen use a mask to prevent the ill effects of air pollution. However, a majority of them remain unaware about the health effects of noise on their hearing ability as this is an insidious process and takes long time to become overt (2, 3, 4, 5, 6). Noise louder than 80 dB (decibels) is considered to be potentially hazardous and continued exposure to >85 dB of noise may cause gradual but permanent damage to hearing. Health effects of noise include both the auditory as well as non auditory effects. Many studies have been carried out to study these effects in different categories of population exposed to high intensity and frequencies of sound in their workplaces (7, 8, 9, 10). There are only minimal studies carried out regarding the estimation of noise levels and auditory effects of noise generated by automobiles among traffic policemen particularly in India. This may be one of the reasons for not providing hearing protection devices to this group of work force. However, the need should be felt by the traffic policemen themselves and this can happen only when they have adequate knowledge about the associated health hazards. With this background, the present study has been carried out to estimate noise levels at major traffic junctions in Bengaluru and to assess the knowledge, attitude and practices of traffic policemen deputed at those junctions towards the auditory effects caused by noise pollution so that some preventive modalities for hearing conservation in the form of safety equipments and duty scheduling for exposure limitation can be suggested.

METHODS

Noise level measurements were taken using Sound level meter at various points in Bengaluru. The Sound level meter is the instrument that displays the amplitude level of sound as its being recorded. In this study, sound level meter of 2231 type with the Front Plate BZ 7110 and software Module "M-11" was used.

The amount of Peak, SPL (sound pressure level), SEL (sound exposure level), Leq (Equivalent continuous sound pressure level) and Max Peak were measured. All the measurements were done in the peak of the traffic. A survey of exposure times, experience of adverse effects, attitudes towards noise levels and hearing protection, use of hearing protection devices and knowledge of noise induced hearing loss were undertaken. Present questionnaire based study was carried out among 60 traffic policemen deputed at the junctions where noise levels were measured. Informed consent was taken. Ethical clearance was obtained. The questionnaire (2) was filled by the subjects and it included the questions regarding the self assessment of the policemen about their hearing ability, past and present exposure to loud sound and the use of personal protective devices such as earplugs and earmuffs. The results thus obtained were tabulated and analyzed.

RESULTS

Table I shows the average of road traffic

TABLE I

Sound pressure level (dB)	*Sound exposure level (dB)*	*Peak (dB)*	*Leq (dB)*	*Maximum peak (dB)*
80.86±6.33	106.1±3.26	92.87±5.85	82.31±3.76	111.91±5.39

Data presented are mean±SD.

noise levels (Sound pressure, sound exposure, peak, Leq & maximum peak) measured at various busy traffic junctions in Bengaluru.

Table II shows the distribution of study subjects The mean age was found to be 41.76+9.70 years. The mean duration of exposure to noise was 10.82+8.53 years. Almost all the subjects had 5-8 yrs of schooling, with majority of the subjects having middle and secondary level of educational qualification.

TABLE II: Distribution of study subjects.

Characteristics	*Number*	*Percentage*
Age (in years)		
<35	14	23.3
35-45	17	28.3
>45	30	50
Duration of exposure (in yrs since joined)		
<5	23	38.3
>5	36	60
Education		
Middle and secondary	22	36.6
Higher secondary	22	36.6
Graduate and above	16	26.6

Table III describes the self assessment of hearing ability by the traffic policemen.

Table IV depicts the distribution of the study subjects according to the usage of earplugs/ earmuffs.

TABLE III: Distribution of study subjects according to assessment of hearing status.

Characteristics	*Number*	*Percentage*
Quality of hearing		
Excellent	4	6.66
Above average	45	75
Average	9	15
Below average	2	3.33
Hearing over phone		
Without difficulty	47	78.33
Do miss some conversation	13	21.66
Hearing in crowd		
Without difficulty	45	75
Do miss some conversation	15	25
Sound of TV/radio		
Usually louder	7	11.66
Usually same loudness	53	88.33
Do people often indicate that you are talking too loudly?		
Yes	6	10
No	54	90
Do people often indicate that you talk too loudly?		
Yes	4	6.66
No	56	93.33
Tinnitus		
More than once a day-work related/recreational	11 work related	16.66

TABLE IV: Distribution of study subjects according to the use of earplugs/earmuffs.

Characteristics	*Number*	*Percentage*
Ever used earplugs or earmuffs		
No	60	100
Reason for non-usage		
Not available	60	100
Other personal protective equipments		
Hands	1	0.16
Cotton	4	6.66
Don't use anything	55	91.66
Do these PPEs effective if used?		
Yes	60	100

DISCUSSION

The minimum standard noise for noise pollution in the environment is 55 dB (1) but most of the traffic junctions in this study measured >75 dB of sound pressure level for which traffic policemen were exposed for >8 hrs per day. In the present study, 3.33% of subjects felt that their hearing ability was below average. A similar study among traffic cops in Gujarat showed that 2.3% of the subjects felt that their hearing ability was below average (2). Study conducted on Moscow traffic policemen showed that the working conditions correlate with hearing loss, so hearing loss in these traffic policemen working on roads is occupational and requires adequate prophylactic and therapeutic management (11). 81.2% traffic branch personnel of Pune traffic police showed sensorineural hearing loss (12). The main cause of stress as perceived by the traffic constables of Kolkata was excessive number of vehicles ie., 50% (13). 24% of Dhaka traffic police personnel showed mild to moderate sensorineural hearing loss due to noise exposure which is related with 6-10 years of duration of exposure (14). Study conducted on Cairo traffic policemen showed that the mean hearing threshold was significantly higher in traffic policemen exposed than that of the controls (15). One more study in Maharashtra showed that 84% of the sample reported hearing loss and defined at least some difficulty in hearing by one/both the ears (16). The self assessed prevalence of reduced hearing was found only in two (3.33%) subjects. Exact figures can be calculated by doing audiometry of these subjects. Thus on the basis of the findings of this study, it is recommended that the periodic medical examination should be done for the traffic policemen and it should include audiometry to assess the auditory effects of exposure to noise.

The study also revealed that most of the traffic police did not use any personal protective equipment (PPEs) like earplugs/armuffs and the non-availability of these PPEs (100%) is the common reason for it. Most of the study subjects are in the economically productive age groups and if they suffer from hearing disability at this age, they would have to live with that disability throughout their life and if effective measures are taken at this stage, health hazards could well be prevented. Thus it is suggested that not only should these PPEs be made available, but also periodic workshops should be carried out to motivate the subjects for their correct and regular usage. The effectiveness of the PPEs over other methods to reduce noise exposure should also be demonstrated (17).

With this background, some preventive modalities for hearing conservation in the form of safety equipment and duty scheduling for exposure limitation can be suggested.

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REFERENCES

1. Skanberg A, Obrstrom E. Adverse health effects in relation to urban residential sound scapes. *Journal of Sound and Vibration* 2002; 250: 151–155.
2. Somnath Tripati R, Rajnarayan Tiwari R. Self reported hearing of traffic policemen. *Indian J Occupal Environ* 2006; 10: 82–84.
3. Wongsurakiat P, Maranetra KN, Nana A, Aksornint M, Chalermasnyakom T. Respiratory symptoms and pulmonary function of traffic policemen in Thonbur. *J Med Assoc Thai* 1999; 82: 435–443.
4. Tamura K, Jinsart W, Yano E, Karita K, Boudoung D. Particulate air pollution and chronic respiratory symptoms among traffic policemen in Bangkok. *Arch Environ Health* 2003; 58: 201–207.
5. 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: 380–382.
6. Karita K, Yano E, Jinsart W, Boudoung D, Tamura K. Respiratory symptoms and pulmonary function among traffic police in Bangkok, Thailand. *Arch Environ Health* 2001; 56: 467–470.
7. Bluhm G, Nordling E, Berglind N. Road traffic noise and annoyance- An increasing environmental health problem. *Noise Health* 2004; 6: 43–49.
8. Mejjer H, Knipschild P, Salle H. Road traffic noise annoyance in Amsterdam. *Int Arch Occup Environ Health* 1985; 56: 285–297.
9. Ouis D. Annoyance caused by exposure to road traffic noise: An Update. Noise Health 2002; 4: 69–79.
10. Ohrstrom E. Longitudinal surveys on effects of changes in road traffic noise annoyance, activity disturbances and psychological well being. *J Acoust Soc Am* 2004; 115: 719–729.
11. Sokolova OI, Kriukov, Pankova VB. Conditions of work and hearing in traffic policemen in Moscow. *Vestn Otolaringol* 2006; 31–33.
12. Singh VK, Mehta AK. Prevalence of occupational noise induced hearing loss amongst traffic police personnel. *Indian Journal of Otolaryngology and Head & Neck Surgery* 2008; 51: 23–26.
13. Sibnath deb, Tanusree, Pooja Chatterjee, Neerajakshi Srivastava. Job related stress, causal factors and coping strategies of traffic constables. *J Indian Acad Appl Psychol* 2008; 34: 19–28.
14. Sharif A, Taour A, Siddique BH, Dutta PG. Prevalence of noise induced hearing loss among traffic police in Dhaka Metropolitan City. *Indian Journal of Otolaryngology and Head & Neck Surgery* 2003; 5: 43–46.
15. Abdel Aziz Kamal M, Samia Eldamati E, Ricky Paris. Hearing threshold of Cairo traffic policemen. *International Archives of Occupational And Environmental Health* 2004; 62: 543–545.
16. Ingle ST, Pachpande BG, Wagh ND, Attarde SB. Noise exposure on hearing loss among traffic policemen working at busy streets of Jalgoan urban center. Transportation Research. Part D, Transport and Environment 2005; 10: 69–75.
17. Lusk SL. Noise exposures. Effects on hearing on hearing and prevention of noise induced hearing loss. *AAOHN J* 1997; 45: 395–408.