SATISFACTION OF HEARING IMPLANT USERS

Satisfação de usuários de próteses auditivas

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ABSTRACT

Purpose: to analyze through the questionnaire Satisfaction With Amplification in Daily Life the satisfaction users Sound Amplification Device Single, after a month of use and check if there was an improvement in this satisfaction two months after the first application of the questionnaire. **Methods:** according to inclusion criteria, 50 patients participated, with varying age, hearing loss, regardless of the level and type that they need to use hearing aids bilaterally. The questionnaire was applied 30 days after the adaptation of Device Personal Sound Amplification apparatus and reapplied after 60 days of adjustment with to the use of the prosthesis. **Result:** it was observed a satisfaction of hearing aids at all factors (negative factors, positive effect, personal image and personal service and cost). The positive effect subscale showed the highest numbers in search of satisfaction. In relation to age group who obtained satisfaction, prevailed over 60 years ages; in the degree of loss, were the moderate and moderately severe; in the classification of appliance, the type A introduced greater satisfaction. These results were statistically significant in the research. **Conclusion:** there was satisfaction with the use of the Individual Sound Amplification Device at all factors evaluated. The positive effect was the subscale that had the highest numbers of satisfaction in age, degree of hearing loss and classification of Individual Sound Amplification Device.

KEYWORDS: Questionnaire; Patient Satisfaction; Hearing Loss

■ INTRODUCTION

Hearing is fundamental not only for acquisition as well as for maintaining human communication, speech development and language.

Auditory impairment is considered the third most common population's impairment¹. It causes hearing difficulties and also a negative impact on development, psychosocial and cognitive behavior, speech and language, as there may be isolation of social and occupational activities, affecting quality of life. A way to decrease the impact of hearing loss in individuals' lives is the use of Hearing Aids (HA). So, environmental and speech sounds, as well as signs of warning and danger will be amplified^{1, 2}.

When hearing loss is perceived in adult age, its implications may be higher because of the restrictions it imposes. The aging process causes worse

sound to reach individuals and they amplify entrance sounds. They provide auditory comprehension, not avoiding hearing loss progression, but they stimulate delays, decreasing, over time, sensory deprivation,

normal hearing subjects³.

with hearing impairments⁴.

and improving the degree of auditory acclimatation⁵. The users of hearing implants improve their own quality of life and the life quality of individuals

performance in speech tests. Even normal hearing individuals need more intensity of sentences presentation in silence and in noise to reach speech

recognition percentages similar to young adults

a process of problem solving, with the purpose of

minimizing difficulties (activity limitation) and disad-

vantages (participation restriction) of an individual

(mild, moderate, severe and profound). The HAs

are a resource of variable technology, with available

The HA are adapted for each type of hearing loss

The auditory rehabilitation may be defined as

own quality of life and the life quality of individuals who live close to them. They make communication and daily activities more pleasant. However, for a positive result, it is necessary to observe the hearing

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implants quality, adaptation, attitude and perception by users.

There are several factors which contribute for the success of the sound amplification use, such as: age, degree, type of hearing loss, physical features, hearing processing skills, use preceding HA and hearing loss length, which, together, play an essential role for amplification acceptation. With this, the auditory handicap perception, the cost, personal expectations, satisfaction, performance and benefits may indicate the users' satisfaction with the sound amplification⁶.

With the purpose of knowing the satisfaction of auditory implants' users, researchers developed the questionnaire Satisfaction With Amplification in Daily Life (SADL)7. This instrument was created with the aim of quantifying the satisfaction degree with the amplification use, allowing the identification of adverse aspects related to HA adaptation. It is a simple questionnaire, with easy application, which contains fifteen questions that help professionals to observe factors which are impairing and/or improving the use of implants.

So. after these considerations, the research purpose was to analyze the satisfaction in the HA adaptation through the SADL questionnaire, divided by the sub-scales: Positive Effect, Negative Factor, Service and Cost and Personal Image. Each sub-scale was analyzed in relation to age group, type of hearing loss, degree of hearing loss and HA type classification, comparing the first and the second questionnaire application in each subject.

METHODS

The project was approved by the Ethics Committee from Passo Fundo University (UPF), protocol n. 443. 285.

The present research is a cross sectional study. It was performed in a partnership between the Speech-Language and Hearing course from UPF and a clinic in connection to the Unified Health System (SUS) in the north of Rio Grande do Sul State, Brazil, that participates in the Grant Hearing Aids Program of the Secretary of Health Care from the Ministry of Health, where institutional authorization was requested.

The list sampling was for convenience. It means that the sample size was determined through availability and acceptation by the research participants.

Individuals from different age groups, with hearing loss, regardless the degree or type, with the use of digital HA was included in the research. They were received by the Grant Hearing Aids Program of the Secretary of Health Care from the Ministry of Health in the clinic, connected to the program. The

excluded subjects were patients who used bimodal implants, with cognitive decline and/or oral language limitations.

First, the subjects who came and accepted to participate in the research were patients of first check-up (30 days after HA adaptation), who signed the informed consent term, after reading it. Then, the patients responded the SADL questionnaire7 (Annex 1). The researchers read the questions and the patients had 30 minutes to answer them. When the patients returned for the second check-up (90 days after adaptation), the questionnaire was reapplied. After concluding the fulfillment, the questionnaires were collected and the data were tabulated.

The SADL questionnaire was developed at Memphis University (United Stated) and translated to Brazilian Portuguese by the questionnaire authors. The original version and the Portuguese version are available on htm.www.memphis.edu/ausp/harl/sadl. Such instrument was elaborated with the purpose of quantifying the satisfaction degree by the use of amplification, allowing the identification of adverse aspects regarding the HA adaptation.

The SADL questionnaire consists of 15 closed questions, subdivided in four sub-scales:

- Positive Effects: present questions related to communicative skills, sound location, sound quality and also psychological aspects. It consists of six items (questions 1, 3, 5, 6, 9, 10);
- Service and cost: it evaluates the Speech-Language therapist competence and the HA value, in three items (12, 14, 15). As the research was performed with subjects who received their HA through concession, the cost was treated only regarding the batteries values and the transportation to the adaptations;
- Negative factors: they cover three items which investigate the performance in noisy environment, with feedback and use of telephone (questions 2, 7, 11);
- Personal image: it consists of three items which research the HA users1 self-image and the hearing implants stigma (questions 4, 8, 13).

The questionnaire was applied in the patients 30 days after receiving the HA and it was reapplied after 60 days of implants use adaptation.

The Grant Hearing Aids Program provides seven brands in three types of HA. The type A classification is digital with timer and it has one channel; type B is digital, with timer and two channels; type C is digital computerized. All of them present noise reducer. The HAs, categories A, B and C presented different brands.

The statistical test used for the analysis was the T-test with average comparisons for dependent samples (paired t-test). The data analysis was performed through the significance level adopted for the α tests = 5% (0.05).

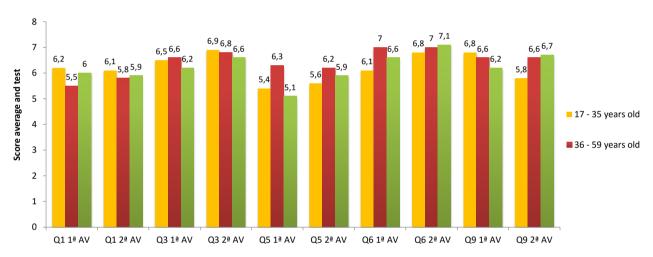
The analyzed variables in relation to the sub-scales (positive effect, negative factor, service and cost and personal image) were age group, loss degree and HA type.

RESULTS

The sample consisted of 50 subjects. From them, 56% were male and 44% were female. The age group varied from 17 to 84 years old. Most subjects were over 60 years old (60%). About the type of

hearing loss, it was observed that most subjects presented sensorineural hearing loss (84%). The prevalent levels of hearing loss were moderate (38%) and moderate-severe (32%). The HAs were classified in three categories: category A was 37%; B was 29%; and C was 33%.

In relation to Positive Effect, the responses were observed according to the age group. The age group 17-35 years old presented important improvements in questions 3, 5 and 6; in the age group 36-59 years old, there were improvements in questions 1 and 3; and in the age group over 60 years old, the questions which obtained improvements were 3, 5, 6 and 9 (Figure 1).



Note: Q: question; AV: evaluation

Figure 1 – Comparison between the score averages of the first and second questionnaire application, in relation to the positive effect, according to age group

The statistical analysis was performed through the total average of the results from the first and the second evaluation by each age group. It was observed that HA users from the age group over 60 years presented statistically significant difference (p<0.05) when it was compared the results from the first and second evaluation of HA adaptation (Figure 1).

In the Negative Factor analysis, questions 2 and 7 need reduced difference between the first

and the second evaluation to improve the results, because they regard discomfort caused by HA sounds and whistles and, in question 11, the score should increase because it is related to the use of telephone with HA. In the age group 17-35 years old, it was verified that, in questions 2 and 7, there was improvement; the age group 36-59 presented improvements in questions 2 and 11; and, in the age group over 60 years old, all questions obtained improvements (Figure 2).

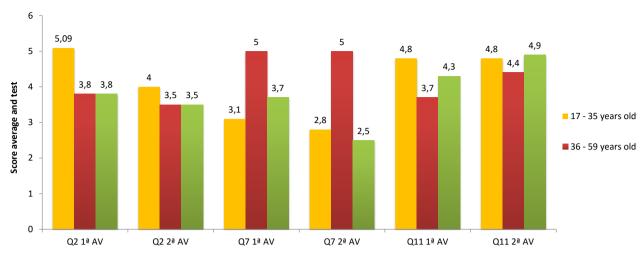
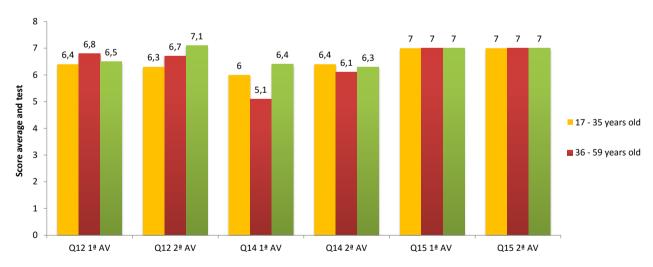


Figure 2 – Comparison between the score averages of the first and second questionnaire application, in relation to the negative factor, according to the age group

Because the questions presented difference in scores, it was not possible to perform an analysis between the general average of the first and second evaluation of the Negative Factor (Figure).

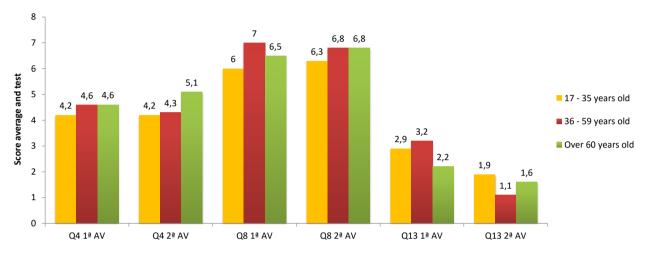
Regarding services and costs, in the age groups 17-35 and 36-59 years old, it was observed improvements only in question 14, while in the age group over 60 years old, there was improvement in question 12. About question 15, there was no alteration in the score of any age group, because it is a question related to HA repair, what did not happen because of the little time the patients used the implants (Figure 3).



Note: Q: question; AV: evaluation

Figure 3 – Comparison between the score averages of the first and second questionnaire application, in relation to services and cost, according to age group

The statistical analysis was performed through the results total average of the first and second evaluation of each age group. About services and costs, although it was observed improvements regarding satisfactions in some questions by HA users, this sub-scale was not statistically significant (Figure 3). The findings about Personal Image, in relation to age group, showed that, in the age group 17-35 years old, the questions 8 and 13 presented improvements; 36-59 years old, there were improvements in questions 4 and 13; and in the age group over 60 years old, the questions 8 and 13 prevailed (Figure 4).



Note: Q: question; AV: evaluation

Figure 4 – Comparison between the score averages of the first and second questionnaire application, in relation to personal image, according to age group

The statistical analysis was performed through the total results average from the first and second evaluation of each age group. For the HA users of all age groups, regarding personal image, it was observed improvement in the results, but without significant values (Figure 4).

The data about loss degree related to the positive effect were divided in two parts, to better visualize information (Figures 5.1 and 5.2).

It was observed that, in the mild-moderate degree, questions 1, 3 and 5 presented improvements; in the moderate degree, there was prevalence in questions 3, 5, 6, 9 and 10; in moderate-severe level, questions 3, 5 and 10 improved in the severe degree; the questions 3, 6 and 10 presented improvements and; in profound level, the questions 3, 5, 6 and 10 presented score increase (Figures 5.1 and 5.2).

The statistical analysis was performed through the results total average from the first and the second evaluation, related to the hearing loss degree. Thus, the HA users, regarding the positive effect, presented score improvements, with statistically significant results in the levels moderate (p<0.05) and moderate-severe (p<0.05); in the levels mild-moderate, severe and profound there was improvement, but without statistical relevance (Figures 5.1 and 5.2).

In the negative factor score, related to the hearing loss degree, the questions 2 and 7 need to have the difference reduced between the first and the second evaluation, to improve the results, because they are questions related to discomfort caused by HA sounds and whistles. In question 11, the score should increase, because it is related to the telephone use with HA. So, the mild-moderate level had improvements only in question 11; in the moderate level, the questions 2 and 7 presented prevalence; in the moderate-severe level, there were improvements in all questions; in the severe level, only question 1 had significant difference; and, in the profound level, there was prevalence only in question 7 (Figure 6).

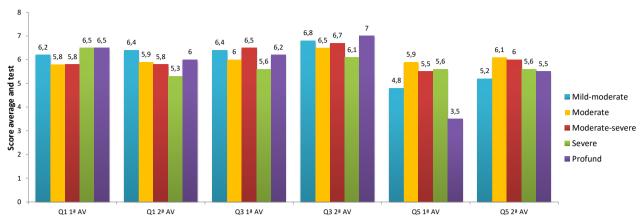
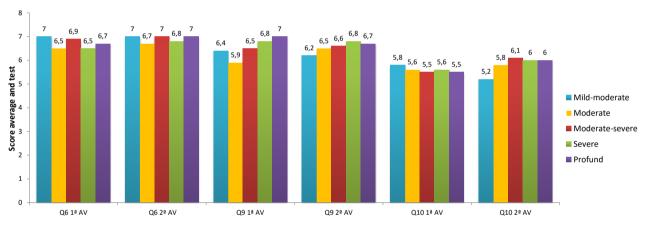


Figure 5.1 - Comparison between the score averages of the first and second questionnaire application, in relation to the positive effect, according to the loss degree



Note: Q: question; AV: evaluation

Figure 5.2 - Comparison between the score averages of the first and second questionnaire application, in relation to the positive effect, according to the loss degree

The questions presented score differences, so, it was not possible to perform an analysis between the averages of the first and second evaluation in the Negative Factor (Figure 6).

In the results related to HA classification, it was observed that in type A there were improvements in all questions regarding the positive effect; in type B, only question 10 presented prevalence; and, in type C, there was significant difference in questions 3, 5 and 10 (Figure 7).

In the performed statistical analysis, it was observed, through the total results average of the first and second evaluation of each classification that, in the positive effect, type A patients adapted with HA presented higher satisfaction degree, with statistically significant difference (p<0.05); in type B and C HA patients, there were improvements, but not significant. Although type A HA has less technological resources, compared to the other types, the patients who use this type of implant presented higher satisfaction level. Type A HAs are used, often, in patients with higher degrees of hearing loss, what may justify the satisfaction (Figure 7).



Figure 6 – Comparison between the score averages of the first and second questionnaire application, in relation to the negative factor, according to the loss degree

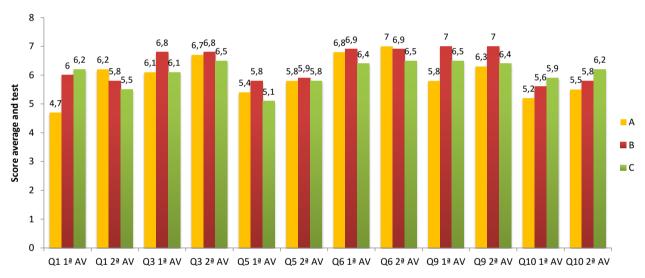


Figure 7 – Comparison between the score averages of the first and second questionnaire application, in relation to the positive effect, according to the classification

The results of questions 2 and 7 need to have the difference reduced between the first and second evaluation to improve the results, as they are questions related to discomfort caused by HA sounds and whistles and Q11. The score should increase because it is a question related to telephone use with HA. Therefore, in types A and C implants,

all the questions presented improvements; in type B HAs only in questions 2 and 7 there were improvements (Figure 8).

As the questions present scores differences, it was not possible to perform an analysis between the first and second evaluation of the Negative factor (Figure 8).

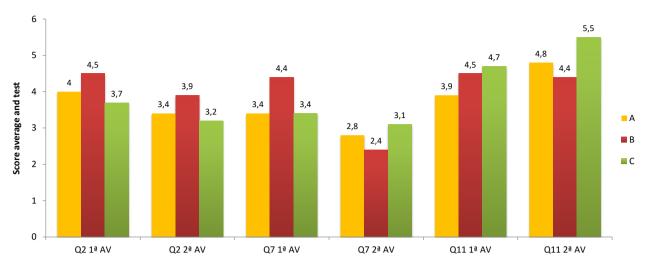


Figure 8 – Comparison between the score averages of the first and second questionnaire application, in relation to the negative factor, according to the classification

DISCUSSION

The SADL questionnaire, according to literature, is a practical questionnaire easy to be comprehended. However, it was verified some problems of its application, such as the use of words which are difficult for the population in general, who need help to understand these terms7.

It was observed, in the present research, that there was reluctance in expressing negative opinion or criticism, perhaps because some individuals are afraid of losing the right to be received at the clinic or the HA use. It was also observed in another study^{8,9}.

About the score, the SADL is practical, but in the analysis there was difficulty, because the questionnaire presents distinctive marking and some questions need to have low values to refer HA use improvements.

The questionnaire score should be more evident, not using numbers, which are from 1 to 7. A study suggests the use of words such as good, very good, great and regular to express the level of satisfaction¹⁰.

The patients were predominantly male (56%), as in other studies 10,11 which researched the satisfaction of hearing implants users. The age of the evaluated individuals was very diversified and well distributed, from 17 to 84 years old (Figure 1).

Regarding the type of hearing loss, it was observed prevalence of the sensorineural hearing loss (84%), (6%) of mixed e (10%) of sensorineural/ mixed (Figure 1). This data agrees with a similar research, in which 95% of the subjects presented sensorineural hearing loss¹¹.

Some studies mention that the interval between the adaptation and the evaluation date is one of the variables which seems to influence the results of the self-evaluation methods. Several studies concluded that the period of two weeks after the HA adaptation is not enough to evaluate the result through the SADL¹². In the present study, it was used a 30 days interval among the applications, what has already occurred in other researches8-14.

In the present research, it was observed that the Positive Effect was the factor with significant difference between the analysis of the results of the first and second evaluation in the use of hearing implants. In another research, it was also observed that the positive effect increased after the first three months of use. It means that three months of HA use were enough to increase the score of positive effects and this result remained after six months8.

In the research with the questionnaire IOI-HA (International Outcome Inventory for Hearing Aids)¹⁵, the results showed higher degree of satisfaction of a sample with predominance of older individuals (63,67%), with ages over 60 years, retired and with little quality of life expectancy¹⁵. In the present research, it was also observed that the age group over 60 years old presented a degree of satisfaction statistically different (p<0.05), in the positive effect (Figure 1).

About the characteristics of the hearing loss degree, 38% of the subjects presented moderate degree and 32%, moderate-severe, who obtained

significant improvements in the positive effect, moderate and moderate-severe (Figure 6.1). It is possible to compare this to a study that found 90% of the subjects who presented tonal average of normal, mild or moderate degree. Probably, it benefited the good satisfaction results obtained, as the HA performance is worse in cases of more severe hearing loss¹¹.

In the negative factor sub-scale, there is a question about telephone use, in which it was possible to observe that most HA users who participated in the research were not satisfied with its use, because they referred a lot of difficulty or they did use the telephone along with the HA use. Such results were also found in other studies^{11,14}.

The present research observed high level of satisfaction in the factor personal image. The users were glad and they feel able to use the HA, data which was also observed in another study¹⁶.

In a study¹⁵ which evaluated the level of difficulty found with the amplification use, the authors observed that in 22 individuals, who referred that they still have difficulties of HA adaptation, the technology of the hearing implants seems not to have influenced the response (50% analogical and 50% programmable digital)¹⁵. It can be compared with the present study, in which there was higher satisfaction by the type A HA users, which refer to the device with less technology (Figure 7).

CONCLUSION

It was observed satisfaction by the HA users between the first and the second evaluation. There were improvements in the results of all sub-scales of the research, although not necessarily in all variables. The positive effect was the aspect with higher numbers of satisfaction in age group, level of hearing loss and HA classification.

It can be concluded that the HA adaptation (use) time contributes to the users' satisfaction in all researched sub-scales.

RESUMO

Objetivo: analisar, por meio do questionário Satisfaction With Amplification in Daily Life, a satisfação dos usuários de Aparelho de Amplificação Sonora Individual, após um mês de uso, e verificar se houve uma melhora nesta satisfação dois meses após a primeira aplicação do questionário. Métodos: de acordo com critérios de inclusão, participaram 50 pacientes, com faixa etária variada, com perda auditiva, não importando grau e tipo de necessidade do uso de prótese auditiva bilateralmente. Aplicou-se o questionário 30 dias após a adaptação do Aparelho de Amplificação Sonora Individual e reaplicado após 60 dias de adaptação com o uso da prótese. Resultado: foi observada uma satisfação da prótese auditiva em todos os fatores (negativo, positivo, imagem pessoal, serviço e custo). A subescala efeito positivo foi a que apresentou maior número de satisfação na pesquisa. Em relação à faixa etária que obteve satisfação, prevaleceram as idades acima de 60 anos; nos graus de perda, foram as moderadas e moderadamente severa; na classificação de aparelho, o tipo A apresentou maior satisfação. Esses resultados foram estatisticamente significantes na pesquisa. Conclusão: houve satisfação com o uso do Aparelho de Amplificação Sonora Individual em todos os fatores avaliados. O efeito positivo foi a subescala que apresentou maior número de satisfação na faixa etária, grau de perda auditiva e classificação de Aparelho de Amplificação Sonora Individual.

DESCRITORES: Questionário; Satisfação do Paciente; Perda Auditiva

REFERENCES

- 1. Albernaz PLM. Quem ouve bem, vive melhor: um livro para pessoas com problemas de audição e seus familiares. 1ª ed. São Paulo: MG editores; 2008
- Campos CAH. Russo ICP. Almeida K. Indicação, seleção e adaptação de próteses auditivas: princípios gerais. In: Almeirda K, Iorio MCM. Próteses auditivas: fundamentos teóricos e aplicações clínicas, 2ª ed. São Paulo: Editora Lovise: 2003. P.35-54.
- 3. Campos UP, Almeida KA. Satisfação com o uso de Próteses Auditivas Analógicas, Programáveis e Digitais. Distúrb. Comum. 2008;20(3):355-64.
- 4. Danieli F, Castiquini EAT, Zambonatto TCF, Bevilacqua MC. Avaliação do nível de satisfação de usuários de aparelhos de amplificação sonora individuais dispensados pelo Sistema Único de Saúde, RevSocBrasFonoaudiol, 2011;16(2):152-9.
- 5. De Freitas CD, Costa MJ. Processo de adaptação de próteses auditivas em usuários atendidos em uma instituição pública federal - parte I: resultados e implicações com o uso da amplificação. Rev. Bras. Otorrinolaringol. 2007;73(6):744-51.
- 6. Magalhães FF, Mondelli MFCG. Avaliação da satisfação dos usuários de aparelho de amplificação sonora individual – revisão sistemática. Rev CEFAC. 2011; 13(3):552-8.
- 7. Mondelli MFCG, Magalhães FF, Lauris JRP. Cultural Adaptation of the SADL (Satisfaction with Amplification in Daily Life) questionaire for Brazilian Portuguese. Rev. Brazilian Journal Otorhinolaryngol. 2011;77(5):563-72.
- 8. Laperuta EB, Fiorini AC. Satisfação dos idosos com os aparelhos de amplificação sonora nos

- primeiros seis meses de uso. J SocBrasFonoaudiol. 2012;24(4):316-21.
- 9. Armigliato ME, Prado DGA, Melo TM, Martinez MANS, Lopes AC, Amantini RCB, Bevilacqua MC. Avaliação de serviços de saúde auditiva sob a perspectiva do usuário: proposta de instrumento. RevSocBrasFonoaudiol. 2010;15(1):32-9.
- 10. Danieli F, Castiguini EAT, Zambonatto TCF, Bevilacqua MC. Avaliação do nível de satisfação de usuários de aparelhos de amplificação sonora individuais dispensados pelo Sistema Único de Saúde. RevSocBrasFonoaudiol. 2011:16(2):152-9.
- 11. Carvalho JSA. Satisfação de idosos com Aparelhos Auditivos concedidos no Estado de Tocantins. Arq. Int. Otorrinolaringol. / Intl. Arch. Otorhinolaryngol, 2007;11(4):416-26.
- 12. De Almeirda K, Iorio MCM. Próteses auditivas: fundamentos teóricos e aplicações clínicas. 2ª ed. São Paulo: Editora Lovise; 2003.
- 13. Farias RB, Russo ICP. Saúde auditiva: estudo do grau de satisfação de usuários de aparelho de amplificação sonora individual. RevSocBrasFonoaudiol. 2010;15(1):26-31.
- 14. Veiga LR, Merlo ARC, MengueSS. Satisfação com a prótese auditiva na vida diária em usuários do sistema de saúde do exército. RevBrasOtorrinolaringol. 2005;71(1):67-73.
- 15. Teixeira CF, Augusto LGS, Caldas Neto SS.Prótese Auditiva: satisfação do usuário com sua prótese e com seu meio ambiente. Rev CEFAC. 2008;10(2):245-53.
- 16. Lessa AH, Costa MJ, Becker KT, VaucherAVA. Satisfação de usuários de próteses auditivas, com perda auditiva de graus severo e profundo. Arq. Int. Otorrinolaringol. / Intl. Arch. Otorhinolaryngol. 2010;14(3):338-45.

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ANEXO 1

SATISFACTION WITH AMPLIFICATION IN DAILY LIFE

Na	me
	te of Birth/ Today's te//
INSTRUCTIONS Listed below are questions on your opinions about your hearing aid(s). For each question, please circle the letter that is the best answer for you. The list of words on the right gives the meaning for each letter. Keep in mind that your answers should show your general opinions about the hearing aids that you are wearing now or have most recently worn.	
A٨	Not At All B A Little C Somewhat D Medium E Considerably
1. (Compared to using no hearing aid at all, do your hearing aids help you understand the people you speak with most frequently? ABCDEFG
2. <i>F</i>	Are you frustrated when your hearing aids pick up sounds that keep you from hearing what you want to hear? ABCDEFG
3.	Are you convinced that obtaining your hearing aids was in your best interests? A B C D E F G
4.	Do you think people notice your hearing loss more when you wear your hearing aids? A B C D E F G
5.	Do your hearing aids reduce the number of times you have to ask people to repeat? A B C D E F G
6.	Do you think your hearing aids are worth the trouble? A B C D E F G
7.	Are you bothered by an inability to get enough loudness from your hearing aids without feedback (whistling)? A B C D E F G
8.	How content are you with the appearance of your hearing aids? A B C D E F G
9.	Does wearing your hearing aids improve your self-confidence? A B C D E F G
10.	How natural is the sound from your hearing aids? A B C D E F G
	How helpful are your hearing aids on MOST telephones with NO amplifier or loudspeaker? you hear well on the telephone without hearing aids, check here []) ABCDEFG
12.	How competent was the person who provided you with your hearing aids? A B C D E F G

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- 13. Do you think wearing your hearing aids makes you seem less capable? ABCDEFG
- 14. Does the cost of your hearing aids seem reasonable to you? ABCDEFG
- 15. How pleased are you with the dependability (how often they need repairs) of your hearing aids? ABCDEFG