ISSN 2091-2889 (Online)
ISSN 2091-2412 (Print)

Journal of Chitwan Medical College 2015; 5(14): 20-26
Available online at: www.jcmc.cmc.edu.np

ORIGINAL RESEARCH ARTICLE

SELF-ASSESSMENT OF HEARING QUALITY OF TRAFFIC POLICEMEN WORKING IN DHARAN-BIRATNAGAR CORRIDOR

A Ghimire [1]*, SR Niraula [1], A Shrestha [1], N Jha [1]

[1]School of Public Health & Community Medicine, B. P Koirala Institute of Health Sciences, Dharan, Nepal

***Correspondence to:** Dr. Anup Ghimire, School of Public Health and Community Medicine.* B. P Koirala Institute of Health Sciences, Dharan, Nepal. *Email: ghimire.anup@gmail.com*

ABSTRACT

The automobiles are an important source of not only air pollution but also of a significant proportion of noise pollution. The traffic police engaged in controlling traffic, particularly at heavy traffic junctions, belong to the high risk group to be affected by the health hazards of noise and air pollution. To assess the hearing quality of traffic policeman towards the health effects caused by noise pollution and their practices on the use of protective measures. The present cross-sectional study was carried out among 78 traffic policemen working in Dharan-Biratnagar corridor. The questionnaire included questions regarding the self- assessment of the traffic policeman about their hearing ability, past and present exposure to loud sound produce by automobiles and the use of personal protective devices. Ethical clearance was obtained from ethical board of BPKIHS, Verbal consent was taken from all the study subjects. Finding of this study shows that most of the respondents were between the ages of 25 to 29 years (33.3%), similarly 26% were under noise exposure since more than 10 to 14 years and 34.6% had exposure of noise 10 to 15 hours per day. Their self-assessment of hearing ability shows that 6.4% traffic policemen usually missed a lot when conversing with someone on phone, while 9% reported similar condition while talking to someone in a crowd and 23.1% reported that while watching television or while listening radio they usually kept the sound louder to hear properly. The study also revealed that the traffic police, in general do not use any personal protective equipment (92.3 %) and the non-availability of the PPEs is the common reasons for it. 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: *Hearing quality, Noise, Traffic policeman.*

INTRODUCTION

Noise-induced hearing loss (NIHL) or noise induced permanent threshold shift (NIPTS) is a condition of hearing problem which occurs when an individual is exposed to unprotected high level of sound. The day to day exposure to the sound, its duration of exposure, the level and the use of protective measures determines how an individual endures the magnitude of the sound.[1] One of the major concerns of todays' global burden of disability is the NIHL which though avoidable may become a burden with the industrialization and the longevity of the people. The risk factors of concern in the developing country are the occupational noise and the environmental noise (especially the traffic noise) while more than one third of the hearing loss in the developed county is attributed to the excessive noise.[2] Many people including the traffic police are exposed to hazardous noise level at work in daily basis and continued exposures to more than 85 decibels may lead to gradual hearing loss and additionally noise hampers the job performance, easy fatigability and irritability too.[3]

As the noise pollution is on the rise in the urban

areas, road traffic noise is the major cause of such pollution. Few researches have been carried out regarding the noise pollution in Nepal where those conducted in the past have revealed higher levels of noise in the urban area as compared to recommended International Standards.[4] Apart from the air pollution which is created by the traffic, noise pollution also plays a significant role and the traffic police who is regularly exposed to such environment is at constant risk of being affected by the health hazards of noise along with the air pollution.[5] A study by Krishna MV and et al. indicates high noise levels, surpassing on many occasions to the prescribed levels. Overall minimum and maximum noise levels for the Main Road are 60.1dB (A) and 110.2 dB (A).Bus parks and Bus stops had minimum and maximum noise levels were 63.9 dB (A) and 110.2dB (A). The picture near residential ten aments also had substantial levels of noise, a minimum of 59.11dB (A). The noise levels produced by different motor vehicles ranged from 121 to 91.2 dB (A), which were substantial. The study observes motor vehicles as main source in the town. The perception surveys indicate high prevalence of headaches, lack of concentration, sleep. Since levels lie much above the prescribed limits there is an imminent health risk to the exposed population and the study suggests control measures to be instituted on a priority.[6]

People are unaware of both the non-auditory and auditory effects of the noise produced by the automobiles in the road sides and the higher authorities have not prioritized the noise pollution which demands the high preventive role. However, if the need of such preventive role felt by the traffic police would help protect themselves from such consequences and this is possible only when they have adequate knowledge about the associated health hazards. This study therefore aimed to assess the hearing quality of traffic policeman towards the health effects caused by noise pollution and their practices on the use of protective measures.

METHODS

This cross-sectional study was conducted in Dharan, Itahari, Duhabi (Sunsari District) and Biratnagar (Morang District) from November 2009 to April 2010 which are one of the Eastern Terai Districts. In this area there are dens movement of Vehicles. According to Ministry of Labour and Transport Management, Koshi Transport Management office, Itahari, there are 6350 car/Jeep/Delivery Vans, 7495 tractor, 2800 Bus/Truck, 11300 two wheelers and 650 three wheelers (Tempo) registered in Koshi Zone.[7] The study population was the all traffic policemen working in this area and those who would not give a consent would be excluded. There were altogether 81 traffic policemen currently working in this area out of which 27 is in Biratnagar, 3 in Duhabi, 30 in Itahari and 21 in Dharan. All the 81 traffic policemen were targeted in this study however data could be collected only from 78 traffic policemen as 3 of them were on leave during study time.

Tool of the study was a modified structured questionnaire. The questionnaire included questions regarding the self- assessment of the traffic policeman about their hearing ability, past and present exposure to loud sound produce by automobiles and the use of personal protective devices such as earplugs and earmuffs. Verbal consent was taken from all the study subjects. The questionnaire was filled up by the interviewer. Ethical clearance was obtained from ethical board of BPKIHS, Dharan. The written approval of the study was taken from all 3 three traffic police office (Duhabi is included under Itahari traffic police office).The consent of the respondents was taken verbally by explaining the objectives of

the study before starting the interview. Their right of refusal to participate in this study was respected. The confidentiality of the information had been maintained and used for the purpose of the study only. Collected data was checked, rechecked and edited at the end of each day of data collection. Coding and categorization were done. Prior to analysis a database was formed mentioning the name, label, value and criteria of the variables in excel program. SPSS version 11.5 computer software was used for analysis. The data were summarized by frequency, percentage. Chi Square test was used to detect association of outcome variable with different categorical independent variables. A level of $P<0.05$ was considered statistically significant.

RESULTS

There were 81 traffic policemen currently working in this area. Out of 81 traffic policemen, this study however could collect only from 78 traffic policemen as 3 of them were on leave during study time. The distribution of the characteristics of the participants are shown in Table 1. The mean age group of the participants was 30.04 ± 5.63 years. Most of the respondents were between the age of 25 to 29 years (33.3%) followed by age group 30 to 34 years (25.6%) and only 6.4% were 40 years and above. The majority of the respondents were male (91%). In terms of working place, majority were from Itahari/ Duhabi (41.1%) and followed by Biratnagar and Dharan i.e. 33.3% and 25.6% respectively.

Table 1: Distribution of the characteristics of the participants (n=78)

Characteristics	Categories	Number	%
Age group in years	20 – 24	14	17.9
	25 – 29	26	33.3
	30 – 34	20	25.6
	35 – 39	13	16.7
	≥ 40	5	6.4
Mean age in years ± SD		30.04 ± 5.63	
Gender	Male	71	91.0
	Female	7	9.0
Place of work	Dharan	20	25.6
	Itahari/ Duhabi	32	41.1
	Biratnagar	26	33.3
Education	Matriculation	55	70.5
	Intermediate	17	21.8
	Bachelor and above	6	7.7
Work experience in years	<5	23	29.5
	5-9	28	35.9
	10-14	21	26.9
	>14	6	7.7
Daily working hours	6-10	51	65.4
	11-15	27	34.6

Most of them had completed SLC (70.5%), 21.8% were educated up to intermediate level while least numbers of respondent had obtained bachelors and above degree (7.7%). Majority were in this job since 5 to 9 years (35.9%) and followed by <5 years (29.5%) and 10 to 14 years (26.9%). Only 7.7% were in this job since more than 14 years. More than half of the traffic policemen (65.4%) had to work 6 to 10 hours daily, whereas rest of the others had to work 11 to 15 hours per day.

Table 2 shows the distribution of the study subjects

according to self- assessment of hearing ability by the traffic policemen. Five subjects reported that they usually missed a lot when conversing with someone on phone, while 9% reported similar condition while talking to someone in a crowed place at working area. Similarly, 23.1% reported that while watching television or while listening radio they usually kept the sound louder to hear properly and 33.3% mentioned that people often indicated to them that policemen were talking louder, while only 19.2% felt that people usually talked louder with them so as to enable them to hear properly. 33.3% had noted tinnitus in their ear, among them 98.7% complained it happen some times while as only 1.3% complained of regular occurrence of tinnitus.

More than half traffic policemen indicate that they are irritate while vehicles blow horn near to their working place (64.1%), while 28.2% express that they were used too with this activity. Least number indicated that they didn't care about it (Table 3).

When asked about the usage of protective measures to protect their ear from noise pollution which arise from automobiles in their working places (Table 4), only 7.7% used earplugs and that too, very seldom. Non availability of the personal protective equipment (PPEs) was the common reason for its non-usage as reported by 92.3% of all subjects. However other reasons for non-usage included uncomfortable / headache (7.7%) and 69.2% subjects did not use any methods other than earplugs/ earmuffs to reduce exposure to noise, while the remaining used cotton, hands and fingers, 12.8%, 11.5% and 6.4% respectively.

Table 2: Distribution of study subjects according to their self-assessment of hearing status (n=78)

Characteristics	Number	%
Hearing over phone		
Without difficulty	56	71.8
Do miss some conversation	17	21.8
Miss a lot of what is said	5	6.4
Hearing in crowded place		
Without difficulty	29	37.2
Do miss some conversation	42	53.8
Miss a lot of what is said	7	9.0
Sound of TV/ Radio		
Usually louder	18	23.1
Usually same loudness	40	51.3
Usually a litter softer	20	25.6
Do people often indicate that you are taking too loudly?		
Yes	26	33.3
No	52	66.7
Do people often have to talk louder with you?		
Yes	15	19.2
No	63	80.8
Do you have Tinnitus in ear?		
No	52	66.7
Yes	26	33.3
Some times	25	98.7
Almost all the time	1	1.3

Table 3: Respondents feeling while vehicles blow horn near their working place (n=78)

Characteristics	Number	Percentage
Used too	22	28.2
Irritation	50	64.1
Don't care	6	7.7
Total	78	100

Table 4: Distribution of study subjects according to use of protective measures (n=78)

Characteristics	Number	%
Ever used ear plugs or muffs		
Yes	6	7.7
No	72	92.3
Regularity of usage		
Seldom	6	7.7
Never	72	92.3
Reason for non-usage		
Not available	72	92.3
Others (Uncomfortable/ Headache etc.)	6	7.7
Usage of other PPE		
No	54	69.2
Yes	24	30.8
Hands	9	11.5
Cotton	10	12.8
Fingers	5	6.4

Bivariate analysis showed that there is a significant association between duration of exposure and habit of listening volume of TV/Radio ($p<0.04$) as shown in Table 5. Similarly, There is significant association between duration of exposure and habit of talking ($P<0.03$), Table 6. But no significant association was found between working hours per day and habit of listening volume of TV/Radio and working hours per day and habit of talking.

Table 5: Association between duration of exposure and habit of listening volume of TV/Radio (n=78)

Duration of exposure (Years)	Usual Sound of tv/radio			Total
	Louder	Same loudness	Little softer	
0-5	1	17	10	28
6-10	9	12	7	28
>10	8	11	3	22
Total	18	40	20	78

*P=0.032 (Significance)

Table 6: Association between duration of exposure and habit of talking (n=78)

Duration of exposure (Years)	Talk louder		Total
	Yes	No	
0-5	1	27	28
6-10	7	21	28
>10	7	15	22
Total	15	63	78

*P=0.026 (Significance)

DISCUSSION

In our study, 33.3% of the total traffic policeman reported to have tinnitus and 6.4% traffic policemen usually missed a lot when conversing with someone on phone, while 9% reported similar condition when talking to someone in a crowd which is lower to the findings of a study by S. Gupta et al., where they found that 61% persons reported having work related tinnitus/ear fullness and 16.7% having trouble during telephonic conversation.[8] In addition, the traffic police, in general do not use any personal protective equipment (92.3 %) and the non-availability of these PPEs is the common reasons for it.It is well established that long term exposure to noise at work

causes Hearing Loss. Although counter measures have successfully reduced noise levels in many industries, noise is still a common occupational hazard, and noise induced Hearing Loss is one of the major occupational diseases worldwide. Nevertheless, long term exposure to a noisy environment, even if it is not apparently as harmful as occupational noise, should also be taken into consideration. [9, 10] It is a recognized that if we listen to a sound at 85 db for 8 hours, 88 db for 4 hours or 91 db for 1 hour, we are at risk for hearing loss. Normal conversation is 58 db, busy traffic is 70 db and standing next to running truck engine is 84 db.[11] The use of audiometry would strengthen our study. The findings from this study will help to plan and focus to prevent the noise related hazard to the traffic police.

CONCLUSION AND RECOMMENDATION

The self-assessment of hearing by traffic policemen suggests that most of the traffic policemen have normal hearing, however, including those who had reported with the hearing problems did not use any personal protective equipment due to unavailability or due to uneasiness or headache. Some of the participants reported of using cotton, hands or fingers instead of earmuffs or ear plugs. Our study found the association between the duration of exposure and habit of listening volume of TV/Radio and between duration of exposure and habit of talking but no significant association was found between working hours per day and habit of listening volume of TV/Radio and working hours per day and habit of talking. We recommend the systematic study with audiometry of these subjects. We also recommend that the distribution of PPEs among them is not sufficient, periodic workshops should also be carried out to motivate traffic policemen for their correct and regular usage. The effectiveness of the PPEs over other methods to reduce noise exposure should also be demonstrated.

ACKNOWLEDGEMENT

We would to express our deep gratitude to the all Traffic Policemen who helped us during this study. We would also like to thank the authorities working in this three area who helped us to conduct the study.

We extend our sincere gratitude to all the colleagues of School of Public Health and Community Medicine for supporting and helping us throughout the study.

Funding

This study was funded by B.P Koirala Institute of Health Sciences and the funding body had no role in this study.

REFERENCES

1. MOL. Canada Labour Code, Part VII, Levels of Sound. Canada Occupational Health and Safety Regulations, Ministry of Labour, Ottawa, ON, Canada. 1991.
2. Organization WH. Prevention of noise induced hearing loss. Report of WHO-PDH Informal Consultation, Geneva 28–30 October 1997, Strategies for Prevention of Deafness and Hearing Impairment, 3. WHO/PDH/98.5 (Author, Geneva, Switzerland), 1997.
3. Noise. The American Speech-Language-Hearing Association (ASHA)http://www.asha.org/public/hearing/Noise/
4. Joshi S, Devkota S, Chamling S, Shrestha S. Environmental noise induced hearing loss in Nepal. 2003.
5. Tripathi SR, Tiwari RR. Self-reported hearing quality of traffic policemen: A questionnaire-based study. Indian journal of occupational and environmental Medicine 2006;10:82.
6. Murthy VK, Majumder AK, Khanal SN, Subedi DP. Assessment of Traffic Noise Pollution in Banepa, A Semi Urban Town of Nepal. Kathmandu University Journal of Science, Engineering and Technology 2007;3:12-20.
7. Report from Koshi Trasport Management office, Itahari.
8. Gupta S, Mittal S, Kumar A, Singh KD. Self Assessment of Hearing Quality and Noise-Related

Attitudes among Traffic Policemen of Patiala, India. International journal of preventive medicine 2014;5: 511.

9. Hoffmann B, Robra B-P, Swart E. Soziale Ungleichheit und Strassenlärm im Wohnumfeld: eine Auswertung des Bundesgesundheitssurveys. Das Gesundheitswesen. 2003; 65: 393-401.

10. Leong ST and Laortanakul P. Monitoring and assessment of daily exposure of roadside workers to traffic noise levels in an Asian city: a case study of Bangkok streets. Environmental monitoring and assessment 2003;85:69-85.

11. Occupational and community noise. Geneva, World Health Organization, 2001 (Fact sheet No. 258).