




Therapeutic itinerary of hearing impaired patients

Itinerário terapêutico de pacientes com deficiência auditiva

Itinerario terapéutico de pacientes con discapacidad auditiva

Kenia Isabella de Souza* 
Camila Ferreira Ambrosio* 
Teresa Maria Momensohn Santos** 

Abstract

Introduction: The actions of the hearing health service are performed by basic, middle and high complexity care in a hierarchical manner, organized to facilitate diagnosis, recovery and rehabilitation. Knowing the route taken by the user can influence the solution adopted and identify difficulties to early diagnosis. **Objective:** To analyze the profile and therapeutic itinerary of patients diagnosed with hearing impairment in a Microregional Hearing Health Service in Minas Gerais. **Method:** Retrospective descriptive analysis of the medical records data from the hearing service Sete Lagoas, of 189 subjects who received hearing aids by the Unified Health Service between the years 2018/2019 at the reference service on Medium Complexity in the Microregion. There are a greater number of users over the age of 60 in Sete Lagoas and also in the micro-region. The classification as to sex shows a predominance of women in the entire service area and mainly in the city of Sete Lagoas. **Results:** The analysis of the itinerary shows that the time between arrival at the hearing health service and the stages of pre-mold, test and delivery of the hearing aid is shorter for children than for adults and the elderly. A higher number of users over 60 years of age is observed in Sete Lagoas and also in the microregion. **Conclusion:** The route taken by the patients interferes with the use of the hearing aid and a proper adaptation due to the waiting time and distance covered. Adults and elderly have a longer itinerary in relation to children.

Keywords: Hearing Loss; Health Services Accessibility; Public Health.

* IEAA - Instituto de Estudos Avançados em Audição - São Paulo (SP), Brazil.

** Pontifícia Universidade Católica de São Paulo - PUC-SP - São Paulo (SP), Brazil.

Authors' contributions:

KIS and CFA: Research planning, data collection, preparation of the final report.

TMMS: Project guidance and supervision; review of the final report.

Correspondence email address: Kenia Isabella de Souza - keniaisa@yahoo.com.br

Received: 7/16/2020

Accepted: 11/12/2020

Resumo

Introdução: As ações do serviço de saúde auditiva são executadas pela atenção básica, média e alta complexidade de maneira hierarquizada, organizada para facilitar o diagnóstico, recuperação e reabilitação. Conhecer o itinerário percorrido pelo usuário pode influenciar a solução adotada e identificar dificuldades ao diagnóstico precoce. **Objetivo:** Analisar o itinerário terapêutico e perfil dos pacientes diagnosticados com deficiência auditiva de um serviço de Saúde Auditiva Microrregional de Minas Gerais. **Método:** Análise descritiva retrospectiva dos dados de prontuários do serviço auditivo de Sete Lagoas, de 189 sujeitos que receberam aparelho auditivo pelo Serviço Único de Saúde entre os anos de 2018/2019 no serviço de referência em Média Complexidade da Microrregião. Observa-se maior número de usuários com idade superior a 60 anos em Sete Lagoas e também na microrregião. A classificação quanto a sexo demonstra predomínio de mulheres em toda área de atendimento, e, principalmente, no município de Sete Lagoas. **Resultados:** A análise do itinerário mostra que o tempo entre a chegada ao serviço de saúde auditiva e as etapas de pré molde, teste e entrega do aparelho auditivo é menor para crianças do que para adultos e idosos. **Conclusão:** O itinerário percorrido pelos pacientes interfere em maior aproveitamento do aparelho auditivo e adaptação adequada devido ao tempo de espera e distância percorridos. Adultos e idosos têm maior itinerário em relação às crianças.

Palavras-chave: Perda Auditiva; Acesso aos Serviços de Saúde; Saúde Pública.

Resumen

Introducción: Las acciones del servicio de salud auditiva son realizadas por atención primaria, media y alta complejidad de manera jerárquica, organizadas para facilitar el diagnóstico, la recuperación y la rehabilitación. Conocer la ruta tomada por el usuario puede influir en la solución adoptada y identificar dificultades en el diagnóstico temprano. **Objetivo:** analizar el perfil y el itinerario y perfil terapéutico de pacientes diagnosticados con discapacidad auditiva en un servicio de salud auditiva microrregional en Minas Gerais. **Método:** Análisis descriptivo retrospectivo de los datos de las historias clínicas del servicio de audición en Sete Lagoas, de 189 sujetos que recibieron audífonos por parte del Servicio Unificado de Salud entre los años 2018/2019 en el servicio de referencia de Complejidad Media en la Microrregión. Hay un mayor número de usuarios mayores de 60 años en Sete Lagoas y también en la microrregión. La clasificación por sexo muestra un predominio de mujeres en toda el área de servicio y principalmente en la ciudad de Sete Lagoas. **Resultados:** El análisis del itinerario muestra que el tiempo entre la llegada al servicio de salud auditiva y las etapas de premoldeo, prueba y entrega del audífono es más corto para niños que para adultos y ancianos. Se observa un mayor número de usuarios mayores de 60 años en Sete Lagoas y también en la microrregión. **Conclusión:** el itinerario recorrido por los pacientes interfiere con un mayor uso del audífono y una adaptación adecuada debido al tiempo de espera y la distancia recorrida. Los adultos y los ancianos tienen un itinerario mayor que los niños.

Palabras clave: Pérdida Auditiva; Accesibilidad a los Servicios de Salud; Salud Pública.

Introduction

The Brazilian National Hearing Health Care Policy (PNASA) was instituted by the Ministry of Health to implement actions in hearing health in a hierarchical, regionalized and integrated manner between primary, middle and high complexity care to ensure diagnosis, promotion, protection and rehabilitation of hearing in the Unified Health System (SUS)¹.

Ordinances, MS/SAS 587, and MS/SAS 589 in October 2004 constituted the accreditation and the attributions of the different levels of complexity of the Hearing Health Services. Primary Care is responsible for collective or individual actions to promote and prevent hearing health with educational and informative activities as well as identifying hearing impairment early. Responsible for the diagnosis and speech-language pathology therapy, the Medium Complexity Service assists individu-

als at risk or suspected of hearing loss and already diagnosed with hearing loss, providing appropriate physical and professional structure for the care. On the other hand, the medium complexity service does not assist children under the age of three, besides hearing screening and monitoring of neonates and schoolchildren. In turn, the high complexity service includes the evaluation and diagnosis of children under three years of age and patients with associated diseases of any nature, in addition to performing the same services of medium complexity with a larger multiprofessional team².

The minimum number of 116 medium and high complexity hearing health institutions throughout the country was established in order to expand the care coverage proportional to Brazil's estimated population of 169,872,856 inhabitants in 2004, as follows: 16 in the South region, 47 in the Southeast, 9 in the Center-West, 33 in the Northeast region and 11 in the North of the country^{1,3}.

The Minas Gerais State Department implemented the Hearing Health Care Network, regulated by the PNASA, to ensure comprehensive care for hearing-impaired individuals. In 2009, there were 12 accredited Hearing Health Care services, being seven of high complexity and five of medium complexity. There are other points of attention, in addition to the Hearing Health Care Services: Decentralized Speech-Language Pathology Therapy (Municipal Health Secretariat/Primary Care), Microregional Hearing Health Board, Hearing Health Regulatory Board, Neonatal Hearing Screening Reference Services and Cochlear Implant Services⁴.

Users with hearing loss seek hearing health services to improve their communication and hearing function. The effectiveness of Individual Hearing Aids and/or hearing rehabilitation treatment must be assessed from all perspectives^{5,6}.

The route of these people in the search for health maintenance or recovery is called as therapeutic itinerary, which incorporates different resources of an organized assistance network^{7,8}.

Knowing the route taken by the patient allows the identification of facts that may hinder the early diagnosis and therapeutic process of patients in all aspects⁹.

Therefore, this study aimed to investigate the therapeutic itinerary and profile of patients diagnosed with hearing loss in a Microregional Hearing Health Service in Minas Gerais.

Methods

This is a retrospective descriptive analysis of data from medical records in the Hearing Health Unit of Sete Lagoas including subjects who received hearing aids from the SUS in 2018 and 2019 in the Medium Complexity reference service in the Sete Lagoas Microregion. The study consisted of a documentary analysis of medical records according to the progress recorded in evaluations, exams, attendance appointments, and registered meetings of each hearing aid candidate by SUS in the city of Sete Lagoas and its microregion.

The sample consisted of 189 individuals, 150 (79.4%) of whom lived in Sete Lagoas and 39 (20.6%) of other 23 municipalities of the microregion attended.

The collected data were analyzed by percentage statistics and presented in charts and tables to facilitate the presentation of possible results.

This project was submitted to the Research Ethics Committee and approved under no. 3.984.685, with waiver of the of Free and Informed Consent Form considering the ethical commitment of the researchers involved and the use only of documentary data referring to the usual services of the Health Unit of Sete Lagoas. The names of the patients have been removed and random initials will be used, if necessary.

The Hearing Health Unit of Sete Lagoas receives patients referred by the Primary Health Units of the municipality and its microregion with hearing-related complaints. The reference in Medium Complexity for patients in this microregion is located in Santa Luzia (MG).

Sete Lagoas has a population of 239,639 inhabitants, while the microregion assisted by the Hearing Health Unit of the city, which consists of 23 municipalities up to 222 km away, totalizing 209,433 inhabitants^{10,11}. Patients from other municipalities may be required to travel up to 12 km to 222 km for low complexity care (municipality of Sete Lagoas). In turn, the distance traveled by the same patients for medium complexity care (municipality of Santa Luzia) may range from 53 km to 294 km.

Figure 1 shows the care process of patients who live in the municipality. The care is provided with a specialist, basic audiological evaluation and diagnosis at the Hearing Health Unit. The patient can choose the basic audiological evaluation in

private service, which results in changes in the process. When required, the hearing aid fitting is performed in the medium complexity reference service in two appointments.

All the steps followed by applicants for the Personal Sound Amplification Product (PSAP),

hearing aids, are recorded in medical records that are kept in the unit provided they have carried out the basic audiological evaluation in the public service. Otherwise, the registration is done only in the vacancy regulation system to schedule the date of pre-molding and fitting of the device.

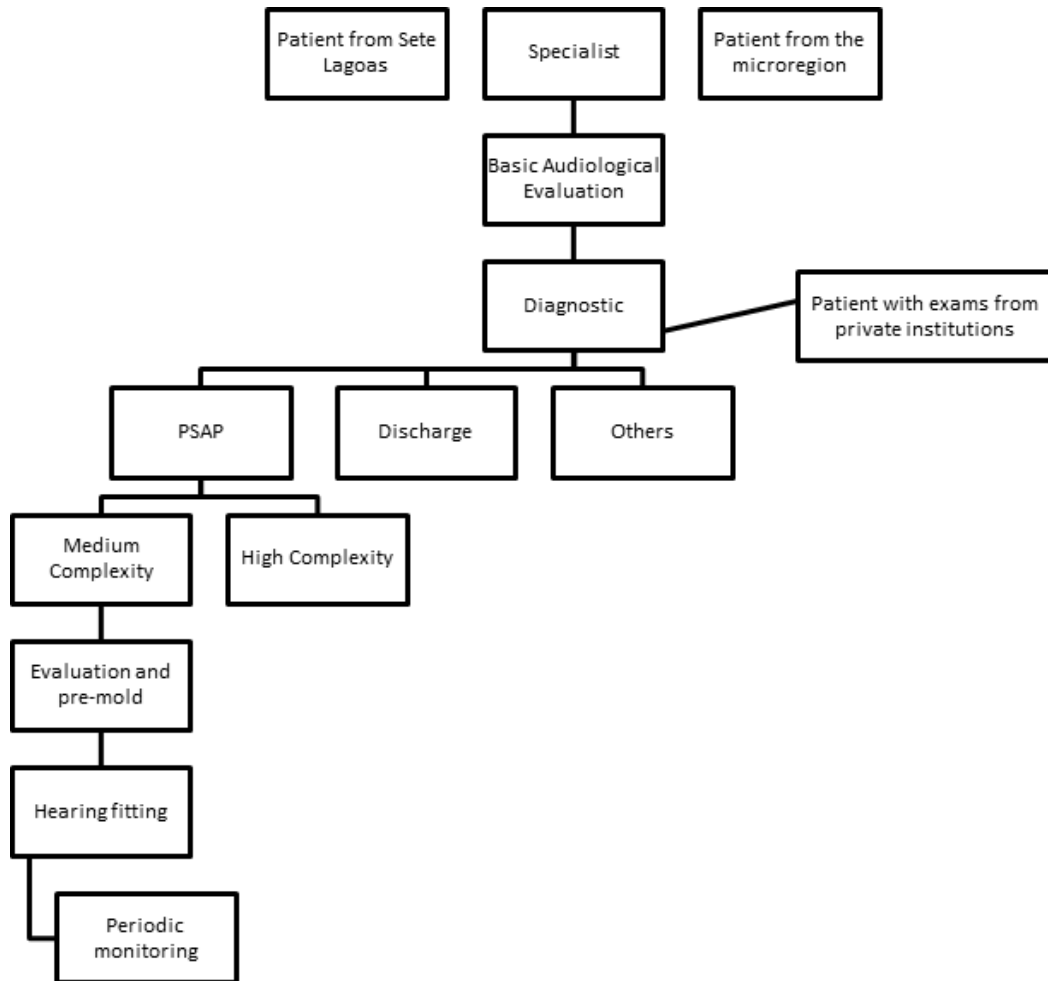


Figure 1. Flowchart of the hearing health service provided in Sete Lagoas and its microregion

Results

As shown in Table 1, which shows the distribution in terms of location, gender and age range, a greater number of users over 60 years

of age was found in Sete Lagoas and also in its microregion. In turn, the gender classification shows a predominance of women in the entire service area and especially in the municipality of Sete Lagoas.

Table 1. Distribution of patients referred for PSAP evaluation by the Hearing Health Unit of Sete Lagoas from January 2018 to December 2019.

Region of origin	Number of individuals evaluated to provide PSAPs	Gender		Individuals aged 3 to 18 years old	Individuals aged 19 to 59 years	Individuals over 60 years of age
		Male	Female			
		n (%)	n (%)	n (%)	n (%)	n (%)
Sete Lagoas	150	66 (77.6)	84 (80.8)	6 (54.5)	50 (78.1)	94 (82.5)
Microregion	39	19 (22.4)	20 (19.2)	5 (45.5)	14 (21.9)	20 (17.5)
TOTAL	189	85 (100.0)	104 (100)	11 (100.0)	64 (100.0)	114 (100.0)

As shown in Figure 2, the total waiting time for patients from the referral by the Primary Health Unit to the adaptation of the PSAP in medium

complexity is longer for elderly people in Sete Lagoas, which is proportional to the number of elderly people referred for hearing aid evaluation.

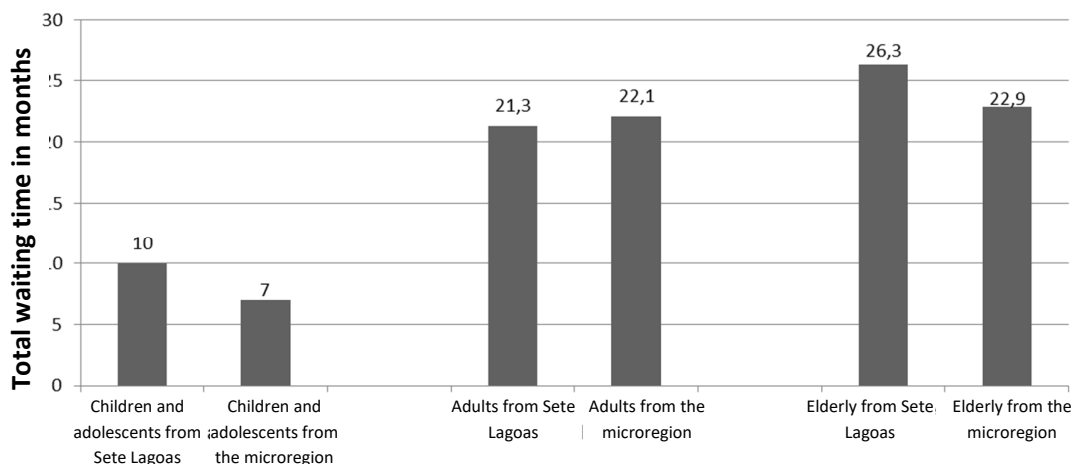


Figure 2. Total waiting time in months that patients go from referral to PSAP fitting.

The specific stages of waiting for residents of Sete Lagoas are described with their respective durations in Table 2. It can be noticed that the first contact with the service is the most time-consuming

stage, in which primary care schedules the care assistance at the Hearing Health Unit. There was a period of absence of an audiometer in 2017 for technical assistance.

Table 2. Waiting time (in months) of the stages of care at the Hearing Health Unit of Sete Lagoas according to the patient's age group.

Stage	Children (months)	Adults (months)	Elderly (months)
First contact	6.3	7.8	6.5
Reaching a diagnosis	0	1.9	3.1
Diagnosis at first evaluation	2	10.3	14.9
First evaluation to receive a PSAP	1.7	1.3	1.8

Table 3 shows the number of patients in Sete Lagoas who returned for guidance, follow-up or repair in low or medium complexity services. The 150 patients in the municipality should have returned to the low complexity service for guidance and counseling after adaptation, while 128 should have attended the medium complexity service for the annual follow-up, since 22 have not yet completed 1 year of device search until the date of data analysis. It can be noted that the number

of patients seeking the service after the hearing aid fitting is much lower than expected in both the low and medium complexity services. All children assisted return to the low complexity service. The comparison shows that some adults return to the medium complexity service directly with no contact with the low complexity service, while the elderly attend more the service of the municipality of residence than the medium complexity service.

Table 3. Number and profile by age of individuals from Sete Lagoas who received PSAPs and returned to low or medium complexity service for care.

Service	Expected	Returned	Children and adolescents	Adults	Elderly
Low Complexity	150	63	3	19	41
Medium Complexity	128	51	2	23	26

Discussion

As the performance of all stages within the public health system was a study criterion, the analysis of the profile attended by the Hearing Health Unit of Sete Lagoas shows a majority of individuals residing in the city.

The significant number of elderly in the sample is similar to previous studies¹²⁻¹⁴ and may be related to factors such as age-related loss. As a service of medium complexity, there is a low number of children that is in line with another study¹². In relation to gender, the higher number of women contrasts with numbers found in international studies¹⁵, but it can be explained by a greater concern presented by women in Brazil related to health care in general, as well as hearing loss¹⁶.

There was no difference in waiting time between adults and the elderly, which may be explained by the clinical prioritization of children at the unit, so their care is provided more quickly. The total wait until the device fitting is longer than the time found in another study that indicates a delay of 3-6 months in the process¹⁷. Factors that may affect the process time must be investigated, such as the effectiveness of the referral and counter-referral service, the expansion of the diagnostic service, and the need to increase the number of hearing aid grants due to the increasing demand with hearing loss due to population longevity, among others.

Initially, the microregions were planned to serve areas with 1,500,000 inhabitants, which seemed to be adequate. However, a geometric growth of the population served in the health services has been found over the years - that is, for each new patient who is enrolled in an institution's program, patients who must return after one month, in three months, and in a year must be added. In addition to these, there are other patients who seek the service to change the mold, to replace a lost, broken or outdated to their hearing need.

The microregion of Sete Lagoas includes many municipalities and has a large population. Therefore, there is an extensive distance that must be traveled for care, either in the municipality of Sete Lagoas or in Santa Luzia, and this distance can interfere with the effective use of the hearing aid due to the difficulty of traveling even for simple repairs. Some municipalities do not have decentralized speech-language pathologists and there is no provision of resources for primary care in the low complexity, such as changing PSAP tubes and test batteries.

The decentralized service asks the patient to return after receiving the device for guidance, in addition to providing speech-language pathology therapy for hearing rehabilitation and groups to assist with adaptation. However, the low number of patients returning to periodic care proposes a reflection on the effective use of the devices provided,

since the follow-up is essential both for effective use and to ensure adequate adaptation¹⁸.

According to records, only 11 of the return patients spontaneously reported their reason for not attending the medium complexity during the care at the Health Unit of Sete Lagoas. Health issues were reported as the greatest obstacles to travel to the municipality of Santa Luzia. In this sense, the problems reported by patients coincide with those pointed out in the literature, such as the difficulty of access to the service, family and personal problems, appropriate adaptation or not using the device¹⁹⁻²¹.

Many countries face a need that exceeds the demand for hearing aids²². Given the significant waiting list, the large population served and the obstacles reported for active periodic follow-up, a greater offer of services aimed at hearing health care should be evaluated for the comprehensive care of patients with hearing loss, as recommended by the PNASA¹.

The device fitting process could become more personalized and prioritize the demands of the user. A possible solution would be to facilitate access to care and accreditation of new services of medium complexity in Hearing Health that are closer to users so that the services are not concentrated only in large municipalities, as it requires a complex travel that the patient is often unwilling to take.

Conclusion

The route taken by hearing-impaired patients interferes with better use of the hearing aid and proper adaptation due to the waiting time and distance travelled. After the study, it was found that adults and the elderly spend more time to adapt their hearing aid when compared to children. In turn, children from Sete Lagoas take longer than the children of the microregion to complete the process.

The distance traveled to reach the service that provides the device is one of the biggest complaints raised by users, who often fail to perform the necessary maintenance to avoid the travel.

References

1. Ministério da Saúde. Portaria nº 2.073, de 28 de setembro de 2004. Brasília: Ministério da Saúde; out 2004.
2. Ministério da Saúde. Saúde auditiva. Portarias de saúde auditiva. Brasília: Ministério da Saúde; out 2004.
3. Teixeira CF. Estudo avaliativo da política de atenção à saúde auditiva: estudo de caso em Pernambuco [tese]. Recife: Centro de Pesquisa Aggeu Magalhães, Fundação Oswaldo Cruz; 2007.
4. Maciel FJ, Januário GC, Henriques CMA, Esteves CC, Silva MA, Carvalho SAS, Lemos SMA ACR. Indicadores de saúde auditiva em Minas Gerais – um estudo por macrorregião. 2013; 18(4): 275-84.
5. Cook JA, Hawkins DB. Outcome measurement for patients receiving hearing aid services. *Laryngoscope*. 2007; 117(4): 610-3.
6. Tamaki EM, Tanaka OY, Felisberto E, Alves CKA, Drumond Junior M, Bezerra LCA, et al. Metodologia de construção de um painel de indicadores para o monitoramento e avaliação da gestão do SUS. *Ciênc Saúde Colet*. 2012; 17(4): 839-494.
7. Brustolin AFF. Therapeutic itinerary of elderly cancer survivors. *Acta paul. enferm*. 2017; 30(1): -59.
8. Pinho PA, Pereira PPG. Therapeutic itineraries: paths crossed in the search for care. *Interface - Comunic, Saude, Educ*. 2012; 16(41): 435-47.
9. Aquino RCA, Lima MLLT, Silva VL, Alencar FL, Rodrigues M. Therapeutic itinerary and access to health services in cases oral cancer deaths. *Rev. CEFAC*. 2018 Set-Out; 20(5): 595-603.
10. Instituto Brasileiro de Geografia e Estatística (página da internet), Diretoria de Pesquisas, Coordenação de População e Indicadores Sociais, Estimativas da população residente com data de referência 01 de julho de 2019. Disponível em: <https://www.ibge.gov.br/institucional>.
11. Rota Mapas. (página da internet). Acesso em 06 de maio de 2020. Disponível em: <https://www.rotamapas.com.br/minas-gerais>. Brasil
12. Gresele, ADP, Lessa AH, Alves LC, Torres EMO, Vaucher AVA, Moraes AB, Costa MJ. Levantamento e análise de dados de pacientes atendidos em um programa de concessão de aparelhos de amplificação sonora individual. *CoDAS* 2013; 25(3): 195-201.
13. Chien W, Lin FR. Prevalence of Hearing Aid Use among Older Adults in the United States. *Arch Intern Med*. 2012; 172(3): 292-3.
14. Correia RO, Pinheiro CCD, Paiva FCG, Gomes-Neto PS, Rodrigues TP, Mendonça ATB, Freitas MR. Reabilitação auditiva por aparelhos de amplificação sonora individual (AASI): perfil epidemiológico de pacientes adaptados em um hospital terciário em 5 anos. *Rev Med UFC*. 2017; 57(2): 26-30.
15. Roth TN, Hanebuth D, Probst R. Prevalence of age-related hearing loss in Europe: a review. *Eur Arch Otorhinolaryngol*. 2011; 268(8): 1101-7.
16. Espmark AK, Rosenhall U, Erlandsson S, Steen B. The two faces of presbycusis: hearing impairment and psychosocial consequences. *Int J Audiol*. 2002; 41(2): 125-35.
17. Jardim, DS; Maciel, F J; Lemos, SMA. Perfil epidemiológico de uma população com deficiência auditiva. *Rev. CEFAC*. 2016 Maio-Jun; 18(3): 746-57.
18. Ribas A; Rosa M; Dante G; Martins-Basseto, J. SOS Prótese Auditiva – relato de um estudo de caso realizado na Clínica de Fonoaudiologia da UTP. Tuiuti: Ciência e Cultura, n. 38, p. 09-18, Curitiba, 2006.



19. Popelka, M. M., Cruickshanks, K. J., Wiley, T. L., Tweed, T. S., Klein, B. E. K., & Klein, R. (1998). Low prevalence of hearing aid use among older adults with hearing loss: The epidemiology of hearing loss study. *Journal of the American Geriatrics Society*, 46(9), 1075-8.
20. 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.
21. Abby McCormack & Heather Fortnum (2013) Why do people fitted with hearing aids not wear them. *Int J Audiol*. 52: 5, 360-8.
22. Vera-Genevey H, Lebogang R. Rehabilitation for disabling hearing loss: evaluating the need relative to provision of hearing aids in the public health care system, *Disability and Rehabilitation*, 41: 22, 2704-7.