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Self-reported hearing impairment among rural adult population of coastal Tamil Nadu

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ABSTRACT

Background: Hearing impairment is the most frequent sensory deficit in human population and irrespective of the age of development, has devastating consequences. This study was done to assess the burden of hearing impairment among the rural adult population of a coastal area in Tamil Nadu.
Methods: This community-based descriptive study was conducted in a rural area of Tamil Nadu state in India. The study protocol was approved by the institute ethics committee of PIMS. Eligible participants from all the household in the study area were selected. A semi-structured questionnaire was used to collect the information and hearing impairment was assessed by self-reporting by the participants. Proportions for categorical variables were calculated and Chi-square test was applied to find the associations.
Results: Among a total of 5621 participants interviewed and examined, 232 (4.1%) participants reported to have hearing impairment. Among them, majority reported that they have hearing impairment due to advanced age or non-specific causes resulted in hard to hearing (77.6%) and 12.5% reported to have deafness. Ear discharge (4.3%), wax (3.0%) were other commonly reported cause of hearing impairment. The hearing impairment increased with age and was common among elderly. The reported hearing impairment ranges from 1.5% to 11.3% in different age groups. Age, sex, education and occupation were significantly associated with hearing impairment (p value <0.05).
Conclusions: A large number of people in rural communities were having hearing impairment. Improving access to health education and raising awareness about prevention and the needs of people with hearing loss in community is required.

Keywords: Hearing impairment, Deafness, Rural India

INTRODUCTION

Hearing impairment is the inability to hear as well as someone with normal hearing. Hearing impaired people can be Hard Of Hearing (HOH) or deaf. If a person cannot hear at all, then they have deafness.[1] Among all the senses, hearing impairment is the most frequent sensory deficit in human population. Hearing impairment, irrespective of the age of development, has devastating consequences for interpersonal communication, psychosocial well-being, quality of life and economic independence etc. Further, limited access to services and exclusion from communication can have a significant impact on everyday life, causing feelings of isolation, loneliness and frustration among people with hearing impairment.

According to World Health Organization report, 360 million people (5% of world population) have disabling hearing loss worldwide.[1] As hearing impairment is more frequent among elderly, these figures are expected to rise substantially in the future due to ageing of the global

population. The majority of people with disabling hearing loss live in low- and middle-income countries. In India, more than five million persons were reported as hearing disabled in 2011, which accounts for 18.9% of total disability.[2]

In adulthood, disabling hearing impairment can lead to embarrassment, loneliness, social isolation and stigmatization, prejudice, abuse, psychiatric disturbance, depression, difficulties in relationships with partners and children, restricted career choices, occupational stress and relatively low earnings.[3,4]

Since no previous studies were conducted in this area on hearing problems, the present study was undertaken to assess the burden of hearing impairment among the rural adult population. Further, as half of all the cases of hearing loss are avoidable through primary prevention, an assessment of hearing problems would be useful for proper interventions to reduce the hearing impairment.

METHODS

This community-based descriptive study was conducted in rural area of Kanchipuram district of Tamil Nadu state in India. The study area with an approximate population of eleven thousand is the field practice area of Department of Community Medicine, Pondicherry Institute of Medical Sciences (PIMS) in Puducherry.

The study protocol was approved by the institute ethics committee of PIMS. A house to house survey is done regularly in the study area so the list of all the households was already available with Department of Community Medicine, PIMS.

The eligible participants from all the household were selected. After providing participant information sheet (in local language) and explaining about the study purpose and procedures, informed written consent was obtained from all the subjects. In case the subject could not sign, a thumb impression was taken.

This study was done as part of re-orientation of medical education posting, where the data were collected by 6th semester MBBS students. All the students were given prior training for data collection including taking informed written consent, administering questionnaire, interview techniques and proper physical measurements. Questionnaire was translated in local language and after pretesting, it was suitably modified. Each household in the study area was visited and the available subjects were interviewed. If nobody was present in the household during the first visit, the student revisited it. Postgraduate students and the faculty of Department of Community Medicine randomly checked 10% of the proforma for completeness and quality. Hearing impairment was assessed by self-reporting[5-7] by the participants and physical examination was also done.

Data collection was done during the month of February 2015. Data were entered in EpiData and exported to SPSS version 16.0 (SPSS Inc.).

Proportions for categorical variables and mean values for continuous variables were calculated. Chi-square test was applied to find the associations and p value of <0.05 was considered as statistically significant.

RESULTS

A total of 5621 participants were interviewed and examined. Most of the participants were of age less than 40 years. Elderly constitutes 18.3% of the study population.

Majority (55.3%) of the study participants were female. More than one-third of the study participants were illiterate and 41% were unemployed.

Overall, 232 (4.1%) participants reported to have hearing impairment. Among them, majority reported that they have hearing impairment due to advanced age or non-specific causes resulted in hard to hearing (77.6%) and 12.5% reported to have deafness. Ear discharge (4.3%), wax (3.0%), congenital deafness (0.9%), perforation of eardrum (0.9%) and tinnitus (0.9%) were other reported cause of hearing impairment (Table 1).

Table 1: Hearing impairment and its causes reported by the study participants.

	n	%
Variable impairment		
Yes	232	4.1
No	5389	95.9
Perceived cause of hearing impairment (n=232)		
Congenital deafness	2	0.9
Deafness	29	12.5
Ear discharge	10	4.3
Age related hearing loss/non-specific causes resulting in hard of hearing	180	77.6
Perforation of eardrum	2	0.9
Tinnitus	2	0.9
Ear wax	7	3.0

As shown in Table 2, the reported hearing impairment ranges from 1.5% among participants of 18-29 years to 11.3% among elderly. The hearing impairment increased with age and were common among individuals of 60 years and above. Higher proportion of females reported hearing impairment as compared to males. Participants with no formal education and unemployed reported to have more hearing impairment. Age, sex, education and occupation were significantly associated with hearing impairment (p value <0.05)

Table 2: Socio-demographic characteristics and hearing impairment among study participants.

Characteristic	Subjects	Hearing impairment	P value
	n (%)	n (%)	
Age groups			
18-29	1581	24 (1.5)	<0.01
30-39	1139	21 (1.8)	
40-49	1097	30 (2.7)	
50-59	778	48 (6.2)	
60 & above	1026	109 (10.6)	
Sex			
Male	2513	87 (3.5)	0.024
Female	3108	145 (4.7)	
Education			
Illiterate	2104	139 (6.6)	<0.01
Primary	632	28 (4.4)	
Middle	1133	32 (2.8)	
High school/intermediate	1167	20 (1.7)	
Graduate	539	13 (2.4)	
Post graduate	46	0 (0)	
Occupation			
Professional	181	8 (4.4)	<0.01
Semi-professional	136	3 (2.2)	
Clerical	140	0 (0)	
Farmer	1759	58 (3.3)	
Skilled worker	363	4 (1.1)	
Semi-skilled worker	358	4 (1.1)	
Unskilled	383	22 (5.8)	
Unemployed	2302	133 (5.8)	
Total	5621	232 (4.1)	

DISCUSSION

Half of all cases of hearing loss are avoidable through primary prevention, early detection and interventions are crucial to minimizing the impact of hearing loss. Among 360 million persons in the world with disabling hearing loss, 328 million (91%) are adults (183 million males, 145 million females).(1) Studies done in north India found that 15.1% of the rural population and 5.9% of urban population was having hearing impairment.[8] In the present study, 4.1% of the study participants reported to have hearing impairment. The lower prevalence of impaired hearing in present study could be due to self-reporting method used to assess the prevalence of hearing impairment. But, there are studies where the prevalence of self-reported hearing impairment was found higher as compared to measured hearing impairment.[9]

Regarding their specific causes of hearing impairment, majority reported that they have hearing impairment due to advanced age or non-specific causes resulted in hard to hearing (77.6%) and 12.5% reported to have deafness. People with hearing loss can benefit from the use of hearing devices but lack of availability of services for fitting and maintaining these devices are few barriers in many low-income settings, making properly-fitted, affordable hearing aids and cochlear implants and providing accessible follow-up services in all parts of the world will benefit many people with hearing loss.

The reported hearing problem ranges from 1.5% among participants of 18-29 years to 11.3% among elderly. The hearing problems increased with age and were common among individuals of 60 years and above. Similar findings were observed in a study done among rural population of Tamil Nadu[10] but the prevalence of hearing impairment observed in other studies was much higher as compared to the present study.[11] In the present study, unemployed people were found to be significantly higher hearing problems (p value <0.05) but it has been observed that adults with hearing loss have a much higher unemployment rate. Further, those who are employed, a higher percentage of people with hearing loss are in the lower grades of employment compared with the general workforce.

Improving access to education and vocational rehabilitation services, and raising awareness especially among employers about the needs of people with hearing loss, would decrease unemployment rates among this group.[1] In addition to the economic impact of hearing loss at an individual level, hearing loss substantially affects social and economic development in communities and countries so interventions in the form of trained community health staff could be an effective way for improving the access for rural community for health care services specific to ear problems.[12] As the prevalence of hearing impairment was higher among elderly, specific need based interventions for this population can be provided.

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