

# Hearing aids: what are the most recurrent complaints from users and their possible relationship with fine tuning?

## Aparelhos de amplificação sonora individual: quais são as queixas mais recorrentes dos usuários e suas possíveis relações com ajustes finos?

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### ABSTRACT

**Purpose:** To identify the most frequent complaints from hearing-aid users and establish possible relationships that might help audiologists solve some problems. **Methods:** Cross-sectional, descriptive and quantitative study, carried out through an online questionnaire, answered by 176 audiologists. After analyzing the responses and computing the terms, coding was performed and the 30 most frequent complaints were described. Four categories were established to verify each reported term and its correspondence with the problem pointed out in each question. To address the possible relationships between complaints and their solutions, the terms were divided into the following main aspects of the hearing aid fitting process: physical adaptation, adjustment of electroacoustic characteristics and user's intrinsic characteristics. **Results:** 30 representative terms of complaint were described due to their high number of occurrences: the term "very loud device / very loud sound" appeared 223 times whereas the term "I cannot hear anything" had the fewest number of occurrences, 25 appearances. In total, there were six complaints related to physical aspects, 17 to adjustments of electroacoustic characteristics, four that could be related to both aspects and two to intrinsic characteristics of the individual. **Conclusion:** It was possible to identify the most frequently reported complaints of hearing aid users. It was observed that it is feasible, based on a complaint, to address a supposedly related aspect of adaptation and help audiologists find solutions. However, each particular patient and situation must be given individualized attention.

**Keywords:** Hearing; Hearing loss; Hearing aids; Audiology; Problem solving

### RESUMO

**Objetivo:** identificar as queixas mais recorrentes dos usuários de aparelhos de amplificação sonora individual (AASI) e estabelecer possíveis relações que auxiliem a busca de soluções de problemas no processo de adaptação desses dispositivos. **Métodos:** estudo transversal, descritivo e quantitativo, realizado mediante questionário *on-line*, respondido por 176 fonoaudiólogos. Após computação e organização das respostas, realizou-se uma codificação e foram descritos 30 termos mais recorrentes, referentes às queixas dos usuários. Foram estabelecidas quatro categorias para verificar cada termo relatado e sua correspondência com o problema apontado em cada questão. Para o direcionamento das possíveis relações entre as queixas e suas resoluções, os termos foram divididos nos seguintes aspectos principais do processo de adaptação de AASI: adaptação física, ajuste das características eletroacústicas e características intrínsecas do usuário. **Resultados:** foram descritos 30 termos representativos das queixas, com maior número de ocorrências para o termo "Aparelho muito alto/Som muito alto", que apareceu 223 vezes. O termo "Não escuta nada" apareceu com menor número de ocorrências, 25 vezes. No total, foram encontradas seis queixas relacionadas a aspectos físicos, 17 a ajustes de características eletroacústicas, quatro que poderiam estar relacionadas a ambos os aspectos e duas a características intrínsecas do indivíduo. **Conclusão:** foi possível elencar as queixas mais referidas pelos usuários de AASI. Observou-se que é viável, a partir de uma queixa, direcionar um suposto aspecto relacionado à adaptação e auxiliar os fonoaudiólogos a levantar soluções, apesar de ser clara a necessidade de um olhar individualizado para cada paciente e situação.

**Palavras-chave:** Audição; Perda auditiva; Auxiliares de audição; Audiologia; Resolução de problemas

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## INTRODUCTION

According to projections of the World Health Organization (WHO), one in every ten people will have disabling hearing loss (HL) by 2050<sup>(1)</sup>. Therefore, we know that HL is an increasingly discussed topic in the present world scene, since, regardless of the identity, it has negative consequences in communication, emotional state, and quality of life<sup>(2)</sup>. Sound amplification is the most recommended intervention for individuals with HL. Hearing aid (HA) is among the available technological devices widely used<sup>(3)</sup> and with proven benefits<sup>(4-6)</sup>. To guarantee an adaptation of excellence, it is necessary to follow the stages of good practices recommended by the American Academy of Audiology<sup>(7)</sup> and by the Brazilian Academy of Audiology<sup>(8)</sup>. These stages are the assessment of the individual, technical aspects of the treatment, orientation, advice of the patient, and validation of the use of amplification.

However, there is still a lack of standardization and protocol for fine adjustments, especially in the other resources offered by HA, in addition to those related to frequency gain adjustment<sup>(9)</sup>. To help the current practice, based on evidence, studies suggest the development of tools that contribute to the resolution of complaints, also taking into account individual characteristics of the patient<sup>(9,10)</sup>. Thus, the active participation of the patient in the process of adapting the hearing aid is necessary. Listening to what he has to say about his amplified hearing is a fundamental task to individualize care, respect his characteristics and value his complaints<sup>(11)</sup>. Listening occurs throughout the adaptation process, and the audiologists sensitivity to understand what each patients complaint represents and how to work with it is essential for solving the problems presented.

With the need to understand the terms used by patients with HA and how such descriptions could contribute to the adaptation process, several studies were carried out in the 1990s about sound descriptors and HA adjustments, mainly in Sweden<sup>(12-14)</sup>. The main objective of the studies was to analyze whether patients with HA would be able to describe sounds accurately, so these descriptions could be used to fine-tune the devices. We found that it is possible for patients to accurately describe their perceptions for its use in adjusting their HA. Other studies have related the complaints of patients with HA to specific adjustment parameters, also with results of reliability between reports and fine adjustments<sup>(15-17)</sup>.

The study by Jenstad et al.<sup>(17)</sup> had the objective of raising the terms most used by patients with HA to describe their complaints and then, to develop a fine-tuning guide based on these complaints. They identified the 40 most frequent descriptors about electroacoustic behavior and physical characteristics of HA. The authors related these descriptors to future adjustments that could guide audiologists in fine-tuning them. Another research<sup>(18)</sup> was carried out in the Netherlands replicating the aforementioned study but regarding the reality of the Dutch language. The aforementioned studies were carried out in English and Dutch and demonstrate that the terms and results found cannot extrapolate the use to other languages, as each language presents particularities, variations, and distinct origins.

In the literature consulted, we did not find recent research, national or international, which revealed the terms used for the most frequent spontaneous complaints of patients with HA and possible problem resolutions. Therefore, we realized that it was

necessary to describe the terms in Brazilian Portuguese, aiming at a better understanding of the complaints of patients with HA.

We also noticed a need to understand how the audiologist should look at these aspects, thinking about the physical and electroacoustic characteristics of HA to achieve the proposed objectives for their adaptation and auditory rehabilitation. Thus, this research aimed to identify the most recurrent complaints of individual sound amplification devices and establish possible relationships that help to solve problems in the process of adapting these devices.

## METHODS

This is a cross-sectional, descriptive, and quantitative study. The project was sent to the Research Ethics Committee (CEP) of FCM/UNICAMP and was approved under number 2,253,925/2017. Data collection started only after approval by CEP.

### Procedures

The research was carried out and made possible through an online questionnaire, prepared on the Google Forms platform, based on the study by Jenstad et al.<sup>(17)</sup> and disseminated through social networks and e-mails. There was no disclosure through professional associations or professional registration councils. The research participants declared their consent by clicking on the "I agree to participate" button, at the end of the online Informed Consent Form (ICF). Only after the consent of the informed consent form, the audiologists were allowed access to the questionnaire.

The questionnaire was divided into two parts. The first part comprises 11 questions regarding the participants and their work locations. The second part contains 18 open questions, subdivided into five main categories that influence the adaptation of HA: frequency gain, maximum volume/output, physical adaptation, compression characteristics, and unwanted sounds (Chart 1). All questions were designed to allow the audiologist to report the patient's complaint when HA is behaving in a certain way.

After analyzing and categorizing the complaints, during the study the responsible researchers raised the possible relationships between these complaints and problem solutions in the process of adapting these devices. For the establishment of these relationships, the terms were dimensioned in the following main aspects: physical adaptation, adjustment of electroacoustic characteristics, and intrinsic characteristics of the patient. It is important to consider that physical adaptation is related to the physical characteristics of the HA and also to the anatomical conditions of the patient; adjustment of the electroacoustic characteristics presupposes the performance of fine adjustments and adjustment in the device. Intrinsic characteristics of the patient refer to factors inherent to the individual such as cognitive ability and brain functioning and superior executive functions for speech comprehension.

**Chart 1.** Questionnaire

<p><b>We inform the audiologist who is answering this questionnaire that all questions must be read containing the following sentence after each item: “my patients are used to use the terms or phrases”.</b>  <b>For example: “If the adaptation has a lot of gain at low frequencies, my patients are used to use the terms or phrases: ‘the device is a little thick’ or ‘the device is echoing”.</b>  <b>The phrase/word that the patient uses to express on the device when it is adjusted/behaving in a certain way must be placed. It is not necessary for the audiologist to write in his answer the phrase “my patients are used to use the terms or phrases”, just put the complaints the patients refer.</b></p>	<p><u>Gain by frequency</u>                  If the adaptation has a lot of gain at low frequencies...                  If the adaptation has a lot of gain at high frequencies...                  If the adaptation has a lot of gain in the medium frequencies...</p> <p><u>Volume/Maximum Output</u>                  If the adaptation has a lot of general gain...                  If adaptation has little overall gain...                  If the maximum output is too high...                  If the maximum output is too low...</p> <p><u>Physical Adaptation</u>                  If the patient reports occlusion...                  If the mold or dome is too tight...                  If the mold or dome is too wide...</p>	<p><u>Compression Characteristics</u>                  If the compression attack and recovery time is too fast...                  If the compression attack and recovery time is too slow...                  If the compression ratio is too high...                  If the compression ratio is too low...                  If the compression threshold is too high...                  If the compression threshold is too low...</p> <p><u>Unwanted sounds</u>                  If the HA is producing distortion...                  If the HA is producing feedback...</p>
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**Caption:** HA = Hearing Aid

### Sample

The sample was formed of 176 audiologists with the following inclusion criteria: professionals with a degree in Audiology in Brazil and professionals who work in the area of individual sound amplification devices. We did not consider the difference between professionals who were working at the time or who had already worked in the area as relevant for the analysis of the answers since the audiologists could give up from answering the question if they did not feel free to respond or were confused about the question. We excluded questionnaires whose answers were outside the scope of the research such as “yes” or “no” answers when asked to describe terms or phrases used by patients with HA.

Among these professionals, 93% (163) were female and 7% (13) were male; 70% of audiologists were from the Southeast region, 14% from the South region, 7% from the Northeast, 3% from the North region, 3% from the Midwest region and 3% did not report to this data. Regarding training, 31 audiologists were only graduated, 94 were post graduated, 28 had a master’s degree and 23 had a doctorate. The average time of experience with HA adaptation was 10.81 years, with a minimum of six months of profession and a maximum of 40 years.

### Statistical analysis

The inferential statistical analysis of the data was performed using the following stages: 1) Coding of terms: performed by two audiologists responsible for the research, with at least three years of experience and specialization in the area of HA selection and adaptation. Before its performance, there was a preparation through the study of existing terms and review of rules of the Portuguese language. Afterward, the coding took place independently. When divergence occurred, we tried to talk and reach a consensus regarding the classification. Terms with the same meaning (for example: “there is a noise in my device” and “my device is making a noise”) and with the same morpheme (“echo”, “echoes”, “echoing”) were combined in the same category. Morphemes that modified the meaning of the word

were not grouped in the same category. Despite the existence of specific software for mining text data from the study, they did not prove to be useful in Portuguese. We needed a manual selection from the tabulated data in the Microsoft Office Excel spreadsheet editor; 2) Calculation of the occurrence frequency for each term in the entire questionnaire and verification of the most frequent terms (in this study, the 30 most frequent terms were listed); 3) Verification of terms that are repeated in the different questions. We could analyze each term and the probable behaviors of sound processing and physical characteristics of HA. Thus, we analyzed the distribution of terms by questions and the number of times these terms were referred to in the questions. From the table of terms occurrence frequency, 10% of the total of the most frequent terms were selected, that is, the first 30 items were presented in descending order (from the highest number of occurrences of each term to the lowest number). For the analysis of the results, four categories were established: A, B, C, and D (Table 1)

### RESULTS

Table 2 shows the occurrence of the 30 terms referring to complaints from patients with HA in descending order, that is, from the term with the highest number of occurrences to the term with the lowest number of occurrences. We observed that the most frequent term, “Very loud device/Very loud sound”, appeared 223 times, and the least frequent term, “I did not hear anything”, appeared 25 times.

Chart 2 shows how we analyzed and described the defined categories (Methods section). We observed that most of the terms appeared in more than one question, but in a non-homogeneous way, that is, their appearance prevailed in certain questions. Based on this categorization, we presented the supposed relationships that can help to solve problems in the process of adapting HA aids.

### DISCUSSION

The analysis of the research answers enabled the discovery of the terms most often mentioned by patients with HA to

describe their complaints, reported by the audiologists who accompanied them. We observed thirty terms with the highest occurrence (Table 2) for categorization and description of patients' complaints. The other studies that explored these terms in English<sup>(17)</sup> and Dutch<sup>(18)</sup> developed a list of the 40 most frequent words reported by patients with HA. The terms of the Dutch study are described in English due to publication reasons, as reported by the author<sup>(18)</sup>. No similar study was found in Portuguese. Table 3 compares the first ten terms among the three researches.

The term most often referred to in this study was "Very Loud Device/Very Loud Sound", as it agrees with the findings of terms similar to English and Dutch language studies. When analyzing the ten descriptors of the other studies<sup>(17,18)</sup>, relating them to the one carried out in Brazil, we observed that, despite the different languages and the long time to carry out the study of the English language (more than a decade), the terms used to describe the behavior of the HA are similar.

Over time, HA manufacturers have shown great commitment to developing technologies to improve sound processing, which

**Table 1.** Analysis categories and their parameters for the distribution of terms by questions

Categories	Parameters
<b>Category A:</b> The term appeared only in one question.	100% of the time the term appeared in a given question.
<b>Category B:</b> The term appeared in more than one question, but with greater occurrence in one of them.	The highest occurrence value of the term represented $\geq 50\%$ of the total number of times the term was presented.
<b>Category C:</b> The term appeared in more than one question, one of which stood out, but others also had relevant values.	The sum of the two or three highest values of the occurrence of the terms represented $\geq 50\%$ of the total number of times that the terms were presented.
<b>Category D:</b> The term appeared in more than one question and was evenly distributed across all questions in which it appeared.	The sum of the three highest values of the occurrence of the terms represented $\leq 50\%$ of the total number of times the terms were presented.

**Table 2.** Occurrence of terms referring to patient complaints as reported by the study sample

#	Term	Number of occurrences
1	Device too loud/Sound too loud	223
2	Beeping device	222
3	Muffled device/Muffled sound	180
4	Device with echo/Sound with echo/Echo in the head/My voice with echo	158
5	Squeaking sound	136
6	Low device/Low sound	132
7	Very loud device/Very loud sound	126
8	Device makes noise/Too much noise	103
9	Device squeaking/Squeaking sound	97
10	Annoying device/Annoying sound/annoying	97
11	Difficulty interpreting speech	92
12	It hurts (device)	72
13	Weak device/Weak sound	72
14	Plugged ear/Plugged ear (device)	69
15	Physical pain/earache	63
16	I listen but don't understand/I can't understand anything/I can't understand conversations	63
17	Strange device/Strange sound	59
18	Distorted sound	54
19	Device makes no difference/It makes no difference	50
20	Cutting sound/Cutting speech	48
21	Device comes out	43
22	Physical discomfort	42
23	Loud sound bothers	40
24	Metallic sound	40
25	My voice inside the head	36
26	Noisy device/Noise/Too much noise	35
27	My voice is loud	30
28	I didn't hear well	29
29	Device escapes	27
30	I didn't hear anything	25

has been updated exponentially. The development of new algorithms and the updates of prescriptive rules are present at all times, alleviating complaints and improving the performance of patients with such electronic devices<sup>(19)</sup>. Thus, the fine-tuning of hearing aids becomes increasingly complex due to technological advances and the fact that current devices try to compensate not only for the magnitude (degree) of hearing loss but also the way of sound processing, by “imitating” the cochlea, through non-linear amplification methods and activation of different sound processing strategies for different acoustic environments<sup>(20-22)</sup>. Despite this, we observed that complaints remain similar even after more than a decade of difference between the American, Dutch and Brazilian studies. This reinforces that, even with advances, some difficulties presented by patients with HA have not yet been solved.

It becomes evident that, despite great advances, HAs are not able to rescue the sound processing performed by an intact auditory system. However, for the possible changes, an audiologist is needed to manage HA programming.

This survey of representative terms that prove to be the most frequent complaints enables the professional to analyze and propose ways to make fine adjustments and orientations to help him in a more efficient adaptation and an adequate hearing rehabilitation process. As in other researches, there is a diversity of complaints and difficulties related to the use of the HA, reinforcing the continuous challenge that patients and audiologists have<sup>(23,24)</sup>. However, evidence remains conflicting

**Table 3.** Description of the first ten terms in the three studies: Brazilian Portuguese, English, and Dutch

Terms	This research Portuguese language	Jenstad et al. <sup>(17)</sup> English language	Thielemans et al. <sup>(18)</sup> Dutch language
1.	Device too loud/ Sound too loud	Too loud *	Too loud
2.	Beeping device	Whistle	Too sharp
3.	Muffled device/ Muffled sound	Not clear	Bad speech understanding
4.	Device with echo/ Sound with echo/ Echo in the head/ Own voice with echo	Pain	Dull
5.	Squeaking sound	In a barrel, tunnel, or well	Too soft
6.	Low device/Low sound	Tinny	Indistinct
7.	Very loud device / Very loud sound	Muffled	Hearing aid whistles
8.	Device makes noise/Too much noise	Environmental sounds too loud	Distorted
9.	Squeaking device/ Squeaking sound	Not loud enough	Hearing aid is producing noise
10.	Annoying device/ Annoying sound/ Annoying	Sharp	Too shrill

**Chart 2.** Result of the analysis of the four proposed categories and their relationships with the adaptation of the individual sound amplification device

Category	Parameters	Analysis	Possible relationships
<b>Category A</b>	100%	3 terms: Device leaves, Physical annoyance, Device escapes.	Physical adaptation: Device leaves, Physical discomfort, Device escapes.
<b>Category B</b>	Highest value $\geq 50\%$ of the total	12 terms: Beeping device, Loud sound, Low device/ Low sound, it hurts (device), Plugged ear/Plugged ear (device), Physical pain/Earache, Strange device/ Strange sound, Device makes no difference/It makes no difference, Annoying loud sound, Metallic sound, My voice inside the head, I can't hear anything.	Physical adaptation: It hurts (device), Plugged ear/ Plugged ear (device), Physical pain/Ear pain. Adjustment of electroacoustic characteristics: Squeaking sound, Strange device/Strange sound, Device makes no difference/It makes no difference, Annoying loud sound, Metallic sound, I can't hear anything. Physical adaptation or adjustment of electroacoustic characteristics: Beeping device, My voice inside the head.
<b>Category C</b>	Sum of the two or three highest values $\geq 50\%$ of the total	14 terms: Device too loud/Sound too loud, Muffled device /Muffled sound, Device with echo/Sound with echo/Echo in the head/My voice with echo, Very loud device/Very loud sound, Device makes noise/ Too much noise, Squeaking device/squeaking sound, Annoying device/Annoying sound/Annoyance, Difficulty interpreting speech, Weak device/Weak sound, Distorted sound, Cutting sound/Cutting speech, Noisy device/Noise/Too much noise, My loud voice, I can't hear well.	Adjustment of electroacoustic characteristics: Device too loud/Sound too loud, Muffled device / Muffled sound, Very loud device/Very loud sound, Device makes noise/Too much noise, Annoying device/ Annoying, Weak device/Weak sound, Distorted sound, Cutting sound/Cutting speech, Noisy device/Noise/Too much noise, My loud voice, I can't hear well. Physical adaptation or adjustment of electroacoustic characteristics: Device with echo/Sound with echo/ echo in the head/My voice with echo, Squeaking device/Squeaking sound (physical adaptation when referring to acoustic feedback) Intrinsic user characteristics: Difficulty interpreting speech.
<b>Category D</b>	The sum of the three highest values $\leq 50\%$ of the total	1 term: I listen but do not understand/I can't understand anything/I do not understand conversations.	Intrinsic user characteristics: I listen but I don't understand/I can't understand anything/I can't understand conversations.

on the reliability of the solution of the problems based on the descriptions and reports of the patients<sup>(9,17,18,20,25)</sup>.

Considering that we opted for an analysis of the terms and a separation seeking terminology similarity through the structure of the morphemes of the words, the 30 terms had similarities between them regarding the complaint presented versus adjustment of the HA versus result for the patient. Some terms do occur, such as “Very loud device/Very loud sound” (term 1) and “Very strong device/Very strong sound” (term 7), which, in a classificatory analysis of what the complaint represents, are related, and may refer to the same complaint. Thus, it is even more evident that it is a frequent complaint and that HA is exceeding the patient’s comfort levels.

Within this perspective of analysis, the terms “Low device/Low sound” (term 6), “Weak device/Weak sound” (term 13), “Device makes no difference/It makes no difference” (term 19), “Do not hear well” (term 28) and “Don’t hear anything” (term 30), follow the same line of reasoning when a possible solution is raised: increasing the gain of the HA. However, only the use of these terms to describe the complaints makes them unspecific, requiring further investigation for a precise resolution. The suggestions raised demonstrate the initial step to guide the audiologist in performing fine adjustments. This becomes even more evident if we consider the way current HAs process the sound and provide several digital transformations in the sound that are forwarded to the patient, to improve speech intelligibility<sup>(26)</sup>.

According to the proposed categorization, we observed that the terms “the device comes out” and “the device escapes” were directly related to the question “if the mold or dome is too wide”, and the term “physical discomfort” related to “if the mold or dome is too tight”, that is, complaints regarding the physical characteristics of the mold/dome of the HA. In agreement with another study, we found that many times, the difficulty is related to the handling of HA, which can be considered a factor with the greatest impact on adherence to the auditory rehabilitation process, demonstrating that guidance and counseling are a good starting point to help patients<sup>(23)</sup>.

In the HA adaptation process, the first stage is to ensure good physical adaptation: HA cannot be moved during use, as demonstrated by the terms “the device comes out” and “the device escapes” (term 29), which already translates that the HA is poorly adapted. Further on, the terms “Hurts (device)” (term 12), “Physical pain/Pain in the ear” (term 15), and “Physical discomfort” (term 22) refer to the fact that, in addition to the HA being poorly positioned, it may cause physical discomfort to the patient. However, physical comfort is paramount to use the HA for long periods and obtain the benefits of peripheral and central auditory system stimulation. Since all complaints listed in category A are directly related to physical adaptation, the speech therapist must pay attention to this aspect, in an attempt to solve the problem.

For category B, even if the terms used were not fully related to only one behavior of the HA, they tended to represent, more than 50% of the time, a single behavior of the device. Questions about physical adaptation are easier to address and resolve when using the terms “Hurts (device)”, “plugged ear/plugged ear (device)”, “Physical pain/Ear pain”, referred to in this category. Other terms may already elucidate the idea of the need for fine adjustments, such as the terms “Squeaking sound”, “Strange device/Strange sound”, “Device makes no difference/It makes no difference”, “Annoying strong sound”, “Metallic

sound”, “I do not hear anything”. The terms “Beeping device” and “My voice inside the head” can direct audiologists to two paths: physical adaptation or adjustment of electroacoustic characteristics. This is because the “Beeping device”, referred to by the patient can be caused by poor positioning of the HA in the ear (physical adaptation characteristics), or by excessive amplification, thus causing feedback. The term “My voice inside the head” suggests the presence of an occlusion effect, which must be resolved with changes in ventilation and depth of adaptation in the external acoustic meatus or, in some cases, by modifying the gain of low frequencies.

When looking at this category in detail, the intrinsic characteristics of the patient appear as a problem situation with possible alternative causes mentioned above. As already described in the literature, HA contributed as a “gateway” of sounds to the individual. However, the interpretation of the message and the understanding of speech take place in the brain<sup>(27,28)</sup>. Thus, many times, even though the speech therapist guarantees access to speech sounds and, through the resources provided by HA, patients hearing effort is reduced, the ability to follow the conversation and understand speech remains compromised, since cognitive and cerebral aspects are essential for this.

Still analyzing category C, several complaints should be looked at from the point of view of the need to refine the regulation of the HA. When complaints such as “Device too loud/Sound too loud”, “Very loud device/Very loud sound”, “Device bothers/Sound bothers/Annoyance” are observed, the fine adjustment should be directed towards issues of maximum output and/or gain of the HA. For complaints such as “The device is noisy/Too much noise”, “Noisy device/Noise/Too much noise”, we also suggest checking the technological resources offered by the HA, such as noise reducers.

Category D was represented by a single term: “I listen but I don’t understand/I can’t understand anything/I don’t understand conversations”. This is a complaint that can represent several situations that are occurring to a patient, and that should cause the audiologist to seek a more precise description to perform or fine-tune the HA. Similarly to the study by Jenstad *et al.*<sup>(17)</sup>, to deal with two imprecise terms as a problem, it is necessary to raise more questions or be more patient to find a more adequate term that uncovers and clarifies the complaint.

We believe that, regardless of the term mentioned by the patient, the role of the audiologist is to analyze this complaint and be able to be precise, accurate, and specific in solving the problem, respecting the patient’s characteristics<sup>(29)</sup>.

Even with advances and the use of digital technologies, the professionals must know about the complaints of the patients and how to deal with them, as well as the need for guidance on the HA and counseling throughout the follow-up of the patient, agreeing with different studies<sup>(23,24,29,30)</sup>. Listening to and understanding the patient brings an effective adaptation because it is useless for the audiologist to have operational technical training on the HA and the software, but not being able to understand the patient’s complaint and overcome such a problem in the form of an adjustment to remedy the complaints.

It is also necessary to reinforce that the process of selection and adaptation of the HA comprises steps of good practices that are already known and guide the audiologist to effective work. Based on this perspective, objectively verifying the amplification characteristics through the use of the probe microphone (considered the gold standard in the verification stage)<sup>(7,8)</sup>, together with the stage of evaluating the results with

the perception tests of speech in silence and in noise – which can assess how the patients will perform in their daily lives in their usual communication<sup>(8)</sup> –, and to the partnership between the individual and the professional<sup>(29)</sup> – in terms of reporting their experiences and complaints – lead to the process of successful adaptation of HA, always permeated with advice and guidance to the patient.

Considering the above mentioned, even with the limitation of the study regarding the disparity of responses by audiologists by region –which may not be representative of territorial extension –, we could recognize the most recurrent complaints and provide a path to guide them. More than that, we reinforce the importance of the audiologist's role during the HA selection and adaptation process.

## CONCLUSION

It was possible to list the most frequently referred complaints by patients with HA. We observed that, from a complaint, we can address a supposed aspect related to adaptation and help audiologists find solutions, despite being clear about the need for an individualized study for each patient and situation.

We detected 30 terms most frequently used by patients for complaints regarding their HA. The term that appeared the most was “Device very loud/Sound very loud”, with 223 occurrences, and the term that appeared the least was “I did not hear anything”, with 25 occurrences.

Within the categories of analysis of terms previously defined to establish possible solutions to problems, the terms were related to the main aspects of the adaptation process of these devices. We observed that, in category A, the three complaints were directly related to physical adaptation; in category B, three complaints were related to physical adaptation, six to the adjustment of electroacoustic characteristics, and two complaints could be related to both aspects. In category C, 11 complaints suggested the need for adjustment of electroacoustic characteristics, two with the possibility of referring to physical adaptation or adjustment of electroacoustic characteristics and one with the intrinsic characteristics of the patient. In category D, the referred complaint prioritized the targeting of the patient's intrinsic characteristics, when considering that the HA is properly regulated.

These terms may relate to certain aspects of HA adaptation. Even a term that can identify more than one complaint allows, from a joint analysis, to raise possibilities for different behaviors and reach a differentiated solution for each patient.

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