

Profile of the elderly population referred for hearing aid fitting in a public hospital

Perfil populacional de idosos encaminhados à seleção de próteses auditivas em hospital público

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ABSTRACT

Purpose: To identify the profile of the elderly population referred for hearing aids fitting in a public hospital, regarding sociodemographic characteristics, general and hearing health. **Methods:** The data of 191 elderly were collected from medical records. The analysis was performed using descriptive statistics, frequency distribution and analysis of variance. **Results:** There was a predominance of female participants, who were born in São Paulo, Caucasians, with proper residence, years of education between zero and four years, no occupation labor, income between zero and three salaries, regular economic situation and lack of private healthcare insurance. Most referrals came from São Paulo Hospital. Patients spend more than 60 minutes on average to make the journey from his residence to the clinic. Relationship between perception of regular or poor health and chronic diseases, dizziness, tinnitus, hearing loss progression, occurrence of visual difficulties, transportation and time of auditory deprivation observed in this study. Type, level and audiometric configuration with sensorineural, moderate and downward sloping predominance. Regarding the selection of hearing aids, predominated BTEs hearing aids, skeleton and canal ear molds. **Conclusion:** The profile of the elderly obtained in this study leads to important insights about accessibility to health services and health education.

Keywords: Speech, Language and Hearing Sciences; Hearing aids; Health profile; Aged; Health services needs and demand

RESUMO

Objetivo: Identificar o perfil populacional de idosos encaminhados à seleção de próteses auditivas em um hospital público, no que diz respeito às características sociodemográficas, de saúde geral e auditiva. **Métodos:** Estudo com 191 idosos e coleta de dados realizada por meio de prontuários. Análise realizada por meio de estatística descritiva, distribuição de frequências e análise de variância. **Resultados:** Predominância de participantes do gênero feminino, nascidos no Estado de São Paulo, raça branca, residentes em domicílio próprio, escolaridade entre zero e quatro anos, não ocupados, renda salarial entre zero e três salários mínimos, situação econômica regular e ausência de plano privado de saúde. A maior parte dos encaminhamentos partiu do próprio Hospital São Paulo. Em média, os pacientes gastam mais de 60 minutos para realizar o trajeto desde sua residência até o ambulatório. Foi observada relação entre percepção de saúde regular ou ruim e presença de doenças crônicas, tontura, zumbido, progressão da perda auditiva, ocorrência de dificuldades visuais e de locomoção e tempo de privação auditiva. Tipo, grau e configuração audiométrica com predominância neurossensorial, moderado e descendente respectivamente. Quanto à seleção de próteses auditivas, houve predomínio de aparelhos retroauriculares e moldes auriculares dos tipos invisível duplo e canal. **Conclusão:** O perfil dos idosos foi obtido e nos levou a reflexões importantes sobre acessibilidade aos serviços de saúde e da educação em saúde.

Descritores: Fonoaudiologia; Auxiliares de audição; Perfil de saúde; Idoso; Necessidades e demandas de serviços de saúde

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INTRODUCTION

The proportion of elderly population has grown quickly because of increasing life expectancy and decreasing birth rates, which implies greater demand for health systems. In 2006, through the Pact for Health, the National Health System (SUS in portuguese) has considered the health of the elderly population as a priority. Each year, 650,000 elderly are incorporated into the Brazilian population, most with chronic diseases and some have functional limitations⁽¹⁾.

One of the chronic diseases that can affect the elderly population is the physiological decrease of hearing, which is the result of the aging process, called presbycusis⁽²⁾, which is characterized by slowly progressive hearing loss, worsening of hearing sensitivity, especially for high-frequency sounds, and difficulty understanding speech. In this case, the hearing aids are the primary modality of rehabilitation, when there is no medical or surgical treatment.

In Brazil, the Ministry of Health established in 2004, the National Policy on Hearing Health Care, through Ordinance No. 2073/GM⁽³⁾, which allowed a full service for the hearing impaired, including a diagnosis, the distribution of hearing aids, follow-up and auditory rehabilitation. In 2012, Ordinance No. 793/GM, established the Network of Care for the Disabled Health, with an interdisciplinary approach, bringing together the arrangements for hearing, physical, intellectual and visual rehabilitations⁽⁴⁾.

The Speech Therapy in the area of public health provides several health measures, contributing information on the health of the population and their demands for medical and social services that are fundamental to the planning of care and health promotion⁽⁵⁾.

The Integrated Center for Care, Research and Education in Hearing (NIAPEA) of the Department of Speech and Hearing Disorders from UNIFESP is a hearing health service that performs procedures of medium and high complexity. It receives patients referred by the Municipal Health Sao Paulo and the São Paulo Hospital (HSP), providing the entire process of selection and fitting of hearing aids, as well as contributing to scientific research.

The high rate of referrals of elderly with hearing impairment to that clinic and the need to identify key issues and guidelines for the definition of priorities for intervention, that the service will provide greater resolution. Therefore, the objective of this study was to identify the profile of the elderly population referred for hearing aids fitting at a public hospital in São Paulo, regarding sociodemographic characteristics, general and hearing health.

METHODS

This is a descriptive study with data collection performed retrospectively through analysis of medical records was

approved by the Ethics Committee of the Federal University of São Paulo (UNIFESP), under number 0584/11.

Data collection occurred in NIAPEA between October 2012 and January 2013.

There are speech therapist's hired and postgraduate students of the program in the Science of Human Communication Disorders, UNIFESP, at levels of specialization, masters and doctoral degrees in NIAPEA. They assisting patients referred by HSP and other health services, private or public. Such professionals work throughout the process: audiological evaluation; selection, adaptation and distribution of hearing aids; assistance, counseling and follow-up of patients with hearing aids.

The records of all patients in this service were raised during the second half of 2012 (July to December). After the first analysis, the records were separated by age groups (children, adults and elderly), and was selected elderly population (according to the National Health Policy for the Elderly, an individual aged 60 or over) studied in the research.

Three hundred and ninety new subjects began the process in the second half of the year 2012 in NIAPEA. Seven subjects were excluded because they were not found their records in the file, after three attempts to search. Therefore, 383 subjects had their medical records reviewed. It were found 17 (5%) were between 0 and 3 years of age, 28 (7%) between 4 and 14 years, 105 (27%) between 15 and 59 years old and 233 (61%) aged 60 years or over.

Two hundred and thirty-three elderly patients, 42 were excluded because the data were incomplete in the history of the chart. Thus, the total elderly participated in the study 191 (49%) during this period.

Two groups were created: Seniors Young (IJ), aged 60-79 years old and the long-lived (IL), with more than 80 years old, to check the differences between them, in some of the variables studied. IJ group was composed by 128 (67%) of the elderly group and IL by 66 (33%). Some analyzes were conducted with all participants.

Data collected included: age, gender, self-reported race, nationality / place of birth, occupation labor, years of education, housing, economic status, self-perception health, auditory perception, hearing and associated complaints, type, degree and configuration of audiometric of hearing loss, time of sensory deprivation, selection of hearing aids and earmolds, time of transportation from their residence to the NIAPEA and service that referred the patient to NIAPEA.

Initially, data were double entered into spreadsheets for analysis of consistency and for statistical analysis. The descriptive, inferential data and the relationship between them analysis was performed using the statistical package Minitab version 15 for Windows.

Inferential analysis test were applied Chi-square test of homogeneity, to assess the association between two variables, and ANOVA, with one factor or nonparametric Kruskal-Wallis test for comparison of means or distributions between the

two elderly groups, or between other categories of qualitative variables. It was used 5% level of significance for association between variables.

RESULTS

The data analysis of 191 medical records revealed that 121 (63.3%) elderly were born in the Southeast, with 97 (80%) born in the state of São Paulo, 51 (26.7%) in the Northeast and ten (5.3%) in other Brazilian regions. Nine (4.7%) were foreign (South American, European and Asian).

Regarding self-reported race, 147 (77%) called themselves Caucasians, 21 (11%) mixed race, 16 (8%) blacks and 7 (4%) yellow.

As for education, 122 (64%) reported having between zero and four years of study (with 21 (17%) with no schooling), 30 (16%), between 5 and nine years of study and 39 (20%), with ten or more years of study.

As to occupation labor, 164 (86%) said they were not working and 27 (14%) work.

The questions related to housing, 160 (84%) said they reside in their proper home and 31 (16%) not having proper home.

Based on the minimum income of 2012 (R\$ 622.00), according to Decree No. 7,655 of December 23, 2011, 125 (65%) subjects mentioned monthly income between zero and three minimum incomes (12 (10%) with incomes below the minimum salary), 49 (26%), between 4 and 6 salaries and 17 (9%) from seven-ten.

As the economic situation, 39 (20%) reported as being good, 114 (60%) as regular and 38 (20%) as bad.

About private health insurance, 154 (80%) reported not having, while 37 (20%) have health insurance.

Regarding visual impairments and gait, 155 (81%) reported difficulty seeing and 90 (47%), walking and / or climbing stairs.

The self-perception of hearing, 184 (96%) reported some type of hearing difficulties, and 94 (51%) classified as regular difficulty and 81 (44%) as bad. An average of four years of waiting between the onsets of the hearing loss to hearing aid fitting was observed. One hundred and twenty-seven (66%) subjects mentioned that there was an increase of hearing loss, since the perception of symptoms.

The nosological diagnosis, 159 (83%) medical referrals for selection of hearing aids contained no diagnosis, 20 (10%) indicated presbycusis and 12 (7%), other disorders.

It was noted 92 (48%) referrals from the HSP, 57 (30%) of primary care and specialist care and 18 (9%) private clinics.

The results obtained on the degree, type and audiometric configuration of hearing loss showed a predominance of moderate in 106 (55%) ears, sensorineural in 159 (83%) ears and downward sloping in 113 (59%) ears, and these symmetrical results in both ears.

Audiometric thresholds were symmetrical at all frequencies and averages of these thresholds increased with frequency (Table 1).

There was evidence of association between the variables “progression of hearing loss” and “self-perception of health.” The proportion of elderly who said they had health “very good” or “good” (49.2%) was higher among those who reported no progression of hearing loss than among those who reported progression of hearing loss (35.7%) (Table 2).

The elderly referred for selection of hearing aids, were observed 130 (68%) cases of binaural amplification, 43 (22%) of monaural fitting, and 18 (10%) cases of seniors who were not with hearing aids (patients with a mean less than 41 dB HL and / or who chose not to use them).

The 173 subjects who started the process of selection of hearing aids, 151 (87%) were prescribed to BTEs devices and 22 (13%) for intra-aural devices. As for the ear mold in the case of BTEs devices, the most indicated were skeleton type in 61 (35%) cases, and canal, in 45 (26%) cases. The others types of earmolds were canal lock, half-shell, shell or BTEs using thin tubes.

Data regarding overall health, we could investigate the self-perception of individuals as health, in which 80 (41.9%) answered “regular”, 66 (34.6%), “good”, 24 (12.6%), “bad”, 11 (5.8%), “very good” and ten (5.2%), “very bad.” Those who considered their health “regular”, “bad” or “very bad”, 99 (87%) also reported chronic diseases associated with hearing loss, such as diabetes, high cholesterol, hypertension, among others. 63 (64%) of these subjects reported still be smokers or ex-smokers. On the other hand, the percentage of seniors who reported having health “very good” or “good” (65.1%)

Table 1. Descriptives measures for auditory threshold variables 500 Hz, 1 kHz, 2 kHz and 4 kHz, by ear

Frequency	Ear	n	Mean	Standard deviation	Minimum	Median	Maximum
500 Hz	Right	191	42.25	20.31	5	40	120
	Left	191	42.43	21.29	0	40	120
1 kHz	Right	191	48.43	18.95	10	45	120
	Left	191	47.46	21.93	0	45	120
2 kHz	Right	191	55.37	17.56	15	55	120
	Left	191	55.29	19.76	10	55	120
4 kHz	Right	191	64.27	17.76	30	65	120
	Left	191	66.39	19.85	15	65	120

Table 2. Frequency distribution between the variables “progression of hearing loss” and “health perception”

Progression of hearing loss	Health perception					Total
	Very good	Good	Regular	Bad	Very bad	
No	4 (6.1)	28 (43.1)	29 (44.6)	1 (1.5)	3 (4.6)	57 (100.0)
Yes	7 (5.5)	38 (30.2)	51 (40.5)	23 (18.2)	7 (5.6)	134 (100.0)
Total	11 (5.8)	66 (34.6)	80 (41.9)	24 (12.6)	10 (5.2)	191 (100.0)

Chi-square test of homogeneity (p=0.018)

was higher among those who did not have chronic diseases (33.1%).

When analyzing the data, according to the two groups formed (IJ and IL), no evidence of association between the variables “group” and “self-perception of health” was observed, but this evidence was noted between the variables “chronic diseases” and “self-perception of health” (Table 3).

Regarding gender, the IJ group had 65 (50.7%) women and 63 (49.3%) men. Have the LI group had 47 (75%) women and 16 (25%) men. There was evidence of association between the variables “group” and “gender”, it was observed that the proportion of elderly women was higher in the group that the IJ IL group.

It was observed that the number of elderly people living alone group was higher in IL group (28.6%) than in the IJ group (14.1%). In the IL group, all subjects who reported they lived alone were female.

The average transportation time from the residence of the

patient to the NIAPEA was 84.6 minutes for the IJ group and 68.3 minutes for the IL group.

The main complaints associated with hearing loss found tinnitus in 134 (70%) subjects, dizziness in 63 (33%) and both symptoms in 58 (30%). There was no evidence of association between the variables “group” and the variables “tinnitus” and “dizziness”. However, there was evidence of variables “dizzy” and “health perception”. The percentage of seniors who reported having health “very good” or “good” (46.1%) was higher among those who reported no dizziness than among those who reported (28.6%). There was also evidence of an association between variables “tinnitus” and “health perception.” The percentage of seniors who reported having health “very good” or “good” (54.4%) was higher among the elderly who did not have tinnitus than among those who had (34.5%) (Tables 4 and 5).

Except for the age variable, the other variables showed great variability and asymmetry. In such cases, the median is the best measure of position. Thus, the mean age was 75 years; median

Table 3. Frequency distribution between the variables “chronic disease” and “health perception”

Chronic disease	Health perception					Total
	Very good	Good	Regular	Bad	Very bad	
No	8 (18.6)	20 (46.5)	12 (27.9)	2 (4.7)	1 (2.3)	43 (100.0)
Yes	3 (2.0)	46 (31.1)	68 (45.9)	22 (14.9)	9 (6.1)	148 (100.0)
Total	11 (5.8)	66 (34.6)	80 (41.9)	24 (12.6)	10 (5.2)	191 (100.0)

Chi-square test of homogeneity (p=0.001)

Table 4. Frequency distribution between the variables “dizziness” and “health perception”

Dizziness	Health perception					Total
	Very good	Good	Regular	Bad	Very bad	
No	10 (7.8)	49 (38.3)	52 (40.6)	14 (10.9)	3 (2.3)	128 (100.0)
Yes	1 (1.6)	17 (27.0)	28 (44.4)	10 (15.9)	7 (11.1)	63 (100.0)
Total	11 (5.8)	66 (34.6)	80 (41.9)	24 (12.6)	10 (5.2)	191 (100.0)

Chi-square test of homogeneity (p=0.021)

Table 5. Frequency distribution between the variables “tinnitus” and “health perception”

Tinnitus	Health perception					Total
	Very good	Good	Regular	Bad	Very bad	
No	5 (8.8)	26 (45.6)	21 (36.8)	3 (5.3)	2 (3.5)	57 (100.0)
Yes	6 (4.5)	40 (29.8)	59 (44.0)	21 (15.7)	8 (6.0)	134 (100.0)
Total	11 (5.8)	66 (34.6)	80 (41.9)	24 (12.6)	10 (5.2)	191 (100.0)

Chi-square test of homogeneity (p=0.043)

transport time from the residence of the patient to the NIAPEA was equal to 60 minutes; the median years of schooling was four years old; the median monthly income was 1,300, 00 real, and the median time between onset of symptoms of hearing loss to be identified, and early treatment was four years.

DISCUSSION

The increase in life expectancy of the population has important consequences on the social and economic field. So, has grown the interest of the scientific community on issues of aging. The SUS has become more important to know the population that generates demand for care. Not just increase the number of years lived, but you need to invest for the increase in life expectancy is accompanied by improvements in health conditions. Therefore, you can enjoy an active and healthy aging for the longest period that it is possible⁽⁶⁾.

It observed that over 60% of subjects who started the process of hearing aid fitting in NIAPEA in the second half of the year 2012, were more than a 60 years old (mean 75.2 years). The fact explained by the growing number of elderly in all countries of the world, and greater demand for health services, according to the increasing incidence of chronic diseases⁽⁷⁾, such as presbycusis.

Regarding age, the most growing age group in the world is that of individuals aged 80 years old or more⁽⁸⁾, which affects social, cultural and epidemiological sectors, since this age group, the prevalence of morbidity and disability is much higher. There was a predominance of females in both groups considered in the literature as the most longevity⁽⁹⁾ and more concerned with hearing impairment, as well as general health compared to men⁽¹⁰⁾. The IL group had a greater proportion of women, compared with the IJ group. The differential mortality between genders shows that women live longer than men do, with increasing age⁽¹¹⁾.

Regarding location of birth of the subjects, there was a great predominance of births in the state of São Paulo, but 26% of the subjects were born in the Northeast, which can be explained by migratory movements, especially in the 50 s, 60 s and 70 s⁽¹²⁾.

On self-reported race, there was a predominance of individuals who called themselves as Caucasians. There was a predominance of brown and black groups who use the SUS and Caucasians not using SUS. However, the study did not mention who named the race type of the patient⁽¹³⁾. Thus, another important fact is the presence of heterogeneity of races in our country.

Regarding residence, 80% of subjects reported having proper residence next to results observed in a study conducted in the city of Recife (PE), Brazil⁽¹⁴⁾, showing a great achievement for Brazilian elderly, as makes them more independent of other family members. The proportion of elderly living alone was higher in the IL group, mostly female, that agreement with another study conducted in São Paulo⁽¹⁵⁾. Higher incidence of women who live alone, indicating that with advancing age, this

trend increases. However, the condition of living alone, while indicating independence is considered risk⁽¹⁶⁾.

The incomplete primary education (zero to four years of study) was predominant, a fact confirmed by the literature because, among individuals who seek public health services in the country, there is a predominance of low education⁽¹⁷⁾. Over 85% of elderly have declared no occupation labor, with only income from retirement, which may have reflected the perception of the economic situation⁽¹⁸⁾, as 80% defined as “regular” or “bad” and a large part mentioned live with income between zero and three minimum salaries.

Almost 80% of referrals to the NIAPEA came from other sectors of the HSP (patients who underwent another treatment), or follow the reference system of the SUS, from primary care⁽¹⁹⁾. The geographical access of patients to the service⁽²⁰⁾, found a median of 60 minutes between the times taken from their homes to the NIAPEA, which makes coming to appointments, especially when follow-ups are needed at the beginning of hearing aids fitting. It is important to emphasize that the type of transportation must considered because patients rely on public transportation.

There was an association between self-perception of health and chronic diseases, regardless of the groups (IJ and IL), which is confirmed by another study in São Paulo, who added that the self-perception of health is also an indicator of mortality⁽²¹⁾. Health perception was worse in subjects whose gap between the onset of hearing loss and the diagnosis was higher. The longer the period of sensory deprivation, the worse will be the consequences for the subject, as the social and emotional domains⁽²²⁾.

Regarding access to health insurance, it was found that most patients do not have health insurance, so looking for the public health service. However, studies have reported a tendency for state funding for higher cost procedures, even for those individuals with good economic conditions⁽²³⁾.

The large amount of referrals with diagnosis unknown to hearing loss is common⁽²⁴⁾. We know that the search for the cause of the problem is a big help for better understanding of the complaints and symptoms.

The most frequent complaint associated with hearing loss was tinnitus. It was a symptom often associated with hearing loss in the elderly⁽²⁵⁾. Thirty percent subjects reported dizziness, which agreed with the average found in other studies⁽²⁶⁾. The prevalence of symptoms increases significantly with increasing age⁽²⁷⁾, affecting the perception of health and quality of life of these individuals.

The incidence of hearing loss is sensorineural bilateral, moderate and downward sloping, which agrees with data from other surveys conducted with individuals with hearing aids⁽²⁸⁾, since the prescription for hearing aids is the primary sector of rehabilitation for such patients.

BTEs devices have significant levels of amplification, volume and program controls more visible, and various possibilities of adjustment and acceptable aesthetic⁽²⁹⁾, which fitted in over

85% of the subjects, when compared with other types. Almost 70% of the patients were fitted with binaural devices, which provides better sound localization and speech recognition in noise compared to monaural⁽³⁰⁾, which provides greater benefit to the patient.

CONCLUSION

The profile of the elderly referred for hearing aid fitting is born in the states of São Paulo; caucasians, low education, not occupation labor; proper home, low income and no health insurance. Women predominated in the item longevity.

Aspects related to health, this study made us reflect on the importance of accessibility and health education. Besides hearing loss, many elderly said visual impairment and gait difficulty. Moreover, the majority of the population spends more than an hour to get to the service, which shows the need for better access to health services. The population needs for health care, because the time between the onset of symptoms of hearing loss and speech therapy was four years. The data on the progression of hearing loss, presence of other chronic diseases and symptoms like dizziness and tinnitus were crucial to a poor self-perception of general health of these subjects, which demonstrates a difficulty in understanding the prognosis of treatment.

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