

Perception of family members and self -perception of the elderly users of amplification devices regarding the restriction of participation caused by hearing impairment

Percepção de familiares e autopercepção de idosos usuários de dispositivos de amplificação quanto à restrição de participação causada pela deficiência auditiva

Percepción de los miembros de la familia y la autopercepción de los ancianos usuarios de dispositivos de amplificación sobre la restricción de la participación causada por la discapacidad auditiva

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Abstract

Introduction: Hearing loss has a profound effect on the lives of the elderly. The support of family members in the rehabilitation process creates ways to facilitate the acceptance of the disability and the use of hearing devices. **Objective:** To analyze the perception of family members regarding the restriction of participation caused by hearing impairment in elderly individuals users of hearing aids and compare it with the self-perception of the elderly in this regard. **Methods:** The sample consisted of 48 individuals, who were divided into two groups, EG being the elderly group, composed of 24 elderly people with bilateral sensorineural hearing loss, who use HA; and FG the group of family members,

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composed of 24 family members, who accompanied these elderly people. EG participants answered the Hearing Handicap Inventory for the Elderly (HHIE) self-assessment questionnaire and FG participants answered the Hearing Handicap Inventory for the Elderly for Spouses (HHIE-SP). **Results:** There was no correlation between the time of HA use and the score obtained in the questionnaire. It was observed that the older the person, the worse the results found in the “emotional” domain of the HHIE for the EG group, and the “social” and “emotional” domains for the FG group. In addition, there was a correlation between the two groups, indicating that the worse the results in the HHIE for the EG, the worse the results in the HHIE-SP answered by the GF. **Conclusion:** The restriction of social participation and the emotional aspects influenced by hearing loss in the elderly who use HA are factors perceived by family members who accompany them in audiology appointments.

Keywords: Hearing; Aged; Hearing Aids; Hearing Loss; Surveys and Questionnaires.

Resumo

Introdução: A deficiência auditiva tem um efeito profundo na vida dos idosos. O apoio dos familiares no processo de reabilitação cria meios para facilitar a aceitação da deficiência e o uso dos dispositivos auditivos. **Objetivo:** Analisar a percepção dos familiares quanto à restrição da participação causada pela deficiência auditiva em indivíduos idosos usuários de aparelho de amplificação sonora individual (AASI) e compará-la com a autopercepção do próprio idoso quando a este aspecto. **Métodos:** A amostra foi composta por 48 indivíduos, que foram divididos em dois grupos, sendo GI o grupo de idosos, composto por 24 idosos com perda auditiva sensorioneural bilateral usuários de AASI; e GF o grupo de familiares, composto por 24 familiares, que acompanhavam esses idosos. Os participantes do GI responderam ao questionário de autoavaliação *Hearing Handicap Inventory for the Elderly* (HHIE) e os participantes do GF responderam ao questionário *Hearing Handicap Inventory for the Elderly for Spouses* (HHIE-SP). **Resultados:** Não houve correlação entre o tempo de uso do AASI e o escore obtido no questionário. Observou-se que, quanto maior a idade do idoso, piores foram os resultados encontrados no domínio “emocional” do HHIE para o grupo GI e para os domínios “social” e “emocional” para o grupo GF. Além disso, houve correlação entre os dois grupos, indicando que, quanto piores os resultados no HHIE para o GI, também foram piores os resultados no HHIE-SP respondido pelo GF. **Conclusão:** A restrição de participação social e os aspectos emocionais influenciados pela perda auditiva em indivíduos idosos usuários de AASI são fatores percebidos pelos familiares que os acompanham nas consultas fonoaudiológicas.

Palavras-chave: Audição; Idoso; Auxiliares de Audição; Perda Auditiva; Inquéritos e Questionários.

Resúmen

Introducción: La discapacidad auditiva tiene un profundo efecto en la vida de los adultos mayores. El apoyo de los familiares en el proceso de rehabilitación crea vías para facilitar la aceptación de la discapacidad y el uso de audífonos. **Objetivo:** Analizar la percepción de los familiares sobre la restricción de la participación causada por la deficiencia auditiva en ancianos usuarios de audífonos y compararla con la autopercepción de los ancianos al respecto. **Métodos:** La muestra estuvo conformada por 48 individuos, quienes fueron divididos en dos grupos, siendo GI el grupo de adultos mayores, compuesto por 24 adultos mayores con hipoacusia neurosensorial bilateral, que utilizan audífonos; y GF el grupo de familiares, compuesto por 24 familiares, que acompañaban a estos individuos. Los participantes del GI respondieron el cuestionario *Hearing Handicap Inventory for the Elderly* (HHIE) y los participantes del GF respondieron el cuestionario *Hearing Handicap Inventory for the Elderly for Spouses* (HHIE-SP). **Resultados:** No hubo correlación entre el tiempo de uso del audífono y la puntuación obtenida en el cuestionario. Se observó que a mayor edad del adulto mayor, peores resultados encontrados en el dominio “emocional” del HHIE para el grupo GI y para los dominios “social” y “emocional” para el grupo GF. Además, hubo correlación entre los dos grupos, indicando que a peores resultados en el HHIE para el GI, peores resultados en el HHIE-SP contestado por el GF. **Conclusión:** La restricción de la participación social y los aspectos emocionales influenciados por la hipoacusia en adultos mayores usuarios de audífonos son factores percibidos por los familiares que los acompañan en las consultas de audiológica.

Palabras clave: Audición; Anciano; Audífonos; Pérdida Auditiva; Encuestas y Cuestionarios.



Introduction

Age-related hearing loss is a gradual, natural process of hearing organ degeneration, usually starting at 65 years of age, and 50% of the affected subjects are over 70-80 years of age¹. Hearing impairment is one of the most frequent sensory disabilities in human beings, and may affect negatively the lives of the affected people, their families and society as a whole. Actually, this issue is not only a health condition, as it affects educational opportunities, economic status and quality of life of the individuals².

For those reasons, hearing rehabilitation among the elderly population has been necessary. Thus, one of the treatment options is the use of hearing aids. The hearing aid is an electronic device, which aims to amplify the sounds, benefitting the stimulation of residual hearing, and improving individuals' quality of hearing³.

Despite its benefits, only one third of hearing-impaired subjects own the device, and up to one third of the users do not wear them regularly. The reasons for not using hearing aids include their high cost, negative behaviors, perception that the device is not necessary, and its esthetic appearance. In addition, fitness-related troubles (such as difficulty in inserting batteries), performance problems (such as sound quality or inability to reduce background noise), and complaints about ongoing maintenance demands (such as cleaning and basic repairs) are also reported⁴.

It is utterly important to conduct subjective assessments on individuals' self-perception regarding their hearing disabilities in daily life. Many questionnaires have been developed for a better profiling of the degree and disability resulting from their hearing impairment in order to report, more specifically, the situations that listeners have to cope with. There are questionnaires that assess users' satisfaction on the sound amplification. Others quantify the benefit of wearing hearing aids. There are still others, which assess more general aspects, such as quality of life

One of the instruments that can be used to investigate the social and emotional effects of hearing impairment on older adults is the self-assessing questionnaire *Hearing Handicap Inventory for the Elderly* (HHIE)⁶, which has a translated and adapted version to Brazilian Portuguese⁷.

The HHIE is a questionnaire comprising 25 simple questions, with 13 questions addressing the emotional consequences of hearing impairment, and 12 questions investigating the social and situational effects of hearing impairment. Its response options are limited to "yes", "no", or "sometimes" and scoring ranges from 0 to 100 points⁷.

Elaborated in 1986, the *Hearing Handicap Inventory for Elderly for Spouses* (HHIE-SP)⁸ is an adapted version of the HHIE, in which the text of the questions was altered to assess the perception of the participation restriction caused by the hearing disability in spouses' point of view. Translation and cultural adaptation of the HHIE-SP to Brazilian Portuguese was carried out in 2012⁹, and the instrument can be applied not only to spouses, but also to other communication partners, such as family members that take the hearing-impaired elderly individual to doctor's appointments during treatment¹⁰.

The presence and support of patients' companions during the process of hearing aid fitting imply higher expectations and optimistic attitudes on the part of the older adult regarding the use of the device¹¹. In addition, studies show that over 70% of the elderly subjects, who use hearing aids, need help for handling the device^{12,13}. Therefore, family members may facilitate and help adaptation to hearing aids in older adults¹⁴. Additionally, sometimes they are better informed about the problems than the hearing-impaired elderly themselves.

Family members must have active participation in the process of hearing rehabilitation of the elderly subject¹⁵, but that does not mean that they are present in all the steps, helping the elder gets the most out of his/her hearing device. Even though family members report the older member's complaint about not listening to the conversations at home settings, the family members may not have the dimension of the participation constraints caused by hearing impairment on elderly subjects.

Keeping in mind the aforementioned, this study aimed to analyze family members' perception on the participation restriction caused by hearing impairment on elderly individuals who use hearing aids and compare it to elders' self-perception about that aspect.

Methods

This study began after its approval by the Research Ethics Board of the Urgency Hospital of Goiania (Hospital de Urgência de Goiânia), Brazil, Certificate of Presentation for Ethical Consideration number 33594820.4.0000.0033, and opinion number 4.155.156. Data collection was conducted at a private hearing healthcare center in Brasília, Federal District, Brazil, and all participants signed the Free Informed Consent Form.

The participants were divided into two groups: the elderly group (EG) and the Family Group (FG).

For participants' inclusion in the EG, the following criteria were adopted: older adults between 60 and 90 years old, suffering from bilateral sensorineural hearing loss. The adopted exclusion criteria were, as follows: older adults whose family members refused to participate in the study; older adults with other comorbidities rather than hearing impairment; older adults who made use of hearing aids for over two years, assuming that, after this time, the family member could have another perception of the elder's condition, rather different from the initial period of adaptation.

The FG entailed the patients' companions with the elderly in the speech-language therapy appointment; the exclusion criterion adopted was elders' family members who refused to participate in the study.

Data collection was conducted in 2020, according to the demand of appointments at the study setting. Forty (40) older adults went to the appointments within that period. However, from those, 15 suffered from mixed hearing loss, and one of them wore a hearing aid for over two years. Therefore, the sample comprised 24 elderly participants (EG) and 24 family members (FG), totaling 48 subjects.

The EG entailed 17 older females (70.8%), and 7 (29.2%) older males, while the FG entailed

19 (79.2%) female relatives, and 5 (20.8%) male relatives.

Regarding the FG, 79.2% (n=19) of the participants lived with the older adult. Concerning the family relations, 75% (n=18) of the participants were children of the hearing-impaired older adult, 16.7% (n=4) were wives, 4.2% (n=1) was a sister, and 4.2% (n=1) was a niece.

After signing the Free Informed Consent Form, the participants in the EG answered the self-assessing HHIE⁷, while the FG answered the HHIE-SP^{9,10}. The groups answered the questionnaires separately, and the questions were orally read by one of the authors, without changing the text of the question. Score analysis was held by assigning points ranging 0 to 4 for each question. Affirmative ("yes") answers are assigned 4 points, "sometimes" answers are assigned 2 points, and negative answers ("no") are assigned zero. Total score ranges from zero (no perception of participation restriction) to 100 points (significant perception of participation restriction due to hearing impairment). Total score between 0 and 16 points evidences no perception of participation restriction due to hearing impairment; between 18 and 42 points, mild/moderate perception, and between 42 and 100 points, severe/significant perception of participation restriction due to hearing impairment⁷.

Finally, data were tabulated and statistically analyzed by means of the Student's t-test and Pearson's correlation.

Results

Table 1 shows median and standard deviation data related to the participants' age, length of time using a hearing aid and scores from the different domains of HHIE e HHIE-SP.

Table 1. Descriptive and comparative analysis of the variables age, length of time using a hearing aid and scores in the questionnaire between the studied groups.

Variables	EI (n=24)	FG (n=24)	P
Age	78.2±6.89	51.6±10.2	-----
Length of time using the hearing aid	21.1±4.99	-----	
HHIE/ HHIE-SP (S)	16±11.5	19.42±13.91	0.198
HHIE / HHIE-SP (E)	18.7±12.7	20.58±14.97	0.483
HHIE/ HHIE-SP (T)	34.67±22.17	40.00±27.44	0.241

Caption: EG= elderly group; FG= group of family members; HHIE=Hearing Handicap Inventory for the Elderly; HHIE-SP= Hearing Inventory for the Elderly for Spouses; S=Social; E=Emotional; T=Total.
Inferential analysis by means of the Student's paired t-test. Statistical difference for p<0.05(*).

Table 2 shows the maximum scores and perception of participation restriction by the groups.

Table 2. Results of the HHIE (EG) and adapted HHIE- (FG)

Participant (EG)	HHIE (T) Maximum=100	Restriction perception	Participant (FG)	HHIE-SP (T) Maximum=100	Restriction perception
1	22	Mild /moderate	1	36	Mild/moderate
2	26	Mild/moderate	2	34	Mild/moderate
3	10	Non-existent	3	6	Non-existent
4	36	Mild/moderate	4	12	Non-existent
5	54	Significant	5	64	Significant
6	64	Significant	6	54	Significant
7	62	Significant	7	54	Significant
8	46	Significant	8	60	Significant
9	28	Mild/moderate	9	12	Non-existent
10	30	Mild/moderate	10	66	Significant
11	14	Non-existent	11	62	Significant
12	50	Significant	12	80	Significant
13	38	Mild/moderate	13	46	Significant
14	50	Significant	14	12	Non-existent
15	0	Non-existent	15	2	Non-existent
16	86	Significant	16	90	Significant
17	10	Non-existent	17	4	Non-existent
18	20	Mild/moderate	18	14	Non-existent
19	72	Significant	19	74	Significant
20	10	Non-existent	20	8	Non-existent
21	42	Mild/moderate	21	14	Non-existent
22	24	Mild/moderate	22	60	Significant
23	14	Non-existent	23	36	Mild/moderate
24	24	Mild/moderate	24	60	Significant

Caption: EG=elderly group; FG= grup of family members; HHIE=Hearing Handicap Inventory for the Elderly; T=Total; HHIE-SP=Hearing Handicap Inventory for Elderly for Spouses
In bold: cases where there was a difference in the perception of restricted participation between the family member and the older adult.

Only six older adults (25%) had scores demonstrating no perception of participation restriction due to their hearing impairment. Eleven (11) family members (45.83%) had total scores in the HHIE-SP evidencing perception of participation restriction due to hearing impairment, different from that obtained by the elderly subjects whom they were companions (participants 4, 9, 10, 11,

13, 14, 18, 21, 22, 23 and 24); among these, 5 (20.83%) relatives had total scores pointing to “no” perception of participation restriction due to hearing impairment, while the older adults, whom they were companions, had scores evidencing mild/moderate or significant perception.

Table 3 shows the correlation between the studied variables.

Table 3. Correlation of variables: patient’s age, length of time using the hearing device and results in the questionnaire of both groups..

Variables	1	2	3	4	5	6	7
1.Older adult’s age							
2.Length of time using the hearing aid	0.13						
3.HHIE (S) EG	0.36	0.14					
4.HHIE (E) EG	0.53*	0.10	0.68*				
5.HHIE (T) EG	0.49*	0.13	0.90*	0.92*			
6.HHIE-SP (S) FG	0.48*	-0.03	0.52*	0.71*	0.67*		
7.HHIE-SP (E) FG	0.48*	-0.20	0.42*	0.56*	0.54*	0.80*	
8.HHIE-SP (T) FG	0.50*	-0.12	0.49*	0.66*	0.63*	0.95*	0.95*

Caption: HHIE=Hearing Handicap Inventory for the Elderly; S=Social; E=Emotional; T=Total; EG= elderly group; FG= group of family members; HHIE-SP=Hearing Handicap Inventory for the Elderly for Spouses
Inferential analysis by means of the Pearson’s correlation. Statistical difference for $p < 0.05$ (*).

All participants wore hearing aids, length of time wearing them ranged from 8 to 24 months. No correlation was observed in any groups between length of time wearing hearing aids and the scores obtained in the questionnaire. However, statistically significant correlation ($p < 0.05$) was evidenced between other variables.

The results demonstrated that the older the adults, worse the results found in the “emotional” domain of the HHIE among the EG, and for the “social” and “emotional” domains among the FG. In addition, there was a correlation between both groups, evidencing that the worst results obtained by the older adults in the HHIE were also verified in the HHIE-SP, responded by their family members.

Discussion

Most elderly subjects featured perception of participation restriction, and there was no correlation between length of time wearing hearing aids and the score obtained in the questionnaire. Many elderly subjects have perceived participation constraints due to hearing impairment, even wearing hearing aids for over six months¹⁶. However,

considering that all participants in the EG made use of hearing aids, this result confronts other studies which claim that the use of hearing devices favor the auditory perception of the speech, thus, reducing the perception of participation restriction in the social, as well as in the emotional domain^{17,18}. These data point out the need for professionals to work according to the good practices and the recommendations in the guidelines of the area in order to take the best possible benefits out of the auditory technology. In addition, it should be considered that the perception of participation restriction due to hearing impairment may be influenced by a series of variables, such as gender, age, socioeconomic factor, among others¹⁷.

In the current study, greater perception of the impact of hearing impairment on the emotional domain was observed in the elderly group, according to age progression. In another study, the authors observed that older adults have difficulty in accepting the need of using hearing aids, which causes potential emotional effects, as they cannot communicate effectively with their family members¹⁹.

The emotional hurdles present in individuals with hearing impairment, users of hearing aids,



comprise feelings of embarrassment, apart from the possibility of such individuals to view themselves as a burden for healthcare professionals and for their families⁴. In a study conducted in Japan, 94 elderly subjects reported, by means of the HHIE, difficulty in having a relationship with their family members due to their hearing impairment. However, after fitting their hearing aids, several problems related to those relationships presented significant improvement²⁰.

In the current study, the older the subject, the greater the perception of family members, not only regarding social aspects affected by the hearing loss, but also emotional ones.

Elderly subjects with hearing impairment report more complaints concerning their social relations than their listening peers, although they report good quality of life²¹. Apart from that, older subjects may feature worse auditory results²², which may imply greater difficulty and, consequently, less social participation. An assumption that could explain greater perception of the impact of hearing impairment on their social domain by family members as age advances could be the fact that those relatives exclude the elders from activities due to their hearing loss-related difficulties.

In a study²³ conducted in 2018, the authors observed that family members found it difficult accepting the constraints caused by the hearing impairment in the individuals, which also hinders the relations within home settings. Additionally, the family often claims that the elder is “slow” or “losing his/her skills”, which does not always depict the reality²⁴. This family perspective may bring about negative feelings in the elders, favoring their social isolation. A study²⁴ carried out in 2010, verified, in acquired hearing-impaired subjects, that the family relationship was hindered by the reported sensory disability.

In the current study, there was a correlation between the scores in the HHIE obtained by the EG and the scores in the HHIE-SP obtained by the FG. In a study²⁵ with 540 older adults, conducted in China, the authors also observed that the family members perceived changes in the elders’ social relations, as well as emotional issues in face of their isolation and discomfort due to hearing impairment. The same was observed in a study¹⁰ conducted in 2012, in which the authors applied the HHIE-SP among family members of elderly subjects with dementia. Its results showed correlation between

the family members’ responses and the elderly subjects’. The authors reported the possibility of applying the questionnaires to the companions, in case the patients feature self-perception problems.

Despite the verified correlation, when the scores were analyzed individually, disagreement was observed regarding restriction perception due to hearing loss in 45.83% of the cases. Literature reports that there may not be agreement between elderly perception and family member perception concerning the difficulties caused by hearing impairment, mainly at the beginning of the process of auditory rehabilitation¹⁵. Additionally, elderly subjects with acquired hearing loss report difficulty in the acceptance, impatience and lack of knowledge about their disability on the part of their family members²⁶.

Family members and professionals should be aware that the referral and fitting of hearing aids are not enough to solve all the consequences experienced by the elderly subjects due to their hearing impairment. Given the importance of family members in the process of auditory rehabilitation, it is essential that they also participate in the guidance sessions. They should also have knowledge about the real impact of hearing impairment on the life of an elderly relative, in order to favor their involvement in the process, aiming at the older adult’s adherence to it as well.

It is also necessary to consider that older adults’ perception regarding their hearing can be influenced by factors such as culture, lived experiences, cognition, educational level, and the context that they are inserted²⁷. Such factors were not assessed in the current study. Therefore, the awareness of the need for a transdisciplinary view in the process of auditory rehabilitation of elders is fundamental, which does not only comprise sessions for the selection, verification and adaptation of the hearing aid.

Further studies are suggested, which correlate other involved variables in the restriction perception caused by hearing impairment in older subjects.

Conclusion

Restriction in the social participation and emotional aspects influenced by hearing loss among older adults, who make use of hearing aids, are factors perceived by family members that take

them to speech-language therapy appointments. In spite of that, this perception does not have full agreement among family members, evidencing the need of suggested strategies that involve them in the process of auditory rehabilitation of the elderly subject.

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