

## Noise Induced Hearing Loss in City Traffic Policeman.

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### Short Communication

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#### ABSTRACT

With rapid industrialization and Urbanization, the hazards of noise pollution are increasing by leaps and bounds. High risk group people exposed to this occupational disease are not aware of detrimental impact of this condition. Our aim to assess the hearing loss in traffic policemen. Hearing assessment of sixty traffic policemen in the age group of 30 to 40 years with service duration of  $3.5 \pm 1.8$  years were selected for the study. The study was carried out in sound treated room by pure tone audiometer. Noise survey was carried out with the help of Digital Sound level meter. The mean age was 37.88 years with mean years of exposure being  $3.5 + 1-8$  years. 66 % of cases showed noise induced hearing loss. Duration of service played a definite role as far as noise trauma is concerned. Temporary threshold shift is noted in subjects immediately after traffic duty. Considering the % of cases showing hearing loss which is highly significant Regular periodic hearing assessment by pure tone audiometer is required to detect the effects of noise on hearing mechanism as this is an insidious process and takes long time to become overt. Noise control can be achieved by ear protective devices and regular rotation of working place.

#### INTRODUCTION

Hearing allows us to be involved with the world around. Hearing impairment is one of the major problems in our country. Hearing loss attributed to noise is one of the most common occupational disease and second most common self-reported occupational illness or injury <sup>[1]</sup>.

Noise causes auditory and non auditory effects on our body. Noise has many ill effects on body even though air pollution, water pollution has attracted majority of researchers but little attention has been paid to noise pollution and its effects. Noise acts upon the body very much as other stress do & so its effects are far reaching affecting body functions mainly hearing <sup>[2]</sup>.

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 & air pollution <sup>[3]</sup>.

Most of traffic policemen are aware of the air pollution but a majority of them remains unaware about the long term ill effects of noise on their hearing ability as this is an insidious process and takes long time to become overt.

Many studies have been carried out to study effect of noise in industrial workers but little attention has been paid to noise caused by automobiles. This may be the reason for not providing hearing protection devices to traffic policemen. With this background present study has been carried out to assess the hearing ability of traffic policemen.

## Aims and Objectives

- To assess the hearing loss in traffic police.
- To see whether traffic noise is hazardous.

## MATERIAL AND METHODS

The present study was carried out on sixty traffic policemen. The mean age was 37.88 years with mean years of exposure to noise being  $3.5 \pm 1.8$  years.

### Noise Survey

The noise survey was carried out by the help of sound level meter (Iutron SL-400/ Digital sound level meter). The sound level meter was a portable one which measured sound between 35-130 dB. It measures sound between 31.5 Hz to 8000 Hz and operates between 0 °C to 50 °C. It is battery operated. Noise survey was carried out as per NIOSH standards.

### Hearing Assessment

The hearing assessment was carried out in a sound treated room & audiometry was carried out by portable pure tone audiometer (model Arphy model mk-II 500 series) Audiometry was done before & after the traffic duty and the thresholds were measured at frequencies 250, 500, 1000, 2000, 4000 & 8000 Hz too. Each subject was explained about the test to be done for proper co-operation.

## RESULTS

Road traffic noise varied in different places depending on heavy & light traffic. In light traffic areas the sound level recorded was 40 to 70 dB and in heavy traffic areas sound level recorded was between 70-102 dB. Most of the traffic policemen were exposed to noise for 5 years (i.e. 41%) some were exposed to noise for 3 years (i.e. 25%) and others to below 3 years (33.3%) Hearing loss greater than 10 dB was accounted for and hearing loss less than 10 dB was ignored. Out of 60 traffic polices 39 had noise induced hearing loss (NIHL) (66%).

Hearing loss was more with increase in duration of exposure and place of work whether it is busy heavy traffic or less traffic place.

**Table I: Noise level at different places of work**

Place of Noise	Noise Level (dB)	Type of Noise
Light Traffic	40 to 70 dB	Continuous
Busy Traffic Place	70 to 102dB	Continuous

**Table II: No. Of Subjects Examined and Showing NIHL.**

Total No. Examined	No. Showing NIHL	Percentage
60	39	66%

**Table III: Duration of Service and % Loss of Hearing**

Duration of service	No. of Workers	Percentage
3 to 5 Years	25	41.1
2 to 3 Years	15	25
Less than 2 Years	20	33.3

**Table IV: Chart Showing Temporary Threshold Shift At of >5db and >10db after Traffic Duty.**

No. of Workers	Place of work	TTS	
		5dB	10 dB
35	Light Traffic	15	5
25	Heavy Traffic	20	5

## DISCUSSION

Noise induced hearing loss is the most important & well documented effect of noise in human beings. Noise became a widespread hazard in the industrial revolution and has continued to be so. Unfortunately industrial noise and transport noise have come to be considered and probably accepted by the society as a necessary evil which we have to learn to live with. This attitude taken by majority of us needs to be changed.

In our study the maximum hearing loss was seen in people with increasing duration of exposure to noise which is consistent with the earlier studies [4,5,6]. NIHL is irreversible and no known therapy will reverse or heal it. It has been demonstrated in several animal studies that noise causes damage to outer hair cells of organ of corti, this is most pronounced in the basal turn [7,8,9,10]. Long term exposure to continuous noise results in damage to the inner ear in the form of degeneration of cilia of outer hair cells. The noise induced hearing loss results due to damage in the inner ear in the form of degeneration of cilia of outer hair cells<sup>2</sup>. In our study sixty traffic policemen were subjected to hearing assessment by pure tone audiometer before & after traffic duty. Out of sixty, 25 traffic policemen were in traffic duty since 3 to 5 years, 15 were since 2 to 3 years and 20 traffic police were from less than 2 years. Of the total 60 traffic policemen 39 i.e. 66% showed NIHL. Based on less and heavy traffic duty areas 35 traffic policemen working in less traffic areas 15 showed shift of 10 db. Out of 25 traffic policemen working in heavy traffic duty areas 20 showed TTS of 5dBss and 5 showed ITS of 10dB. All the above traffic polices showed TTS for all frequencies of sound. Our findings co inside with other studies [11].

Thus our study reveals that Automobile noise definitely causes noise induced hearing loss and duration of service plays definite role as far as noise trauma is concerned. Our study also revealed that Noise trauma depends on intensity & duration of noise, continuous vs interrupted noise & susceptibility of the individual.

## CONCLUSION

Regular periodic hearing assessment by pure tone audiometer is required to detect the effects of noise on hearing as this is an insidious process & takes long time to become overt. Early detection and timely intervention by providing ear protective devices (ear plugs) & regular rotation of working place will provide cheap and long term benefits in this fast increasing noise polluted environment.

A baseline audiograms (Hearing level Assessment) must be done at the time of recruitment of traffic policemen and annual audiogram should be carried out in these highly exposed population.

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