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AUDIOLOGICAL PROFILE AND TIME OF HEARING DEPRIVATION OF OLDER ADULTS IN THE OUTPATIENT HEARING HEALTH SERVICE PROGRAM (OHHS)

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ABSTRACT

Introduction: Changes in the auditory system in older adults are potentially disabling since they may imply direct losses in communication and quality of life of older adults. The Individual Sound Amplification Device (ISAD) is an essential alternative to rehabilitation, making sounds audible and preventing hearing deprivation. **Objective:** Characterize the older adult population that enters the program Granting ISAD in the SUS concerning psychosocial aspects, form of communication, previous experience with ISADs, and time of hearing deprivation. **Methods:** Retrospective cross-sectional study analyzing the Hearing Health System (HHS) database of the Brazilian Unified National Health System (SUS) of Santa Catarina, a state in southern Brazil. Data were collected from evaluations concerning the multidisciplinary team, including the audiological, psychological, social worker, and otolaryngologist evaluations. **Results:** Female patients (53.51%) with onset of postlingual loss (100%) were predominant. Most patients reported difficulty in social interaction (99%), first contact with ISAD (89.1%), communication by oral language (99.7%), presence of tinnitus (70%), and expectation of the condition not to worsen with the use of ISADs (41.8%). The primary diagnostic hypothesis identified was Age-Related Hearing Loss (59.7%), and the most common disease associated with hearing impairment was hypertension (67.7%). The predominant bilateral hearing loss consisted of sensorineural loss, with 80.1% for the right ear and 80% for the left ear, and moderately severe degree as the most common, with 33.9% for the RE and 34.5% for the LE. The retroauricular device was the most selected. The time of hearing deprivation was 12 years or more for 31.6% of the subjects. **Conclusion:** This study showed a significant impact of hearing loss on the quality of life of older adults, showing that the SUS represents the only possibility of acquiring ISADs for most of this population.

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Key words: Hearing aids. Health Unic System. National Policy for Hearing Health Care. Comprehensive Health Care for the Elderly. Rehabilitation of Hearing Impairment.

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INTRODUCTION

Changes in the auditory system are potentially disabling, whereas they may imply direct losses in communication. Age-Related Hearing Loss or presbycusis is one of the primary causes of hearing loss in older adults. There is a progressive decline in biological functions as the body ages. Concerning the auditory system, impaired hearing sensitivity affects older adults' quality of life in many areas. Sensory deprivation causes changes in the functioning of the central auditory system. It manifests itself as a significant reduction in the performance of the individual after a period of lack of auditory stimulation [1,2].

The use of the Individual Sound Amplification Device (ISAD) is an essential alternative to rehabilitation, making sounds audible and preventing hearing deprivation, consequently affecting the quality of life of older adults. In Brazil, the Health Care Network for People With Disabilities seeks to expand access and qualification of health care for people with disabilities within the Brazilian Unified National Health System (SUS), focusing on the organization of Health Care Networks (HCN) and the comprehensiveness of care. The production of Lines of Care (LC) for the use of resources and practices between different points of health care seeks to promote team connectivity, overcoming fragmented responses to user needs, comprehensive care and access to health promotion actions, disease prevention, early identification, diagnosis, treatment, functional evaluation, early stimulation, rehabilitation, and the granting and adaptation of assisted technologies 4,5.

In this sense, the care model established by SUS presents Primary Health Care (PHC) as the coordinator and articulator of care networks, according to the established attributes, especially territorialization, longitudinality of care, and care in complete coherence with users' health status 6. This research aimed to characterize the older adult population that enters the program Granting ISAD in the SUS concerning psychosocial aspects, form of communication, previous experience with ISADs, and time of hearing deprivation.

METHODS

STUDY DESIGN AND LOCATION

A retrospective cross-sectional study of a public Outpatient Hearing Health Service (OHHS), a reference in Santa Catarina, a state in southern Brazil, with users over 60 who underwent an initial evaluation in 2018. The data collection was carried out in the state's Hearing Health Data Registration System (HHS). Data were collected from evaluations

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concerning the multidisciplinary team, including the audiological, psychological, social worker, and otolaryngologist evaluations.

DATA COLLECTION PROCEDURE

Data were analyzed from the database of the HHS of the Otovida Institute (hearing, voice, speech, and language clinic), a service accredited to the SUS, a reference for hearing health. The service is responsible for the ISAD Concession Program, which is regulated as an Outpatient Hearing Health Service (OHHS) to provide care to 78 municipalities in state. The users are treated by the multiprofessional team. The data were collected from each professional's registry file at the HHS. Sociodemographic data, difficulty in social interaction, previous use of ISADs, and the form of communication used by the patient were collected from the social service. Information on the period and time of HI, the report of tinnitus, and the expectations regarding the use of ISADs were collected from the psychological interview. Data were collected on the diagnostic hypothesis based on clinical history and primary associated diseases during the otorhinolaryngological evaluation. Data were collected on each ear's type and degree of hearing loss, indication of ISADs, and type of ISADs selected from the audiological evaluation.

DATA ANALYSIS

Descriptive statistics with summary measures (position and variability) were used to analyze the numerical data and quantitative variables, such as mean and median, minimum, maximum, and standard deviation, and graphs to visualize the results adequately. The value of a population parameter and the actual size of the outcome in the source population were estimated through inferential statistics, expressed in terms of a 95% Confidence Interval (CI: 95%). The descriptive statistics of the categorical variables were presented with simple and double-entry tabulations, referring to the frequencies and relevant percentages inherent to the object of study. The analyses were performed using SPSS (IBM) version 19 and Excel® 2013 software.

ETHICAL ASPECTS

This research was approved by the Research Ethics Committee of Universidade Federal de Santa Catarina under CAAE Opinion no. 39562720.8.0000.0121.

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RESULTS

The study consisted of n=740 subjects (53.5% female and 46.5% male), aged 60 to 108 years, with an average age of 74.12 years. Concerning the initial HI period, it was found that 100% of the subjects reported acquired hearing loss with post-lingual onset.

The difficulty of social interaction was verified by 99.9% of the subjects, and the primary expectation regarding the use of ISADs was preventing the aggravation of the auditory framework (41.8%). Regarding the form of communication, it was identified that 99.7% of the subjects use oral language to communicate, and 89.1% entered the SUS program without previous experience with ISADs. Self-reported tinnitus occurred in 70.1% of subjects (Table 1).

The prevalent etiological hypothesis was Age-Related Hearing Loss, with 59.7% of cases, followed by Noise-Induced Hearing Loss (NIHL) with 17.0% and 8.4% of unknown causes (Table 2). The primary disease associated with hearing impairment (HI) was hypertension (67.7%), followed by diabetes mellitus (24.5%), heart disease (24.3%), dyslipidemia (21.1%), and depression (18.4%) (Table 3). The predominant type of hearing loss was sensorineural loss, with 80.1% for the right ear (RE) and 80.0% for the left ear (LE). The degree of hearing loss verified and presented with the highest degree of occurrence was moderately severe, with 33.9% for the RE and 34.5% for the LE (Table 4).

Bilateral ISAD indication occurred in 82.8% of the subjects, 4.6% received indication only for the RE, 7.0% received indication only for the LE, and 5.5% were outside the criteria of the ministerial ordinance for granting ISAD. Regarding the type of ISAD indicated, 64.3% and 65.7% (RE and LE) received indication of conventional retroauricular, 15.8% and 16.8% (RE and LE) received indication of retroauricular ISAD with a thin tube or receiver in the canal, and 7.6% and 7.3% (RE and LE) received indication of intraaural ISAD. Only 0.1% received an indication of the Cros system.

DISCUSSION

The prevalent etiological hypothesis was Age-Related Hearing Loss, followed by Noise-Induced Hearing Loss (NIHL), with 17.0%. The data presented are consistent with other studies found in literature. The result is expected since presbycusis is related to the age group studied7,8. According to the World Health Organization, over 42% of people with hearing loss are over 60 years old 9. The psychosocial difficulties present in individuals with HI were identified in 99.9% of the subjects of this research. Information of

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embarrassment in participating in conversations with people, social isolation, low self-esteem, lack of understanding of the family, reduction in participation in tasks, and feelings of sadness and anxiety were reported. According to Löhler et al. (2019) 10, difficulties in communication increase since hearing loss is progressive. The difficulties of hearing in quieter environments increase, and their everyday life becomes affected since tasks such as watching television and talking on the phone are impaired. Thus, there is an attempt to "compensate" for the lack of hearing by asking questions, increasing the volume, and later avoiding difficult situations, that is, moving away from social interaction.

The presence of self-reported tinnitus in this study was significant (70.1%), corroborating the results of Araujo and Iório (2014)11 and Lins and Gaspar Sobrinho (2020)12. This index reinforces the need to elaborate specific rehabilitation for this difficulty within the guidelines of the Hearing Health program, emphasizing that such strategies require more time and preparation of the multidisciplinary team and that they can be advised and treated initially in primary care13. The results obtained on the degree and type of HI were the predominance of moderately severe and sensorineural HI, which were bilaterally symmetrical. These data are compatible with the search results of Araújo and Iório (2014)11 and Lins and Gaspar Sobrinho (2020)12. According to Gresele et al. (2013)14, the severity of patients arriving at the health service is related to gradual HI. Therefore, many individuals seek audiological care years after the onset of the complaint or only realize when the case is already aggravated.

Hypertension was the primary disease associated with HI, with 67.7%, followed by diabetes mellitus. These data are consistent with the study by Rolim et al. (2018)15, who also highlight hypertension as having a more significant influence on hearing than other diseases. Regarding the analysis of the audiometric results for indicating ISADs according to the norms of the ministerial ordinance, it was found that most of the ISAD indications were bilateral according to the studies by Araujo and Iório (2014)11 and Lins and Gaspar Sobrinho (2020)12.

The most indicated hearing aids were retroauricular, at 64.3% and 65.7% (RE and LE). The findings are consistent with the study by Correia et al. (2017)16. The authors indicate this is due to the target audience, older adults. Retroauricular ISADs are easier to handle and are the best indication for moderately severe and moderate hearing loss. Intra-aural hearing aid adaptations were restricted (7.5%) due to disadvantages such as lower battery durability, the need for better manual dexterity for handling, and a greater possibility

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of technical failures. The study conducted by Araújo and Lório (2014)11 identified a 10% indication for intracanal ISADs, while Lins and Gaspar Sobrinho (2020)12 found 0.9%.

CONCLUSION

It can be concluded that older adult patients treated in the OHHS in question presented bilateral sensorineural hearing loss of moderately severe degree, with high self-report of tinnitus, significant hearing deprivation time, no previous experience with ISADs, and predominance of adaptation of bilateral retroarticular ISADs.

Thus, we emphasize the importance of promoting and preventing the health of the older adult population through public policies, such as the Health Care Network for People With Disabilities, which seeks to expand the access of people with disabilities to health services. This study showed a significant impact of hearing loss on the quality of life of older adults, showing that the SUS represents the only possibility of acquiring ISADs for most of this population.

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ATTACHMENTS

Table 1. Psychosocial characteristics, form of communication, and previous experience with Individual Sound Amplification Device and time of auditory deprivation of the subjects treated at the Outpatient Hearing Health Service for an initial evaluation in 2018 (n=740).

Variables	Categories	n	%
Beginning of HI	Pre-lingual	0	-
	Peri-lingual	0	-
	Post-lingual	740	100
Difficulty in socializing	No	1	0.1
	Yes	739	99.9
Expectation	Better hearing	271	36.6
	Prevent it from getting worse	309	41.8
	Improve quality of life	149	20.1
	Reduce tinnitus	7	1.1
	None	4	0.4
Form of communication	Oral	738	99.8
	Brazilian Sign Language	1	0.1
	Homemade gestures	1	0.1
Previous experience with ISAD	No	659	89.1
	Yes	81	10.9
Self-reported tinnitus	With tinnitus report	518	70.0
	With no tinnitus report	222	30.0
Time of hearing deprivation	Up to 2 years	52	7.1
	3 to 5 years	228	30.9
	6 to 8 years	112	15.1
	9 to 11 years	113	15.1
	12 years and over	235	31.8

Table 2. Etiological hypothesis of the subjects treated at the Outpatient Hearing Health Service for an initial evaluation in 2018 (n=740).

Etiological hypothesis	n	%
Age-related hearing impairment	442	59.7
Unknown	62	8.4
Noise-Induced Hearing Loss	126	17.0
Chronic otitis media	40	5.4
Genetics	19	2.6
Otosclerosis	22	3.0
Metabolic alteration	6	0.8
Ototoxicity	4	0.5
Infectious disease	9	1.4
Sudden deafness	3	0.4
Acoustic trauma	3	0.4
Head trauma	2	0.3
Neurinoma	1	0.1

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Table 3. Primary associated diseases of the subjects treated at the Outpatient Hearing Health Service for an initial evaluation in 2018 (n=740).

Associated Diseases	n	%
Cancer	47	6.4
Heart disease	180	24.3
Depression	136	18.4
Diabetes	181	24.5
Dyslipidemia	157	21.2
Visual impairment	17	2.3
Neurological disease	49	6.6
Fibromyalgia	6	0.8
Glaucoma	12	1.6
Hypertension	501	67.7
Hypothyroidism	70	9.5
Nephropathy	14	0.9

Table 4. Type and degree of hearing loss of the subjects treated at the Outpatient Hearing Health Service for an initial evaluation in 2018 (n=740).

Variables	Right ear			Left ear	
	n	%		n	%
Type of hearing impairment					
Normal hearing	6	8		5	7
Conductive	1	0.8		1	0.7
Mista	140	18.9		142	19.2
Sensorineural	593	80.1		592	80
Hearing impairment degree					
Normal hearing	8	1.1		4	0.5
Mild	61	8.2		53	7.2
Moderate	243	32.8		239	32.3
Moderately severe	251	33.9		255	34.5
Severe	116	15.7		127	17.2
Deep	35	4.7		35	4.7
Complete	26	3.5		27	3.6

Table 5. Indication and type of Individual Sound Amplification Device (ISAD) of the subjects treated at the Outpatient Hearing Health Service for an initial evaluation in 2018 (n=740).

ISAD indication	n		%	
Bilateral	613		82.8	
Unilateral right	34		4.6	
Unilateral left	52		7	
Outside the Ordinance Criteria	41		5.5	
Type of ISAD	**Right ear**		**Left ear**	
	n	**%**	**n**	**%**
Conventional retroauricular	476	64.3	486	65.7
Retroauricular with tube/receiver	117	15.8	124	16.8
Intra aural	56	7.6	54	7.3
Cros System	1	0.1	1	0.1