

Noise Induced Hearing Quality Assessments of Traffic Police Personnel in Dhaka City

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Abstract This study aims to assess the perception, knowledge, attitude and practices of traffic policemen towards the physiological and psychological health effects of noise pollution they are exposed to. A questionnaire survey was conducted among 110 traffic policemen purposively selected in Dhaka Metropolitan Police area. Semi-structured questionnaires have been used to collect unbiased data from the traffic police persons from heavy traffic area. Study showed that 40.9% respondents are in age group of 20- 24. The self-assessment of hearing ability has described by the traffic policemen as 11.8% of the respondents felt that their hearing ability was below average, while the remaining believed that their hearing ability was above average to excellent. 15.5% respondents reported that they usually missed a lot when conversing with someone on phone, while 25.5% reported similar condition while talking to someone in a throng or noisy place. 33.6% reported that while watching television they usually kept the sound louder to hear properly. 08.2% of them have squealed about regular Vertigo. This study strongly recommended that, awareness and education level of noise pollution is most important for the traffic police.

Keywords: sound, occupational health, perception, Urban

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1. Introduction

Sound is a complex perception and noise refers to undesired sound [10]. By extension, noise is always unwanted disturbance within a broad frequency band. The automobiles are an important source of not only air pollution but also of a significant proportion of noise pollution [1]. 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 [2-9].

However, a majority of them remains unaware about the health effects of noise on their hearing ability as this is an insidious process and takes long time to become overt. The World Health Organization (WHO) passed out an assessment of the global disease burden from occupational noise and determined 25 factors of risk in a consistent manner [10]. Occupational hearing loss includes acoustic traumatic injury and Noise Induced Hearing Loss (NIHL), and can be defined as a partial or complete hearing loss in one or both ears as the result of one's employments [11]. Exceed limit of occupational noise level remain a problem in the world. In the United States of America (USA), more than 30 million workers are affected to hazardous noise [12]. In Germany, 4-5 million people (12-15% of the workforce) are exposed to high level of noise [13]. Although noise is associated with almost every work

activity, some activities are associated with Noise Induced Hearing Loss (NIHL), the most important of which are working with impact processes, handling certain types of materials, and flying commercial jets, manufacturing, transportation, mining, construction, agriculture and the military.

The situation is improving in developed countries, as more widespread appreciation of the hazard has led to the introduction of protective measures. Due to the data scarce in developing country, the developed countries showed their evidence for total average noise level for occupational recommendation.

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 [17-21]. Though, the adverse auditory impacts of noise generated by vehicles among the traffic policemen have never been investigated, particularly in India [8]. The circumstances in Dhaka City Traffic Policemen is similar. This might be one of the causes for not taking any initiatives to supply hearing protection devices to this group of work force. However, the need should be felt by the traffic policemen themselves for which they should have adequate knowledge on the associated health hazards. Considering the previous background, the study has been conducted to identify the noxious effects of noise pollution on the traffic policemen.

2. Methods & Methodology

The present questionnaire-based study was carried out among 110 traffic policemen purposively selected in DMP from June 2016 to August 2017 of which 82 males and 28 females representing 74.55% and 25.45% respectively. Semi-structured questionnaires have been used to collect unbiased data from the traffic police persons from heavy traffic area. Traffic police persons, whose duty areas at Mirpur road, Dhaka Aricha Highway, Sat Mashjid Road, Nilkhet Road, Kazi Nazrul Islam

Avenue, Bir -Uttam Zia -Ur- Rahman Road, Bir-Uttam-AK-Khandakar Road, Progoti Sarani Road, Bir-Uttam-Rafiqul Islam Avenue, Outer Circular Road, Shahid Faroque Road, Atish Deepankar Road, Topkhana Road, Dilkusha Road has been surveyed. The questionnaire comprised questions regarding the assessment of the traffic policemen about their listening capability, previous and recent exposure to hefty traffic sound and the use of different devices such as earplugs and earmuffs etc. The data has been analyzed by the software SPSS 16 to calculate the results.



Figure 1. Map of Dhaka Metropolitan City (Source: Banglapedia)

3. Results

The general profile of the subjects according to demographic characteristics is shown in [Table 1](#).

Table 1. Demographic and occupational characteristics of the study subject

Characteristics	Number	Percentage
Sex Composition		
Male	82	74.55
Female	28	25.45
Age (in Years)		
20- 24	45	40.9
25-29	35	31.8
30-34	22	20.0
35-39	8	07.3
Educational Qualification		
Primary	6	05.5
SSC	68	61.8
HSC	31	28.2
Bachelors	5	04.5
Occupational profile		
Police Constable	74	67.3
Head Constable	36	32.7
Duration of exposure (in years)		
2-5	65	59.1
6-10	31	28.2
11-15	13	11.8
≥ 15	1	00.9
Duration of exposure (hours in a day)		
< 4	7	06.4
5-7	22	20.0
8-10	71	65.6
≥ 11	10	09.0

Study showed that the age of the subjects lies in the range of 20-39. Most of the respondents (40.9%) belong to

the age group of 20-24 years. Most of them have recently joined the police service. The mean age of the subjects was found to be 26.6 years. All the subjects had minimum of secondary level of school education. Majority of them (61.8%) had passed SSC whereas the number of subjects who had passed HSC was lesser (28.2%) and those with Bachelors' degree were very few (4.5%). Out of the total subjects, majority (67.3%) worked as a police constable and 32.7% worked as head constable. The years of service in traffic police is also considered as the year of exposure which is not so high. The duration of service of the subjects as traffic police ranges between 2 to more than 15 years. Most of the subjects (59.1%) had served as a traffic police for less than 5 years. 28.2% had worked for 6-10 years, 11.8% for 11-15 years and 0.9% for more than 15 years. The distribution of the subjects according to year of exposure showed a decline from 2 to more than 15 years. Again in Dhaka City traffic police has long working hours. More than 65.6% of them reported that they have a duty hour of 8-10 in 6 days in a week. Their duties were not fixed at one station and they had to give duties at any time in any location of the city.

[Table 2](#) illustrates the general perception of the subjects regarding noise pollution and their effects on human health. The table shows that most of the subjects (93.6%) believe that noise affects on their health. 78.2% considered noise pollution as one of the occupational hazard for them. 59.1% traffic policemen reported that their work environment is noisy (27.3%) to extremely noisy (31.8%) which results a number of hearing problems and which lead to make them to go to doctors. 35.5% subjects had visited the doctors in the last 12 months regarding ear injury complaint or auditory problem. So, awareness should be increased through formal and non-formal education.

The self-assessment of hearing ability has describes by the traffic policemen in [Table 3](#). Only 11.8% of the respondents perceived that their hearing ability was below average, while 57.3% of them were confident that their hearing ability was above average to excellent, the other 30.9% said that their hearing ability was average.

Table 2. The study subject according to their perception on noise pollution

Perception	Number	Percentage
Did you know that noise affects human health?		
Yes	103	93.6
No	6	05.5
Don't Know	1	00.9
Do you think noise can be considered as an occupational hazard?		
Yes	86	78.2
No	23	20.9
Don't Know	1	00.9
How do you classify your present working environment in terms of noise quality?		
Quiet	6	05.5
Tolerable	39	35.5
Noisy	30	27.3
Extremely Noisy	35	31.8
Did you visited doctor, in the last 12 months, regarding any ear injury complaint or auditory problem		
Yes	39	35.5
No	71	64.5

Table 3. The self-assessment of hearing ability describes by the traffic policemen

Perception	Number	Percentage
How do you feel about your hearing ability?		
Excellent	43	39.1
Above average	20	18.2
Average	34	30.9
Below average	13	11.8
Do you feel any difficulties to hear over phone?		
Without difficulty	71	64.5
Do miss some conversation	22	20.0
Miss a lot of what is said	17	15.5
How do you hear in a throng or noisy place?		
Without difficulty	45	40.9
Do miss some conversation	37	33.6
Miss a lot of what is said	28	25.5
Level of hearing to the sound of TV/Radio?		
Usually louder	21	19.1
Usually with same loudness	29	26.4
Usually a little softer	60	54.5
Is it happened some times that your friends & family notify you for your too loud voice?		
Yes	32	29.1
No	78	70.9
Do people usually talk to you loudly?		
Yes	37	33.6
No	73	66.4
Vertigo		
Most of the time	9	08.2
Few moments in a day	12	10.9
About once a day	5	04.5
Few moments in a week	14	12.7
Few moments in a year	7	06.4
Any time at duty station	63	57.3

However, the additional questions to assess the hearing capability stated a slightly different Scenario. 15.5% respondents reported that they usually missed a lot of conversation when talking with someone on over phone, while 25.5% of the traffic police man said about same problem while conversing to someone in a throng or noisy place. 19.1% mentioned that while watching television they are very fond of to kept the sound louder to hear clearly. 29.1% reported that there friends & family often indicated to them that they (traffic police) were talking too loudly, on the other hand 33.6% of them felt that people generally talked with them loudly as to enable them to hear perfectly. 8.2% censured of regular Vertigo, while 57.3% had working time Vertigo and faced it during working stations only.

Table 4 shows the distribution of the respondents according to the usage of personal protective equipment like earplugs/earmuffs. Only 7.3% and that too, 5.5% used those very few times. Again only 1.8% traffic police of the city are being using ear plugs regularly during the duty period. Personal protective equipment's (PPEs) is not always available for traffic police men in our country's circumstance so it was the common reason for its non-usage as reported by 49.1% of them.

Table 4. Distribution of study subject according to use of personal protective equipment's (PPEs)

Perception	Number	Percentage
Have you ever used Ear Plugs or Ear Muffs		
Yes	8	07.3
No	102	92.7
Continuity of using Ear Plugs or Ear Muffs		
Only during duty period	2	01.8
Seldom	6	05.5
Never	102	92.7
Causes for not-using of Ear Plugs or Ear Muffs		
Feel distressing	15	13.9
Not available	53	49.1
Poorly fit	7	06.5
Dislike	24	22.2
Physical problem (Headache, Sweating, Allergic problem etc.)	9	08.3
Use of other Categories of PPE		
Hands	9	08.2
Cotton	13	11.8
Fingers	3	02.7
Don't use anything	85	77.3
Efficacy of using those PPE		
Average	19	76.0
Good	3	12.0
Better than plugs	3	12.0

However, other reasons for non-usage included personal dislike (22.2%), uncomfortable (13.9%), headache caused by its use (8.3%), bad fit (6.5%), and 77.3% subjects did not use any method to reduce exposure to noise, while the remaining used fingers (2.7%), hands (8.2%) and cotton (11.8%) to avoid noise exposure. However, out of these subjects using other methods, only 24.0% felt that these methods were good or better than the earplugs.

However, other causes for non-usage included personal dislike (22.2%), Feel distressing (13.9%), Different physical problem like headache, sweating, allergy caused by its use (8.3%), poorly fit (6.5%), and 77.3% of the respondents did not use any things to reduce exposure to noise, Since the rest of them used fingers (2.7%), hands (8.2%) and cotton (11.8%) to abate noise exposure. However, out of these subjects using other things, only 24.0% felt that these tools work good or better than the earplugs.

4. Discussion

By focusing of the age group the present study transpired that the study subjects are the socially useful labors & economically active population. They would have to live with disability through their entire life if they suffer from hearing loss at this stage of their life. It was gratified to see that the duration of exposure was minimum, hearing loss was not found in higher rate and if effective measures would be taken at that initial stage, health hazards issue of noise pollution is supposed to be receded. Only 11.8% of the policemen felt that their hearing ability was below average. This could be due to ignorance about the hazards caused by continuous

exposure to noise and non-usage of PPEs. In a similar study among the traffic police in India out of 86 subjects only 2.3% felt that their hearing quality is below average. In a similar study among the traffic police in India out of 86 subjects only 2.3% felt that their hearing quality is below average [8]. A study conducted in 2001 showed that health effects of vehicular noise pollution on traffic police personnel in Kathmandu is very alarming [4]. Another study among the rock concert attendees, only 36.3% of the subjects felt that noise is likely to cause health hazards [22]. In a study in Nepal it is found that, 39.34% of the total sample surveyed had the NIHL which is quite a high in number [23]. Prevalence of reduced hearing was found only in 11.8% subjects. However, the supplementary questions to assess hearing ability suggested that it was higher though not felt by the 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 test to assess the health effects of exposure to noise along with the investigations to measure the health effects of noise pollution. It is recommended that PPE should be available for traffic police as well as it is important to ensure that the PPE are user friendly & users can use them for long duration while they are at duty stations. Moreover, it traffic need to trained of the proper use & effectiveness of PPE using by attending training session or workshop.

5. Conclusion

The questionnaire survey revealed that most of the subjects are aware about the health effects of noise pollution and three forth of the subjects think that noise pollution can be considered as occupational hazard. The use of these PPEs can ensure the best protection only by their proper use. For the proper use of PPEs and to disseminate more knowledge regarding noise pollution and its health effects, awareness programs should be conducted for the traffic police. The long work hours of traffic police personnel and no holiday in weekends has been made necessary by manpower crunch. Such long duty hours are against the international norms. So, the recruitment of more traffic police should be done. Further research and follow-up studies using the same subjects should be done as it could give a better picture on the occupational health status of the traffic police working in Bangladesh and reveal more significant results related with their health.

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