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Hearing Loss among Elderly Patients in an Ear Clinic in Nigeria

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Abstract

Background - Hearing Loss is a very common disabling condition among the elderly. It is estimated that above the age of 60, one in four people have some degree of hearing loss and over the age of 70, to one in two. Approximately one-third of persons above 65 years have disabling hearing loss. This study was to investigate the pattern of hearing among the elderly patients in an ear clinic in Nigeria.

Methods - Eighty-eight elderly patients were studied ex-post facto. These were the patients aged over 65 among 586 patients who had presented for hearing loss and had been sent for Pure Tone Audiometry over a period of three years.

Results - The eighty eight patients studied comprised 15% of the 586 patients who had been seen for Pure Tone Audiometry. Mean age was 72.4 years (SD= 6.58). The Male: Female ratio was 1.9:1. There was normal hearing in 18%. More than eight out of ten (82%) had hearing loss. Among those with hearing loss, more than eight out of ten (82%) had disabling hearing loss. Although a mixed hearing loss pattern predominated, there where almost as many with only sensorineural hearing loss. Thus more than seven out of ten had some sensorineural hearing loss. And although the majority of those with hearing loss had the classical sloping presbyacisis pattern, other patterns were also found.

Conclusion - Disabling hearing loss is very common among the elderly. It is usually due to presbyacusis but can also be from other causes. Since there is a risk of subsequent psychological problems and social isolation, all caregivers of elderly people should be aware of this and provide care or guidance appropriately. In addition, strategic initiatives directed to the elderly, the general public, health workers, professionals working with the elderly, ear and hearing specialists, government entities and Non Governmental Organizations are needed to address the issue.

Keywords: Hearing Loss, Elderly, Rehabilitation, Nigeria

1. Introduction

Ageing is not a uniform process in all people. But while it is unique in each individual, it is generally true that most elderly people will experience a deterioration in their sensory organs. Principal among the senses affected by ageing is the sense of hearing. It is estimated that an average of one in ten people have some degree of hearing loss. But above the age of 60, the estimate changes to one in four and over the age of 70, to one in two. Even though some people will maintain normal hearing, as we live longer, the chances that we will experience some reduction in our ability to hear is high (Wayner 2002). Diminution of hearing in the elderly is called presbyacusis. It is a progressive, bilateral, sensorineural hearing loss that occurs in older people as they age; a multifactorial process driven by environmental factors and exacerbated by concurrent disease (Lui & Yan 2007).

Global estimates for hearing loss for population above 65 years are staggering. According to the World Health Organization (WHO), there are 164.5 million persons of above 65 years with disabling hearing loss. This is approximately one-third of persons above 65 years. Also, it is estimated that the population of persons above 65 is growing at a faster rate than the general world population. World population will grow from 6,853 million people to 7,770 million in the period 2010-2020 (growth 11%) while the population of people aged 65 years or more will grow from 626 million in 2010 to 855 million in 2019, representing a growth of 37% (WHO, 2011). Thus it is expected that the overall proportion of people aged over 65 years with hearing loss will increase over time.

Also, the prevalence of disabling hearing loss in persons above 65 years is highest in Sub-Saharan Africa, Asia Pacific, and South Asia and in general, the lower the income, and the literacy of the region's population, the higher is the prevalence of disabling hearing loss (WHO 2012). Unfortunately, there is little information available in these places of higher prevalence. In a developing country such as Nigeria, more information is needed to provide a basis for planning a cost-effective program on hearing conservation for the elderly with

normal hearing and proper management for those with presbyacusis. This study therefore investigated the pattern of hearing among the elderly patients seen in an ear clinic in the Ladoke Akintola University of Technology Teaching Hospital, Osogbo, Nigeria.

2. Methods

This study was an institutionally approved descriptive cross sectional study of all 88 elderly patients among the 586 patients sent for audiometric assessment within 3-year period in the department of Otorhinolaryngology–Head and Neck Surgery, Ladoke Akintola University of Technology Teaching Hospital, Osogbo, Osun State, NIgeria . The participants were all aged 65 years and above. Data for the study were obtained from the records of the patients who had been seen between January 2010 and December 2012. The following data were extracted: age, sex, audiograms, types of hearing loss diagnosed, degrees of hearing loss and patterns of hearing loss.

The inclusion criteria were: age of greater than 65 years, complaint of hearing loss, and the performance of Pure Tone Audiometry for the subject. Those whose audiograms were missing and those underlying factors that could be responsible for hearing loss (such as ear wax impaction, tympanic membrane perforation, etc) were excluded from the study. However, those with reversible causes of hearing loss (like ear wax impaction) in whom such pathology had been successfully treated were also included in the study. A calibrated diagnostic audiometer MA 53 had been used to determine the hearing thresholds of the patients at frequencies between 125Hz and 8000Hz in a sound-proof booth and by a certified audiologist. Thresholds of the patients from the speech frequencies (500Hz, 1000Hz and 2000Hz) were used to determine the pure tone averages. Data entry cleaning and analysis were done with SPSS version 14. Results are summarized and displayed as frequencies and percentages.

3. Results

A total of 88 subjects were studied. This constituted 15% of all the patients who had pure tone audiometry within the study period. Table 1 shows the age distribution.

Table 1 - Age Distribution

Age Category	Frequency	Percentage (%)
Early Elderly*	57	65
Late Elderly**	31	35
Total	88	100

* = 65 – 74 years ** = 75 years and above

Mean age was 72.4 years (SD= 6.58) . The majority of patients (65%) were early elderly patients (Aged 65 – 74 years). Table 2 shows the sex distribution. There were 58 males and 30 females.(M:F= 1.9:1).. and 2 and sex distribution respectively.

Table 2 - Sex Distribution

Sex	Frequency	Percentage (%)
Male	57	65
Female	31	35
Total	88	100

Table 3 shows the frequency distribution of the type of hearing loss found among the subjects. The results are displayed in terms of the number of ears (since each ear for each patient was tested separately).Only 18% of the ears demonstrated normal hearing patterns, Among the others, the largest proportion (38%) presented with mixed hearing loss, slightly fewer (34%) presented with pure sensorineural hearing loss and 10% had conductive hearing loss.

Table 3 : Types Of Hearing Loss Found In Subjects

Hearing Pattern	Frequency	Percentage (%)
Normal	32	18
Conductive Hearing Loss	17	10
Sensorineural Hearing Loss	60	34
Mixed Hearing Loss	67	38
Total	176	100

Table 4 shows the frequency distribution of the degrees of hearing loss found in the ears of the subjects. The entire spectrum of degree of hearing loss from normal hearing to profound hearing loss was found with a sizeable proportion in each category. However, moderately severe hearing loss stood out as the commonest degree of loss that was found. It was found in about a quarter (24%) of ears examined. Only 18% of the ears examined had normal hearing. Severe and profound hearing loss each had the lowest proportion of 12% each. However, it is pertinent to note that taken together, the ears with severe and profound hearing loss also constituted almost a quarter (24%) of the ears examined.

The audiometric patterns obtained for the ears are displayed in table Table 5. The sloping pattern was the predominant pattern (53%), distantly followed by the normal pattern in 18%. Other patterns that were found included the flat pattern, the peaked pattern, the precipitous pattern, the trough pattern and the notched pattern

Table 4: Degrees Of Hearing Loss In Subjects

Degree Of Hearing Loss (Threshold In Db)	Frequency	Percentage
Normal Hearing (0 - 25 Db)	32	18%
Mild Hearing Loss (26 – 40 Db)	26	15%
Moderate Hearing Loss (41 – 55 Db)	33	19%
Moderately Severe Hearing Loss (56 – 70db)	42	24%
Severe Hearing Loss (71 – 90 Db)	21	12%
Profound Hearing Loss (91 Db And Above)	22	12%
Total	176	100%

Table 5: Audiogram Patterns Found Among Subjects

Patterns Of Hearing	Frequency	Percentage
Normal Pattern	32	18%
Flat Pattern	16	9%
Sloping Pattern	93	53%
Trough Pattern	2	1%
Peaked Pattern	16	9%
Notched Pattern	2	1%
Precipitous Pattern	15	9%
Total	176	100%

4. Discussion

In this study, we found that the elderly (aged greater than 65 years) constituted a large proportion of those who presented for hearing assessment in our institution. There were almost twice as many males as females. More than eight out of ten (82%) had hearing loss. Among those with hearing loss, more than eight out of ten (82%) had disabling hearing loss (defined by the World Health Organization as moderate or worse hearing loss in the better ear). Although a mixed hearing loss pattern predominated, there was almost as many with only sensorineural hearing loss. Thus more than seven out of ten had some sensorineural hearing loss, the form of hearing loss found in presbyacusis. And although the majority of those with hearing loss had the classical sloping presbyacisis pattern, other patterns were also found among them.

Our finding of a large number of elderly people among those presenting for audiometry as a result of hearing loss is expected since it is well known that there is a degeneration of the inner hair calls of the cochlea in the inner ear as people age. This degeneration is gradual and leads to a progressively worsening loss of hearing acuity. It is true that normal hearing can still be found among the elderly, but as was demonstrated in our study this situation may be true for only a small proportion of elderly people. The implication of this for practice is that in order to maintain a good quality of life for the elderly, health practitioners dealing with them should be aware of the high risk of hearing loss and react promptly and appropriately.

There have been conflicting findings with respect to whether hearing loss is the elderly is commoner in males or in females. In our study, there was a male preponderance with there being about twice as many males as females. Male preponderance has also been reported by Rosenhall et al. (2003), Karlsmose et al. (2000), Leila and Renato (2007) and Rosenhall (2000). On the contrary, Bhatia et al. (1976) found a higher incidence of presbyacusis in women than in men. And Quaranta, Assennato & Sallustio (1996), found no significant differences in the hearing level of elderly men and women. Our study, like many of these studies, was a hospital based study and the findings may not represent the true community prevalence. Therefore while it does suggest that there may be a preponderance of males among the elderly who present in the hospital, the findings cannot be generalized to the larger community.

Majority of the elderly in our study had disabling hearing loss. More specifically, the most prevalent degree of loss was moderately-severe hearing loss. With this degree of hearing loss, there is difficulty even with perception of loud speech and loud sounds. This result is similar to that in a previous study of 63 patients with a median age of 79 years. Eighty three percent of the subjects in that study tested positive audiometrically for hearing impairment. Of these, the majority (54%) had moderately-severe hearing impairment, 29% had mild impairment and only 17% had normal hearing. These data underscore the magnitude of the problem that the elderly who present with hearing loss often face.

The prevalence of disabling hearing loss in our study is higher than the WHO estimate that one-third of those aged above 65 present with disabling hearing loss. A possible explanation is that our study is hospital-based and does not give a true community prevalence. Those that are seen in the hospital are those who have come with complaints of hearing loss. This notwithstanding, the fact that the vast majority of those who present in the hospital have disabling hearing loss is significant. Thus ear clinics and clinics that attend to those aged 65 and over need to be well equipped with facilities and staffed with well-trained personnel in order to be able to meet the needs of this group of people. Even though a fewer number present with mild hearing loss, clinics should also be ready with hearing conservative programs. These hearing conservative programs can also be combined with screening programs for the elderly and launched from the clinics into the community.

It is noteworthy also that apart from the sensorineural hearing loss expected in people with presbyacusis, our study also detected other forms of hearing loss. This suggests that the hearing loss in the elderly ,while largely due to presbyacusis may also be caused by other factors. In our series a proportion of the subjects presented with conductive hearing loss and mixed hearing loss. Conductive hearing loss is due to diseases of the external and middle ear not related to ageing and is usually curable. Mixed hearing loss implies the presence of both conductive and sensorineural hearing loss, suggesting the presence of a disease of the external or middle ear in addition to the sensorineural hearing loss of presbyacusis. If the disease causing the conductive component is addressed it reduces the hearing deficit and makes rehabilitation of hearing for the residual hearing loss much easier. Thorough otological assessment of elderly people presenting with hearing loss is therefore necessary to ensure that the best possible management is given.

Closely related to the type of hearing loss is the pattern of the audiogram found in the subjects. As was the case with the type of hearing loss found, while the predominant audiometric pattern found was the sloping type due to

presbyacusis, other patterns were also found. Similar results have been reported from other studies. One such study of 207 elderly patients found the sloping audiometric curves to be the most prevalent in elderly patients (Ahmad et al. 2007). Interestingly, one study by Kelly et al. (2009) reported the flat pattern, not usually found in presbyacusis, as the most dominantly represented pattern. The implication of this is similar to that of the finding of other types of hearing loss among the elderly: while presbyacusis is the commonest cause of hearing loss among the elderly, caregivers of the elderly must be aware that there can be other potentially easier to manage causes, possibly even with better prognosis.

The behavioural implication of hearing loss in the elderly is that due to the difficulties they may have with the perception of normal speech and important environmental sounds that are of low to moderate loudness, they can develop psychological problems and may experience social isolation. It is a therefore a rule of thumb in ear care that hearing loss in the elderly should not be ignored since a thorough evaluation and proper rehabilitation can significantly improve the quality of life in these elderly people who many times are also battling with other disabling conditions. All caregivers of elderly people should be aware of this and provide care or guidance appropriately.

We note that there are a number of limitations with our study, The first of these limitations is that the study was a hospital-based study. Even more specifically, it was based in an ear clinic and our study subjects comprised only those who had complained of hearing loss. Thus our target population for the study is the population of elderly people who presented with hearing loss and not the general population and the prevalences refer to this population and not to the general population. In addition the sample size for the study is small. A larger study will be more comprehensive and yield more information. Larger and population-based studies are recommended to be able to measure the true community impact of hearing loss in our community.

We also recommend that more stategic initiatives be developed to encourage conservation of hearing in the elderly and facilitate the provision of adequate facilities for treatment and rehabilitation of elderly people with hearing loss. These should include initiatives directed to the elderly encouraging healthful living and avoidance of known risk factors for hearing loss, regular hearing assessments and provision of information about available treatment and rehabilitation options, and those directed at the general public to increase awareness on hearing loss and hearing conservation. Health workers, professionals working with the elderly and ear and hearing specialists should also be made to undergo regular training and re-training to update them on the trends in treatment and rehabilitation of hearing loss for the elderly. Government entities working alone and in cooperation with Non Governmental Organizations should ensure provision of modern day equipment in the field of audiology and otology, training of otologists and audiologists and even auxiliaries for ear care, subsidization of prosthesis and amplification costs and legislations on hearing conservation.

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