

# Socio-demographic profile of elderly people with hearing loss in the city of Belém-PA

## Perfil sóciodemográfico de idosos com perda auditiva no município de Belém-PA

## Perfil sociodemográfico de adultos mayores con pérdida auditiva en el municipio de Belém-PA

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### **Abstract**

The growth of the elderly population is a fact, becoming a subject of interest in several studies, since aging has many implications on the quality of life of these individuals. The objective of this research is to delineate the population characteristics of the elderly enrolled in a program of hearing aids of the single health system. Method: a cross-sectional study with 150 subjects, questioned about socio-demographic characteristics and lifestyle, perception of hearing difficulty, self-reference questions regarding dizziness, hearing and falls, and audiometric examination. Results: The mean age was 72.7 years, 63.5% were female, 63.3% reported feeling dizzy, the perception about how long the hearing impairment had been was for more than two years, 54.7% of hearing loss was sensorineural type and moderate degree. Conclusion: the elderly need to be seen in their entirety with population characteristics, so that public policies can be created that meet the diverse needs resulting from the regional differences of the country.

**Keywords:** Aged; Hearing Loss; Unified Health System.

### **Resumo**

O crescimento da população de idosos é um fato, tornando-se assunto de interesse em vários estudos, pois o envelhecimento tem muitas implicações sobre a qualidade de vida destes indivíduos. O objetivo desta pesquisa é delinear características populacionais de idosos inscritos em um programa de concessão

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AMM: data collection, conception, data analysis and writing.

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de órtese auditiva do sistema único de saúde. Método: estudo transversal com 150 sujeitos, questionados quanto às características sócio demográficas e estilo de vida, percepção da dificuldade auditiva, perguntas de auto referência com relação a tontura, audição e quedas e análise do exame audiométrico. Resultados: A média de idade foi de 72,7anos, sendo 63,5% do sexo feminino, 63,3% relataram sentir tontura, a percepção sobre há quanto tempo tem a dificuldade auditiva foi de mais de dois anos, 54,7% acham a audição regular e a perda auditiva foi tipo neurosensorial e grau moderado. Conclusão: o idoso precisa ser visto em sua totalidade com características populacionais, para que se possa criar políticas públicas que atendam às diversas necessidades decorrentes das diferenças regionais do país.

**Palavras-chave:** Idoso; Perda Auditiva; Sistema Único de Saúde.

### Resumen

El crecimiento de la población de adultos mayores es un hecho y se convierte en un tema de interés en varios estudios, pues el envejecimiento tiene muchas implicaciones sobre la calidad de vida de los individuos. El objetivo de esta investigación es delinear características poblacionales de adultos mayores inscritos en un programa de concesión de prótesis auditiva del sistema único de salud. Método: Estudio transversal con 150 sujetos, cuestionados sobre las características socio demográficas y estilo de vida, percepción de la dificultad auditiva, preguntas de auto referencia con relación a mareos, audición y caídas y análisis del examen audiométrico. Resultados: la media de edad fue de 72,7 años, siendo el 63,5% del sexo femenino. El 63,3% relató sentir mareo, la percepción sobre cuánto tiempo tienen la dificultad auditiva fue de más de dos años, el 54,7% consideran la audición regular y la pérdida auditiva fue de tipo neurosensorial y de grado moderado. Conclusión: el adulto mayor necesita ser visto en su totalidad frente a las características poblacionales, para que se puedan crear políticas públicas que atiendan a las diversas necesidades derivadas de las diferencias regionales del país.

**Palabras claves:** Adulto mayor; Pérdida Auditiva; Sistema Único de Salud.

### Introduction

Elderly has been defined as a chronological age of 60 years old or older. Aging is a natural process with physical, psychological and social changes. According to IDB<sup>1</sup> the proportion of elderly people in 2012 was 10.8: 100 inhabitants and the aging index (elder-child ratio) was 44.7, being the highest rate in Rio Grande do Sul (65.4) and the lowest in Amapá (15.4)<sup>2</sup>.

The purpose of aging index research is to monitor this rate in such population, assess the demographic dynamics tendency and also support public policies formulation, management and assessment in the areas of health care and social security. Provided that this population has grown and considering that aging process impacts those individuals, their health, autonomy and quality of life, one of the priorities of the Pact of Health is to implement the National Health Policy of the Elderly People that aims to give integral assistance to this population.

Hearing loss due to aging is one of the damages present in this population. In this period

hearing impairment occurs, impacting communication, quality of life and even contributing to social withdrawal, depression, cognitive decline, low physical functioning, fall related injury and dementia<sup>4,5</sup>. One of the resources that may help to reduce this difficulty in elderly's communication is the hearing orthesis or hearing aids. This device aims to amplify the sounds in the environment and of speech by which all people are exposed to and send them to the wearer's ear.

Elderly who suffer from hearing loss may benefit from this resource. The National Policy on Hearing Health Care in Brazil has benefited children, workers and elderly people through the concession of hearing aids and rehabilitation therapy since 2004. Several studies have been carried out to identify the reasons why this population don't use such devices, including: adaptation difficulties, comfort, maintenance costs, device's functioning, psycho-social and situational factors, and health-care professional's attitude among others<sup>7</sup>.

The purpose of researches has always been to classify the population according to the hearing point of view as well as whether the use of these

devices has really benefited them or not. Such studies aim to analyse the audiological profile by associating it with demographic characteristics and audiometric findings<sup>8</sup>, hearing self perception<sup>9</sup> along with the amplification benefits through self-evaluation questionnaires.

From a holistic approach to aging, in which the elderly is seen by his functional and social limitation and not by his illness, it is important to classify this elderly by his socio-demographic and epidemiologic profile. Based upon this data collection, public policies on the concession of hearing aids and hearing rehabilitation program can be better addressed to assist specific needs of this population.

Some issues are considered in the process of hearing aid concession and adaptation, such as: psycho-social consequences which impact the quality of life, social desintegration<sup>10</sup>, general health condition – mobility, blindness, degenerative diseases; aftercare provided for monitoring hearing aids adaptation, accessibility by public transport and public servants training<sup>11</sup>. All of these aspects may impact hearing aids adaptation process, therefore they must be considered at the time the device model of future wearers is chosen.

In order to adapt the elderly hearing aids concession and rehabilitation program, the aim of this work was established to analyse the socio-demographic characteristics of hearing impaired elderly who are enrolled in the program of hearing aids concession in a public service in the north part of Brazil.

## Method

Cross-sectional study approved by Research Ethics Committee of this institution, under # 43831015.0000.5482.

Data were collected at a Specialized Reference Unit (Unidade de Referência Especializada - URE) of public service, in the city of Belém - PA. This unit belongs to the state and is not linked to the Hearing Care program of the Department of Health (Ministério da Saúde). The sampling frame is composed of individuals who are referred by healthcare centres or seek spontaneously this service. The latter bring the audiometric examinations from their reference unit. The study was based on a non-probability convenience sampling. 150 out of 471 patients, from June 2016 to February 2017, agreed

to participate and fit the research criteria, in which where surveyed 150 patients regardless of gender, above the age of 60 years-old. The exclusion criteria were insufficient cognitive conditions, severe degree of hearing loss that impedes them from understanding questions or refusal to participate in the research.

## Procedures

Data Collection was carried out in two stages:

I – The Elderly were invited to answer a questionnaire designed to get the following information:

- Socio-demographic and lifestyle characteristics: age, gender, occupation, education level, monthly income, marital status;
- General health conditions – chronic diseases such as hypertension, cardiovascular disturbances, diabetes;
- Lifestyle in terms of smoking, alcohol consumption as well as the use of medicines<sup>12</sup>.

Where the patients were referred from; information such as housing, sanitation and other data based upon the Basic Health Care Information System (SIAB)<sup>13</sup> developed by DATASUS, housing and sanitation situation, healthcare insurance, how they seek help in case of illness, most used media, participation in community work; most used transport.

II – Data regarding dizziness, hearing and falls

- Perception of hearing loss in light of the elderly and his family;
- Self-reference questions regarding dizziness, hearing and falls;
- Analysis of audiometric examination: audiometric examinations were interpreted under the criteria of degree and magnitude<sup>(14)</sup> considering threshold average 500, 1000 and 2000 Hz normal (0-25dBNA), Hearing Impairment (HI) mild (26-40 dBNA), moderate HI (41-55 dBNA), moderately-severe HI (56-70 dBNA), severe HI (71- 90 dBNA) and profound HI (bigger or equal to 91 dBNA).

## Data Analysis

Descriptive analysis was performed through absolute and relative frequencies, measures of central tendency (mean and median) and dispersion (standard deviation, maximum and minimum values). Data were input in a Microsoft® Excel and

interpreted at Statistical *Package for the Social Sciences* (SPSS) program version 22.0 for Windows.

## Results

150 elderly were surveyed, 63.3% female and 36.7% male. Average age of 72.7 years ( $sd \pm 7.6$ ), median of 72, ranging between 60-89 years-old.

The analysis of prevalence on education level showed that 66.7% had elementary school, 22% high school, 8.7% illiterate and 2.6% higher edu-

cation. Most of them (66.7%) have a minimum wage monthly income, 16.7% earn one up to two minimum wages, 7.3% earns from two to four minimum wages, likewise those who stated to be without income, 0.7% earns less than one minimum wage and 1.3% earns more than four wages. In regards to the marital situation, married status prevails (60%).

With regard to health conditions, it is possible to observe in Table 1 that 81.3% hear buzzing sounds and 62% suffer from hypertension. Notably 76.7% use some sort of medication.

**Table 1.** Number and percentage of people, according to clinic and lifestyle characteristics

Variables	Categories	N	%
Buzzing Sounds?	No	28	18.7
	Yes	122	81.3
Hypertension	No	57	38.0
	Yes	93	62.0
Cardiovascular Diseases	No	121	80.7
	Yes	29	19.3
Diabetes	No	115	76.7
	Yes	35	23.3
Smoke	No	141	94.0
	Yes	9	6.0
Drink	No	114	76.0
	Yes	36	24.0
Take any medicine?	No	35	23.3
	Yes	115	76.7
Total		150	100.0

The analysis of the item “how they have been referred to this service”, displayed that 58.7% were referred by the Basic Health Unit (Unidade Básica de Saúde), 28% were referred by an otolaryngologist and 9,3% spontaneous demand.

SIAB data record form analysis provides an accurate social data from this population. 100% have access to electricity; 6,7% reported to burn/bury their garbage; 76% are supplied by filtered water treatment; 74% are supplied by the public water system and 53.3% urine/faeces are disposed of in a latrine (Table 2).

**Table 2.** Descriptive analysis regarding housing and sanity situation of the elderly, according to SIAB questionnaire

Variables	Categories	n	%
Electricity	Yes	149	100.0
Garbage	Collected	140	93.3
	Burnt/buried	10	6.7
	Filter	114	76.0
Water Treatment at home	Boil	2	1.3
	Chlorination	14	9.3
	No Treatment	20	13.3
	Public water system	111	74.0
Water Supply	Well water or spring	39	26.0
	Sanitation (Public)	66	44.0
Faeces and urine	Latrine	80	53.3
	Open air	4	2.7
	Total	150	100.0

Following SIAB data record form item “other information”, 60% don’t have health insurance, 67.3% go firstly to the Basic Health Unit (UBS) in case of a disease; the most used media is television (78%); buses are the most used type of transport (81.3%), 70.7% don’t participate in any community group and 23.6% are engaged in religious groups. (Table 3).

Self-reference data regarding dizziness, hearing and falls, displayed that most of the elderly (63.3%) reported feeling dizzy. The question “In general, you would say that your hearing is”, 38.7% (n=58) replied bad, 54.7% (n=82) informed moderate and 6.6% (n=10) said good. For the question: “Have you fallen in the last 12 months?”, 65.3% (n=98) answered no, 33.3% (n=50) said yes and 1.3% (n=2) didn’t answer. For the third question “Have you felt dizzy or balance difficulty in the last

12 months?”, 60.7% (n=91) answered yes, 38% (n=57) said no and 0.7 (n=1) answered “I don’t know”.

Analysis for the questions regarding hearing loss perceptions demonstrated that 0.7% of the elderly don’t perceive their hearing impairment; 68% reported that they have been suffering hearing impairment for more than two years, 15.3% for two years, 12.7% for one year and only 3.3% for less than six months. For 60.7% of the families, hearing impairment occurs for more than two years, followed by 17.3% for two years, 11.3% for one year, 6% have never noticed any family difficulty, 2.7% for less than six months and 2% didn’t know when they noticed this elderly difficulty.

Considering the type and degree of the elderly hearing loss, we could observe the prevalence of moderate sensorineural loss in both ears. (Table 4).

**Table 3.** Descriptive analysis of the number and percentage of people, according to the SIAB category of other information

Variables	Categories	n	%
Has health insurance	No	90	60.0
	Yes	60	40.0
In case of a disease seek	Hospital	41	27.3
	Hospital and UBS	2	1.3
	Hospital and Drugstore	1	0.7
	UBS	101	67.3
	UBS and Drugstore	1	0.7
	Drugstore	2	1.3
	Other	2	1.3
Most used media	Radio	7	4.7
	Radio and TV	10	6.7
	TV	117	78.0
	TV and Cell phone	1	0.7
	Cell phone	13	8.7
	Newspaper	2	1.3
Participate in community groups	Don't participate in anything	106	70.7
	Cooperative	1	0.7
	Cooperative and Religious Group	1	0.7
	Religious Group	35	23.3
	Associations	2	1.3
	Other	5	3.3
Most used Transport	Bus	122	81.3
	Truck	3	2.0
	Car	14	9.3
	Bicycle	6	4.0
	Motorcycle	3	2.0
	Boat	1	0.7
	On foot	1	0.7
	Total		150

**Table 4.** Analysis of the results regarding the prevalence of hearing loss type and degree according to the analysed ear: right ear (RE) and left ear (LE)

Loss Degree	Type of loss					
	RE			LE		
	Mixed n (%)	Sensorineural n (%)	Total n (%)	Mixed n (%)	Sensorineural n (%)	Total n (%)
Mild	10 (18.2)	21 (23.1)	31 (21.2)	14 (26.9)	18 (18.9)	32 (21.8)
Moderate	33 (60.0)	62 (68.1)	95 (65.1)	32 (61.5)	71 (74.7)	103 (70.1)
Severe	9 (16.4)	4 (4.4)	13 (8.9)	4 (7.7)	3 (3.2)	7 (4.8)
Profound	3 (5.5)	4 (4.4)	7 (4.8)	2 (3.8)	3 (3.2)	5 (3.4)
Total	55 (100.0)	91 (100.0)	146 (100.0)	52 (100.0)	94 (100.0)	147 (100.0)

## Discussion

The surveyed data enable us to have a portrait of future beneficiaries in the hearing aids concession program of the Department of Health (Ministério da Saúde). Therefore, proper programs and actions that meet the social demand of each wearer can be implemented. Elderly hearing loss may be associated with some health problems such as acceleration of cognitive decline, depression, high risk of falls, hospitalization and early mortality. In addition, we observed social isolation, difficulties in locomotion and loss of autonomy<sup>15</sup>.

The analysis of socio-demographic characteristics of hearing-impaired individuals showed that women are the majority who seek solutions to this problem. These data meet the findings of studies carried out in Brazil<sup>9-16</sup> in the public aids concession services as well as in the private ones.

Importantly, a study carried out in the United States<sup>17</sup> reached very similar data when it comes to education. It is worth noting that the American study was carried out with 3379 individuals aged 20-69 years, the authors demonstrated that HI individuals have 3.21 times more probability of having a low education level, 1.58 times higher probability of having low income and 1.98 times higher probability of being unemployed or underemployed compared to the individuals with normal hearing condition. It is also important to highlight that we surveyed elderly, average age of 72.7 years whereas the American study focused a younger population.

Based on the analysis of monthly income data of the elderly who seek this service, we could observe that 66.7% earns one minimum wage monthly. This financial situation prevents this elderly from keeping the hearing aid working; furthermore, battery replacement cost can be an obstacle or an additional expense which they cannot afford in this tight budget. Additional costs with mould replacement and technical assistance may end up being a heavy financial burden for the elderly and his family. Even if these issues were considered in the Program of Aids Concession, how is it possible for an elderly who lives along the river or inside the forest to resolve problems of batteries replacement or aids maintenance? Considering the aids' life expectancy from three up to five years<sup>18</sup> and 22 months average without showing any defect<sup>19</sup>, we need to assure that the wearers benefited by the aids can really afford to

buy the battery as well as to do the maintenance when the warranty expires.

The greatest difficulties of the wearers in the aids' maintenance process are concentrated in two points: maintenance and purchase of batteries (economic issue) and adaptation process (functional issue)<sup>20</sup>. A study carried out in a medical clinic certified by SUS (Single Health System) in 2011<sup>21</sup>, through the analysis of 80 patients medical report (age group of 4-86 years), it was noticed that 94 aids were sent to technical assistance (mainly in-the-canal technology type C model), with less than 12 months of use, due to the bad use (maintenance cost inferior to R\$100,00).

In 2014<sup>19</sup>, a research was carried out to analyse the technical failures of hearing aids in five accredited services of the Department of Health (Ministério da Saúde), from January to May 2009. Among the patient's complaints and the technical problems found in the aids, the following stand out: mute device 48.29%, amplifying failures 37.44%, microphone failures 25.59%, bad connection 24.39%, weak sound 9.76%, noise 8.29% and high battery consumption 2.44%. Cost of repair ranging from R\$500.00-R\$1000.00. This issues show that the program of hearing aids concession cannot be compared to the eye aids program (glasses) as the demand for a good functioning of these devices are greater. Another key point to consider is the adaptation to sound amplification. Not all aid wearers have immediately benefits. Monitoring, orientation and counselling are necessary. Aid wearer's difficulties and problems in handling the aid must be resolved quickly, otherwise, the aid is abandoned. Moreover, these points are considered everywhere and in every country, there is no magic solution for hearing aids adaptation.

Elderly difficulties in becoming part of the hearing rehabilitation programs can be explained by analysing data regarding housing and sanity situations as well as other information on the participation in community groups, most used transport and preferred/ available media. They can end up abandoning this device if there is neither this type of intervention nor financial and social conditions for maintaining it.

It is known that there are several elderly health damages, such as buzzing sounds<sup>9,22,23</sup>, chronic diseases (cardiovascular disturbances, diabetes, hypertension<sup>23</sup>) falls, among others. A research comparing groups of elderly with diabetes, high

blood pressure and hearing impairment<sup>24</sup> revealed that the groups with diabetes and high blood pressure associated demonstrated to have a greater hearing impairment compared to the ones who didn't have such pathologies, only diabetes or only high blood pressure.

Falls are considered to be one of the greatest death risks for this group, for falls leads to hospitalization, surgery, complications and even death in many cases. Elderly falls must be seen as a public issue. Hearing impairment is one of the risk indicators for falls. There are studies demonstrating that elderly risk of falls triplicates with hearing impairment<sup>25</sup>. Among the elderly surveyed, 63.3% reported feeling dizziness, likewise in another study<sup>9</sup>, 60.7% reported having had dizziness or balance difficulty in the past 12 months. These data are important for associating HI to balance functioning.

Importantly, we must consider the perception of hearing impairment by the elderly and their families, for when they notice the problem, hearing impairment has already worsened. Why this delay? We know that hearing loss due to aging doesn't arrive suddenly; it comes gradually, slowly, little by little. Probably, elderly and families gradually adapt to this new condition until the degree of loss impacts family and social relations. With so many damages in the health of the elderly, families tend to seek solutions that can harm even more the life of their relatives; hearing is often tested only when the doctor or health professional perceive the hearing impairment. Perhaps this explains why they are mainly referred by the Basic Health Unit (UBS) 58.7%.

In addition, the item "In general, you would say that your hearing is:" showed that 54.7% believe that their hearing was bad, yet they delayed in seeking specialized care. It is noteworthy that both elderly (68%) and relatives (60.7%) reported having noticed the hearing impairment for at least two years; however, they don't persist in hearing aids adaptation for not understanding the complexity in processing auditory information.

On the other hand, by believing that hearing impairment is due to aging, aids adaptation process is delayed. The lack of attention paid to hearing issue lies in all spheres, from familiar to primary care<sup>5</sup>. Professionals who have this idea, delay in referring the elderly to rehabilitation, as a result, when the elderly arrives at the aids adaptation process, his communication is already impaired.

Hearing impairment in light of the elderly and his family is also important to succeed in the adaptation process. What are the daily-life difficulties that are associated to HI before wearing hearing aids? What do the elderly and his family think about wearing hearing aids? How does the family see this hearing-impaired individual?<sup>26</sup> and, the most important, how much everyone believe that this device will benefit the HI individual.

Audiometric analyses demonstrate that moderate hearing loss was the most frequent in this group. We know, however, audiometric characteristic by itself doesn't assure the success of the adaptation process but a set of internal situations (of the individual) and external (social and living environment) that involves hearing-impaired individual and his family.

The findings of this study enable us to reflect about the way hearing aids concession program is held. Thus, there is a need to study how we can properly assist this population who live apart from the big centres under unfavourable social and economic situation. This view should be backed by longitudinal research of population characteristics, targeted to each region of the country with their particularities, since it is difficult to create homogeneous public policies for such heterogeneous population.

## Conclusion

On this basis, the results of this research enable a reflection upon improvements in the hearing aids concession program. Elderly need integral assistance, so that they can understand the importance of wearing the device, when to seek this service, how the aids can improve their quality of life.

A broader view upon the perception of hearing loss, since referral, diagnosis process, aids indication and adaptation, will permit us to work in a process that brings the real benefit of this device to the elderly.

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