

Self Assessment of Hearing Quality and Noise-related Attitudes among Traffic Policemen of Patiala, India

Sharat Gupta, Shallu Mittal¹, Avnish Kumar¹, Kamal Dev Singh¹

Department of Physiology, Gian Sagar Medical College, Ramnagar, Patiala, Punjab, India,

¹Department of Physiology, Government Medical College, Patiala, Punjab, India

Correspondence to:

Dr. Sharat Gupta,
House no. 849, S.S.T. Nagar, Rajpura Road, Patiala - 147 001, Punjab, India.
E-mail: sharatgupta29@yahoo.co.in

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ABSTRACT

The study was conducted on a group of 90 traffic policemen aged 20-50 years and working in and around Patiala district to assess their knowledge, attitude, and practices toward the ill effects caused by traffic noise on health. The subjects were required to fill up a questionnaire regarding their self-assessment of hearing ability, noise-related attitudes, and the use of personal protective equipment such as earplugs. The mean age of subjects was 39.8 ± 5.80 years, while the mean duration of exposure to traffic noise was 10.56 ± 6.43 years. Only 5.5% subjects felt that their hearing was below average. As many as 61% subjects had work-related tinnitus. It was observed that none of them had ever used ear plugs, mainly due to their non availability. The self-assessment of hearing by traffic policemen indicated that most of them had normal hearing. However, to find out the exact number of cases with hearing impairment, further evaluation with audiometry is recommended in them.

Keywords: Noise-induced hearing loss, noise pollution, occupational hearing loss, traffic policemen

INTRODUCTION

The rapid expansion of many Indian cities has led to a subsequent rise in the ownership and the use of motor vehicles, thereby increasing the level of noise pollution.^[1] The nuisance of traffic noise is especially aggravated by the lack of strict legislation regarding the usage of horns as well as the indiscriminate blowing of horns by drivers.^[2] The police personnel who are engaged in controlling the vehicular movement at heavy traffic junctions are continuously exposed to the high level of noise from these vehicles, due to the nature of their job.^[3] In 2010, a survey on the effects of noise pollution in traffic policemen in Hyderabad city, conducted by the Society to Aid the Hearing Impaired (SAHI), revealed that 76% had noise-induced hearing loss (NIHL).^[4]

The ill effects of noise on human health include both auditory and non-auditory effects such as fatigue, depression, inability to concentrate, and impulsive behavior.^[5,6] Many studies investigated these ill effects of noise in different categories of occupationally exposed persons.^[7-9] However, there are only few studies that

have been done regarding the estimation of noise levels and auditory effects of noise generated by automobiles among Indian traffic policemen. It has also been observed that a majority of these policemen remain unaware about the health effects of noise on their hearing ability.^[10,11] The present study was thus conducted to assess the knowledge, perceptions, and practices of traffic policemen of Patiala district toward the auditory effects caused by noise pollution so as to appraise them regarding certain remedial measures pertaining to hearing conservation and noise exposure limitation.

The minimum standard for noise pollution in the environment is 55 dB.^[12] In India, occupational permissible limit for 8-h time-weighted average is 90 dB.^[13] However, at various traffic points in Patiala, the Leq value (i.e., continuous daily equivalent sound pressure level) was found to range from 75 to 80 dB, while the Lmax (i.e., maximum sound pressure level) was found to range from 91.2 to 103 dB.^[14] Most of our study subjects work for around 9 h every day at these heavy traffic junctions and are thus exposed to high levels of noise for a prolonged period of time.

METHODS

The present study was carried out on non-smoking male traffic policemen aged 20-50 years during a general health check-up camp organized at Government Dispensary, Police Lines, Patiala, Punjab. The study protocol was approved by the institutional ethical committee. Informed consent was taken from all the participants. Out of the initial 112 participants who volunteered for the study, 22 were subsequently excluded due to the presence of either a positive past/family history of ear disease, intake of known ototoxic medications (e.g., aminoglycosides), recent ear surgery/trauma, chronic alcoholism, tobacco chewing, and exposure to loud noise other than traffic-related noise. The remaining 90 policemen were finally selected for the study.

The subjects were asked to fill up a questionnaire that included multiple choice questions relating to the knowledge, perceptions, and practices of the traffic policemen regarding noise. It was designed to have a total duration of 20 min and the questions asked were in accordance with ISO/TS 15666;2003, an international standard.^[15] The questionnaire

was translated in local language and was filled up by the subjects under close supervision so as to avoid the influence of one's result by the other. For maintenance of reliability, anonymity and confidentiality, the subjects were asked not to write their names. The data was analyzed using Statistical Package for Social Sciences (SPSS Inc., Chicago, US) version 13.0 and included calculation of percentages and proportions of the study subjects, in context to a particular response, out of a total of 90 participants.

RESULTS

The mean age of subjects was 39.8 ± 5.80 years, while the mean duration of exposure to traffic noise was 10.56 ± 6.43 years. All the subjects had a minimum of 5 years of schooling, with a majority of them being graduates. It was seen that most of the subjects (64.4%) had been serving as traffic constables for >8 years.

Table 1 depicts the details on the self assessment of hearing by traffic policemen; it was found that even though a majority of subjects rated their hearing as excellent, the supplementary questions that probed their hearing ability, revealed a different picture. A relatively more number of subjects reported having difficulties in conversation with others over the phone or in crowded places, due to which they had to ask the other person to talk a bit loudly, or they were themselves pointed out as talking loudly by others. Also, a majority of our subjects reported having tinnitus during duty hours.

Table 2 depicts the distribution of study subjects according to their perceptions on noise pollution and their attitudes toward the usage of personal protective equipment. It was observed that a majority of our subjects were oblivious to the harmful effects of noise and did not consider it as an occupational hazard. The workplace environment was perceived to be extremely noisy by most of them. It was observed that none of our subjects had ever used an ear plug or ear muff, for which the main reason cited was its unavailability. A majority of them did not use any method to protect themselves against noise, while a few of the policemen used either hand, fingers, or cotton plugs. However, these methods were not found to be satisfactory by those who were using them.

Table 1: Distribution of subjects as per their self assessment of hearing status

Characteristics	Number	Percentage
Quality of hearing		
Excellent	58	64.4
Above average	18	20
Average	9	1
Below average	5	5.5
Hearing over phone		
Without any difficulty	75	83.3
Do miss out some part of conversation	15	16.7
Miss a lot of what is said	Nil	-
Hearing in crowd		
Without difficulty	55	61.1
Miss out some part of conversation	33	36.7
Miss a lot of what is said	2	2.2
At what sound level do you hear the TV/radio		
Usually louder than others	25	27.8
Usually at same loudness as others	65	72.2
Do people often indicate that you talk loudly?		
Yes	30	33.3
No	60	66.7
Do you ask other people to talk loudly to you?		
Yes	32	35.5
No	58	64.5
Tinnitus/ear fullness		
Almost all the time	3	3.3
More than once a day	10	11.1
Work related	55	61.1
Not having any ear symptoms	22	24.4

DISCUSSION

In the present study, even though only 5.5% of the policemen rated their hearing ability as below average, a larger percentage of subjects reported having trouble during normal (40%) and telephonic conversation (16.7%). As many as 61% persons reported having work related tinnitus/ear fullness. All these symptoms usually occur in the early stages of NIHL.^[16]

The results of the present study are quite similar to those obtained in Gujarati traffic policemen by Tripathi and Tiwari.^[17] They observed that 2.3%

Table 2: Distribution of subjects as per their perceptions regarding noise pollution and their attitude toward the use of personal protective equipment

Perceptions	Number	Percentage
Do you know that noise affects human health?		
Yes	32	35.6
No	58	64.4
Do you consider noise as an occupational hazard?		
Yes	37	41.1
No	53	58.9
How would you describe your present work environment?		
Quiet	Nil	-
Tolerable	4	4.4
Noisy	10	11.1
Extremely noisy	76	84.4
Have you ever used ear muffs/ear plugs?		
Yes	Nil	-
No	90	100
Regularity of usage		
Always during duty hours	Nil	-
Occasionally	Nil	-
Never	90	100
Reasons for non usage		
Unavailable	90	100
Uncomfortable	Nil	-
Personal dislike	Nil	-
Causes headache	Nil	-
Ill fitting	Nil	-
Other measures adopted		
Hands/fingers	9	1
Cotton plugs	3	3.3
None	78	86.7
How effective are these alternative methods?		
Very good	Nil	-
Satisfactory	3	3.3
Unsatisfactory	9	1
If provided with ear plugs/ear muffs, are you willing to use them regularly during duty hours?		
Yes	90	100
No	Nil	-

subjects rated their hearing ability as below average and 62.8% had work-related tinnitus. However, it was also seen that only a few of them (4.7%) were using ear plugs and that too occasionally. Our

results are also in agreement with those obtained by Venkatappa *et al.*,^[18] in traffic policemen of Karnataka. Their study revealed that only 3.3% subjects felt that their hearing was below average and 16.66% complained of work-related tinnitus, and none of them had ever used any hearing protection devices. Our results also confirm those obtained by Majumder *et al.*,^[19] from traffic constables in Kathmandu, Nepal; 11.8% of their subjects gave a below average rating to their hearing ability. Also, a substantial number of the subjects (92.7%) admitted not having used any kind of hearing protection device.

A common observation between the present study and all of the above studies was that although the self-assessed prevalence of hearing loss was found in a lower percentage of subjects, a closer scrutiny of the supplementary questions to assess the hearing status suggested that the number of subjects with hearing disability was much higher. Another common revelation by all the studies, including the present study, was that non availability of ear plugs/ear muffs was the major reason cited by the traffic constables for not using these devices.

The slight variations in the results of present study and the previous ones may be due to the differences in the sample size of the studies. It is further suggested that, to find out the exact number of traffic policemen with hearing impairment, their further evaluation with audiometry needs to be done. The use of self-assessment questionnaire to assess the hearing impairment is a limitation of the present study, as the results are based entirely on the respondents' probity and how they perceived their attitudes toward the variables used in this study. Also, the male predominance in the study made it impossible to study gender-related patterns. Another limitation might be due to the small sample size of the study.

CONCLUSIONS

The present study revealed that traffic policemen in Patiala were exposed to potentially damaging noise levels and that none of them were using any kind of personal protective equipment. Most of the study subjects were in the economically productive age group and, if they suffer from hearing impairment at this age, they would have to live with this difficulty throughout the rest of their

lives. We therefore strongly vouch for the following strategies for protection of traffic policemen:

- Availability of ear plugs/ear muffs/ear canal protectors by government authorities. A variety of styles may be provided so that the workers can select a particular hearing protector on the basis of comfort, ease of handling, and use
- Regular check-up of traffic constables posted at heavy traffic junctions by trained otologists
- Rotational duty of all traffic policemen between heavy and light traffic junctions
- Introduction of stringent legislations regarding usage of horns
- Organization of intensive public awareness campaigns regarding ill effects of noise, via print, and electronic media.

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