



Assessment of Hearing Loss Among Occupational People in Heavy Traffic Areas in Bhuj District

KEYWORDS

Hearing Disability, Bhuj, Traffic Areas

Dr. Ashok Shah

Assistant Professor, Department of Otorhinolaryngology, Gujarat Adani Institute of medical science, Bhuj, Kutch

ABSTRACT *Introduction: Hearing impairment includes a range of difficulties with hearing, including deafness. People may be born with reduced hearing or may lose all or part of it due to accident or illness. General objective included, To find the prevalence of hearing loss in people working in heavy traffic areas of Bhuj and To detect co-relation of hearing loss with duration of exposure to noise. To identify the usefulness of screening for hearing loss in susceptible population.*

Materials & Methods: Total 200 participants agreed and gave consent for inclusion in the study. All the participants were called in batches of 5 to 10 to ENT-OPD. Detailed history was taken regarding number of years of service/working at the selected traffic junctions. Thorough ENT examination was done.

Results & Conclusions: Total 200 participants agreed and gave consent for inclusion in the study. All the participants were called in batches of 5 to 10 to ENT-OPD. Detailed history was taken regarding number of years of service/working at the selected traffic junctions. Thorough ENT examination was done. Measures that can be implemented to reduce prevalence of hearing loss include; Mass transportation, Distribution of traffic by sensible road & traffic signal planning,

Introduction

World wide, 16% of disabling hearing loss in adults is attributed to occupational noise. Small scale industries like textile, saw mills, printing and mining etc are also responsible for excessive noise and exposure of workers to hazardous noise levels. In India, there are large number of agro based small scale industries.¹ The workers in these industries are exposed to high noise levels prevailing at the work place environment during duty hour. India is the second largest producer of sugar in the world with more than 45 million of sugarcane growers in the country, one of the agro based enterprises in India; sugar manufacturing is second largest agricultural industry after textile sector. Excessive sound levels produce a hostile acoustic environment by masking wanted signals and with chronic exposure by a central blocking out of all auditory signals. In addition they damage cochlea and thus produce noise induced hearing loss. All these have deleterious effect on education, communication, and the hearing of warning signals.^{1, 2}

Hearing loss is included among the diseases/disorders that burden the majority of the world's population. Global statistics shows an increase in the prevalence of this disease yearly and it has continuously affected the quality of life and productivity of majority of the general population. It has long been known that such a health problem exists and that it can actually be prevented,³ however, efforts to reduce cases of hearing impairment tends to be minimal and at present not given that much of a priority. Locally, the exact prevalence of hearing impairment in the general population is yet to be established. Several surveys have already been conducted among special populations, therefore it is about time that the nationwide burden of this disease be known for appropriate action and intervention.^{2, 4}

Hearing impairment includes a range of difficulties with hearing, including deafness. People may be born with reduced hearing or may lose all or part of it due to accident or illness. It can range from mild to profound, and

some people may be able to hear certain frequencies but not others, so that increased loudness does not necessarily result in greater clarity.^{4, 5} Some people may rely on lip/speech reading to communicate, and some may rely on sign language or a combination of both while many others may prefer the use hearing aids. General objective: 1. To find the prevalence of hearing loss in people working in heavy traffic areas of Bhuj. 2. To detect co-relation of hearing loss with duration of exposure to noise. 3. To identify the usefulness of screening for hearing loss in susceptible population.

Materials & Method

Inclusion criteria: Those who are working / residing at or around the selected traffic junctions for more than 1 year and known to be exposed to traffic noise. i.e. traffic police, vendors near traffic junctions, rickshaw drivers etc.

Exclusion criteria: If participant is known to have exposure to accidental explosion, ear disease or undergone any ear surgery. Those who gave negative consent for inclusion in the study.

Methodology

This was the cross-sectional study conducted in Dept. of orhinolaryngology, Gujarat Adani Institute of Medical Science, Bhuj. We identified four heavy traffic junctions in the Bhuj city having measured noise intensity level of more than 65db. Total 200 participants agreed and gave consent for inclusion in the study. All the participants were called in batches of 5 to 10 to ENT-OPD. Detailed history was taken regarding number of years of service/working at the selected traffic junctions. Thorough ENT examination was done.

Results:

There were total 200 participants included in the study. Not a single participant at presentation had either complain of decreased hearing or even a suspicion of it. Overall prevalence of hearing loss was 75% (150 participants) detected on pure tone audiometry. It was found that 90

persons had notch at 4 kHz in pure tone audiometry which was typical of NIHL. There were 30 individuals with high frequency SNHL (4 kHz or more) and 20 individuals with mild SNHL. There was 5 individual each having moderate SNHL and profound SNHL.

On assessing the hearing impairment according to "Degree of hearing loss as per WHO guidelines" we found that 49.3% had hearing impairment which includes 45.3% having slight hearing impairment & 4% having moderate hearing impairment. Rest 50.7% had no hearing impairment.

It was observed that prevalence of hearing loss was 70% in participants having exposure of noise for < 5 yrs and prevalence of hearing loss was 70% in participants who exposed to noise for 5 yrs or more. It was statistically not significant. It was observed that prevalence of hearing loss was 68% (17) in participants having exposure of noise for < 2 yrs and prevalence of hearing loss was 68.2% (58) in participants who exposed to noise for 2 yrs or more. It was statistically not significant. Amongst the participants < 42 yrs of age we found that prevalence was 40% in those having > 5 yrs of noise exposure while it was 45% in those having < 5 yrs of exposure. The participants having age 42 yrs or more, prevalence of hearing loss was 72% in those having < 5 yrs of noise exposure and 63.3% in those having noise exposure for >5 yrs or more. Amongst the participants < 42 yrs of age we found that prevalence was 36% in those having >2 yrs of noise exposure while it was 18% in those having < 2 yrs of exposure. The participants having age 42 yrs or more, prevalence of hearing loss was 76.5% in those having < 2 yrs of noise exposure and 65.5% in those having noise exposure for 2 yrs or more. There were 11 participants with unilateral hearing loss & rest participants with binaural hearing loss.

Discussion

The word noise is derived from the latin word "nausea" meaning impulsive, unwanted, unpleasant, or loud unexpected sound. Noise as such is achieving dangerously alarming proportion and providing hazardous in all spheres of life more so industries workers.² In our study hearing loss was reported high among our study participants may be due to exposure of noise between 85-96 dB in the working environment. Our study is in concurrence with study done by Dube KJ et al, among workers exposed to excessive levels of noise in ginning industries.

The national profile shows that about 3% of persons aged 5 years and older had mild difficulty in hearing, while those who experienced severe difficulty in hearing constituted less than 1%. Severe difficulty in hearing was more prevalent among the older ages.⁶ Jorunn et al (2011) studied the consequences of hearing loss and considerations for audiological rehabilitation in the elderly. The proportion of persons with severe difficulty in hearing was highest among persons aged 85+ years (10%). The profile of persons with a

hearing disability in the four population groups shows that the white population group had the highest proportion of persons who experienced difficulty in hearing (4.8%), followed by the black African population group (3.5%) and the Indian/Asian population group (3.3%).⁷ Reliable epidemiological data for hearing loss in the Bhuj city is currently lacking; existing national datasets likely underestimate the country-specific burden of hearing loss. Epidemiological data on population health and disability is vital for planning and policy responses. The impact of this data is far-reaching—from policy decisions to the availability and accessibility of hearing services offered to individuals.

Total 200 participants were included in the study. Overall 71% prevalence of Sensorineural hearing loss (SNHL) is observed in the study population. A very interesting fact observed in our study is that not a single participant among this high risk group has complained or suspected [themselves or by their family] hearing loss. This indicates the insidious nature of the HL and the utmost importance of counseling & regular follow-up of this group for early detection, treatment and/or rehabilitation for hearing loss. As against the overall prevalence of 68.2%, we found that male has prevalence of 70.5% and female has 20%. This is comparable to Study done by Shrestha I et al on traffic police, showed that there was 66.4% prevalence of 3 noise induced hearing loss. A study done by R Deepak on Traffic police showed that 21% prevalence of noise induced 2 hearing loss and 18% of high frequency SNHL. In this study regarding configuration of audiometric curve it is found that 56% participants had notch at 4 kHz in pure tone audiometry which is typical of NIHL. There are 20% participants with high frequency SNHL(4 kHz or more) and 21.3% participants had mild SNHL. One candidate each had moderate SNHL and profound SNHL comprising 1.3% in each category.

A study done by Shrestha I et al showed that 66.4% had a clear notch at 1 4 KHz. There is another study done by R Deepak who concluded that 21% had noise induced hearing loss with notch 2 at 4 KHz. In this study as per WHO definition and grading of hearing impairment total 49.3% participants had hearing impairment; out of them 45.3% have slight hearing impairment and 4% have moderate hearing impairment. A study done by R Deepak showed that 51.8% had mild hearing 2 loss, 13.6% had moderate & 0.9% had severe hearing loss. A study done by Shrestha et al showed that 81.2% had SNHL which was of moderate to severe intensity in 37.7% of 4 individual.

Conclusions:

Measures that can be implemented to reduce prevalence of hearing loss include; Mass transportation, Distribution of traffic by sensible road & traffic signal planning, Restricting number of duty hrs to 4-6, Banning noisy and illegal horns and sirens, Making susceptible people aware about hearing impairment and encouraging regular ENT examination, Transfer of those with hearing loss to less noisy area or having compulsory rotation in duty, Encouraging use of noise-reduction devices or ear protection wherever possible.

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