

# IMPORTANCE OF FORMAL EDUCATION AND FAMILY INCOME IN THE ACCESSION PROCESS TO THE USE OF HEARING DEVICES IN CHILDREN UNDER 12 YEARS

## *Importância da educação formal dos responsáveis e renda familiar no processo de adesão ao uso de próteses auditivas em menores de 12 anos*

Karla Anacleto de Vasconcelos <sup>(1)</sup>, Maria Dolores Gonçalves Amâncio Pereira <sup>(1)</sup>

### ABSTRACT

**Purpose:** to determine if the level of education and income of the guardians of children seen at the Hearing Health University Hospital, influences on the adherence to the use of hearing aids. **Methods:** a retrospective study using a survey of secondary data in Supplementary Examination Laboratory University Hospital was conducted. Data on the type and degree of hearing loss, type of adaptation, family income and education of parents or guardians were verified. Adherence to the use of hearing aids was verified by the presence in annual consultation after discharge. **Results:** 105 patients were analyzed. 35(10,47%) cases reported to receive a minimum wage as a single income family, 54(51,4%) between one and three minimum wages, 4(3,8%) from three to 10 minimum wages and 12(11,4%) cases the information was not reported in the interview. Regarding the level of education of parents or guardians, 51(48,5%) had no formal education or at most elementary school, 39(37,1%) began or completed high school, 5(4,7%) began or completed a university degree and in 10(9,7%) cases there was no information. 94 patients adhered to the hearing aids, and 11 did not. There was no statistical significance between family income or education and the adherence to the use of hearing aids in children treated at University Hospital. **Conclusion:** the family income or education of parents or guardians does not influence the adherence to the use of hearing aids in children up to 12 years seen in University Hospital.

**KEYWORDS:** Hearing Loss; Social Assistance; Income; Education

### ■ INTRODUCTION

A deaf individual is one who lacks, partially or completely, the ability to comprehend spoken word through the auditory system. There are many causes of deafness and they are classified by the means of acquisition: pre-natal causes, natal causes, or post-natal causes<sup>1</sup>. According to the *Instituto Brasileiro de Geografia e Estatística – IBGE* (Brazilian Institute of Geography and Statistics), 5.7 million Brazilians experience some type of hearing loss<sup>2</sup>. To serve

this population, the *Ministério de Saúde* (Ministry of Health) determined, in 2004, that the Secretaries of Health of individual states were henceforth responsible for the organization and implementation of the “*Redes Estaduais de Atenção à Saúde Auditiva*” (State Networks for Attention to Auditory Health). The Actions for Auditory Health in Basic Attention take actions to promote auditory health, prevention and early identification of auditory problems together with the community, as well as informative and educational actions, family orientation and the re-direction of cases, when necessary, to the Medium – and High – Complexity wings of the Auditory Health Attention Service (*Serviço de Atenção à Saúde Auditiva na Média ou Alta Complexidade*). These actions are to be taken in health care establishments which

<sup>(1)</sup> Hospital Universitário Clementino Fraga Filho da Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brasil.

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have been pre-registered in the National Register (*Sistema de Cadastro Nacional--SCNES*) by the teams responsible for basic attention, considering the auditory health of several different segments of the population: pregnant women, newborn children, toddlers, children/adolescents, young adults, adults, and seniors<sup>3</sup>.

Those with auditory problems are included in auditory health services with the objective of improving their auditory functions and, therefore, their cognitive ability, and their social and emotional health. When treatment is provided, whether through the use of hearing aids or through rehabilitation (or through both), the effectiveness of the treatment must be verified continually. Through verification, the professional can systematically evaluate any gains and benefits. The role of the auditory health team in the process of training or rehabilitation is to orient those responsible for the treatment and to offer adequate services for the success of the treatment<sup>4-6</sup>. This condition depends on the progress of the patient, for the effective use of the hearing aid, which becomes viable through the periodical checks with the Auditory Health Attention Program (*Programa de Atenção a Saúde Auditiva*). The participation of family members is a determining factor in the success of the adaptation process of hearing aids. Issues relating to the comprehension of the process and of the social condition of the families can interfere in the larger goal of the auditory health program: communication<sup>5-7</sup>.

The social worker, who composes the technical chart of the Auditory Health Attention Programs, is responsible for attending the families, and particularly for identifying potentially compromising situations for the adaptation process of the patients<sup>8</sup>. In the cases of juvenile and/or disabled patients, orientation for the patients' parents or guardians is imperative to its success. Difficulties in the comprehension of the adaptation process are common to the populated attended by *Hospital Universitário Clementino Fraga Filho – HUCFF* (Clementino Fraga Filho University Hospital). The hospital serves a majority-low-income population with little formal educational instruction. Financial difficulties are frequently cited by patients as an important restrictive factor in the treatment process of minors and those with disabilities.

The “*Lei Orgânica da Assistência Social – LOAS*” (Organic Law of Social Work) provides the “*Benefício de Prestação Continuada – BPC*” (Benefit of Continued Borrowing”) to those with disabilities whose families can not provide for them due to insufficient income. Should the disabled patient, or the family of said patient, present proof of insufficient income, the BPC guarantees a monthly salary at the

minimum wage to the disabled person<sup>8,9</sup>. According to Bittencourt (2011)<sup>8</sup>, “social rights are difficult to maintain in commitments between the state and the society, and immediate implementation is not guaranteed. The families of deaf individuals seek to overcome the barriers of auditory disability by taking advantage of varied resources, with varying levels of success. For professionals that work with these families, it is necessary to know how the parents and relatives deal with the repercussions and demands tied to hearing loss. This is an issue of social protection, whether in the context of the state or the civil society<sup>6,7,10,11</sup>.”

This study aims to verify whether the level of formal education of those responsible for the treatment of children influences the success of the adaptation of auditory prostheses, like the factors of family income and degree of auditory loss, in the Auditory Health department of the University Hospital (HUCFF).

## ■ METHODS

A retrospective study was conducted by means of a secondary data survey at the Complementary Exam Laboratory (LEC) of the Speech Therapy Service at the Clementino Fraga Filho University Hospital (HUCFF) from the Federal University of Rio de Janeiro (UFRJ), approved by the CEP of the same institution under number 166.156.

The database was developed and is fed by the only social worker of the Auditory Health Program of the Speech Therapy Service of the HUCFF/UFRJ, as part of the social interview carried out with all users of the program. The following data was collected: age, gender, degree of hearing loss (classified according to the British Society of Audiology's recommendations), fitting of hearing aids (unilateral or bilateral), returning for speech therapy follow-up visit after medical discharge (adherence), education level and income of the patient's family, number of residents at their residence (socioeconomic profile). All persons under the age of 12 who received hearing aids unilaterally or bilaterally between July 2007 and July 2011 were included. 12 patients were excluded from the statistical analysis for not presenting complete data of interest of the study.

The statistical analysis aimed to determine the association between two variables. Possible associations between the degree of hearing loss and adherence to the use of hearing aids were analyzed; between family income and adherence to the use of hearing aids and, finally, between the schooling of parents or guardians and the adherence to the use of hearing aids. The Mantel-Haenzel test with significance less than 0,05 was used.

■ RESULTS

Data was retrieved for 105 patients with the mean age of six years, being 54 (51.4 %) males. In relation to the degree of hearing loss, 13 (12.3%) patients presented a mild degree of hearing loss, 30 (28.5%) presented moderate hearing loss, 22 (21.0%) presented severe hearing loss, 39 (37.2%) presented profound degree of hearing loss and, in one case (1.0%) it was not possible to check the exact degree of hearing loss due to the child's age (under one year old) (Figure 1). In only two cases (1.9%) adaptations of unilateral hearing aids were implemented and in 103 (98.1%) cases, bilateral.

Level of adherence was checked for 94 (89.5%) cases. The statistical association between adherence and the degree of hearing loss was checked only in the cases of profound degree of hearing loss, wherein the value of p was 0.011 (table 1).

Degree of hearing loss

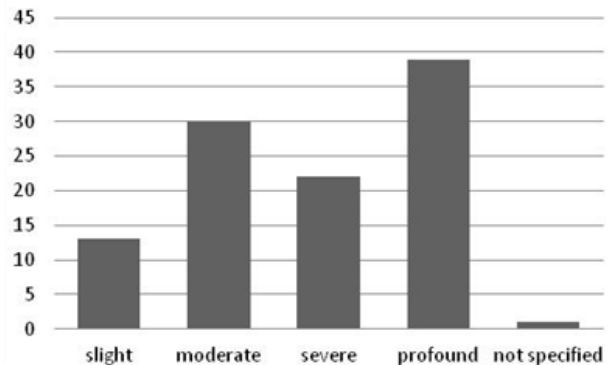


Figure 1 - Percentage distribution of different degrees of hearing loss in the population studied.

Table 1 – Relationship between the degree of hearing loss and accession fewer than 12

Degree of hearing loss	Adherence to the use of hearing aids						p
	Yes		No		Total		
	n	%	n	%	n	%	
<b>Slight</b>							
Yes	13	100.0	0	0.0	13	100	0.187
No	80	87.9	11	12.1	91	100	
<b>Moderate</b>							
Yes	28	93.3	2	6.7	30	100	0.411
No	65	87.8	9	12.2	74	100	
<b>Severe</b>							
Yes	21	91.3	2	8.7	23	100	0.630
No	71	87.7	10	12.3	81	100	
<b>Profund</b>							
Yes	31	79.5	8	20.5	39	100	*0.011
No	62	95.4	3	4.6	65	100	

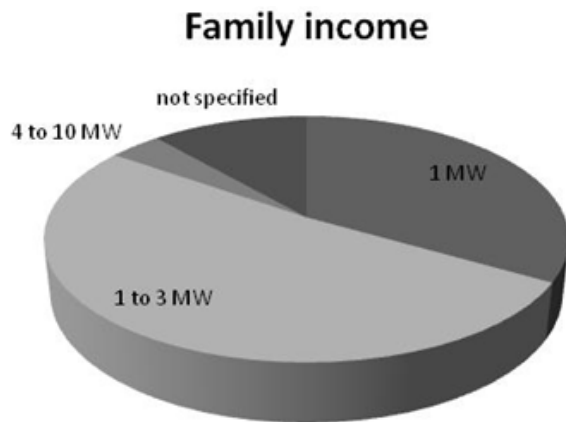
Mantel-Haenzel test with significance value less than 0.05.

In relation to the number of people living at the residence, 25 (23.8%) declared that only two people live in the residence (child and guardian), 57 (54.2%) declared that between 3 and 4 people live in the residence, 19 (18.2%) between 5 and 6 people and 4 (3.8%) 7 or more people.

In 33 (31.4%) cases, respondents reported up to a minimum wage as the only family income, 52 (49.5%) cases reported between one and three minimum wages, 4 (3.8%) reported between four and 10 minimum wages and in 10 (9.5%) this data was not provided during the interview.

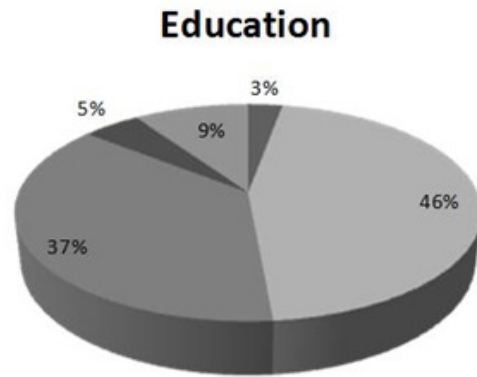
Regarding education levels of the children's guardians, 3 (2.8%) reported having no education, 48 (45.7%) reported having primary education, 39 (37.1%) initiated or completed high school, 5 (4.7%) initiated or completed a university degree and, in 10 (9.7%) interviews this information was not provided.

Statistical analysis did not identify an association between the family income (Table 2) or the education level (Table 3) of the guardians in the adherence of patients under the age of 12.



MW:Minimum wage

Figure 2 - Distribution of family income patients enrolled in the Program Hearing Health Care University Hospital.



■ No ■ Basic education ■ High school ■ University degree ■ not specified

Figure 3 - Distribution of education level in charge of children served in the program of Hearing Health Care University Hospital

Table 2 – Relationship between family income and membership in fewer than 12

Family income	Adherence to the use of hearing aids						p
	Yes		No		Total		
	n	%	n	%	n	%	
<b>MW</b>							
Yes	32	91.4	3	8.6	35	100	0.657
No	62	88.6	8	11.4	70	100	
<b>1 to 3 MW</b>							
Yes	48	88.9	6	11.1	54	100	0.827
No	46	90.2	5	9.8	51	100	
<b>4 to 10 MW</b>							
Yes	4	100.0	0	0.0	4	100	0.487
No	90	89.1	11	10.9	101	100	
<b>Not specified</b>							
Yes	10	83.3	2	16.7	12	100	0.633
No	82	88.2	11	11.8	93	100	

Mantel-Haenzel test with significance value less than 0.05. MW:Minimum wage

**Table 3 – Relationship between the level of formal education of responsible and accession fewer than 12**

Education	Adherence to the use of hearing aids						p
	Yes		No		Total		
	n	%	n	%	n	%	
<b>No</b>							
Yes	3	100.0	0	0.0	3	100	0.549
No	91	89.2	11	10.8	102	100	
<b>Basic education</b>							
Yes	43	89.6	5	10.4	48	100	0.985
No	51	89.5	6	10.5	57	100	
<b>High school</b>							
Yes	34	87.2	5	12.8	39	100	0.73
No	60	90.9	6	9.1	66	100	
<b>University degree</b>							
Yes	5	100.0	0	0.0	5	100	0.435
No	89	89.0	11	11.0	100	100	
<b>Not specified</b>							
Yes	11	100.0	0	0.0	11	100	0.285
No	85	90.4	9	9.6	94	100	

Mantel-Haenzel test with significance value less than 0.05.

## ■ DISCUSSION

The *Sistema Único de Saúde – SUS* (Single Health System) instituted the *Política Nacional de Atenção à Saúde Auditiva* (National Auditory Health Policy) through Ordinance 2.073/2004. The University Hospital had the Auditory Health Attention Program (*Programa de Atenção à Saúde Auditiva – PASA*) implemented in 2007 to serve medium- and high-complexity patients in Rio de Janeiro. Patients with varying degrees of hearing loss are included in this program with the objective of receiving Individual Sound Amplifying Devices (AASI), improving auditory abilities and, as a result, the cognitive performance, social and emotional, with the goal of better communication. The program provides the adaptation of continuous-flux hearing aids, with speech/hearing therapy and medical and social assistance.

The degree of hearing loss is an aggravating factor in the development of speech of children. The more compromised the hearing, the more difficult it is to develop speech<sup>6,8,9</sup>. Therefore, AASI's are a demonstrably essential tool in the development of speech of children with hearing loss. In the present study, the degree of hearing loss was not proven to be a limiting factory in the adherence to the use of hearing aids<sup>9-11</sup>. The adherence to the use of AASI's was associated to the degree of hearing loss only in cases of high-degree loss. Although they were not the object of this study, in these cases, it was

possible to verify that the families were shown to be more involved with the adaptation process, especially with the expectation that this resource would bring demonstrable benefits in the better development of speech. In the period of adaptation, it was possible to verify that the parents or guardians sought the service more often than the families of the children with other audiometric configurations. In the return consultations, the main questions were related to the change of behavior in the child due to the presence of auditory stimuli. Many questions also referred to doubts in relation to use, care, and handling of the auditory device.

The families attended at PASA at the aforementioned hospital possess sociocultural and economic characteristics common to the urban strata of low-income and poorly-educated populations, as shown in graphics II and III. This data corroborates the information of the literature when compared to the populations at attended by the SUS through Ordinance 2.073/2004<sup>3</sup>.

Even considering the well-known limitations of a retrospective study, particularly in terms of the unreliability of the information provided through interviews, it was possible to verify that the PASA of the referred hospital has met the objectives described in Ordinance number 2.073/2004, given that, in the mentioned period, PASA adapted and followed more than 110 children up to the age of 12 in a multidisciplinary way, improving the communication by means of the residual hearing.

The provision of hearing aids by the government does not guarantee that the adaptation of the user will be successful. An understanding of the cognitive, social and emotional gains from auditory stimulation with the use of personal hearing amplification devices (AASI), must be guaranteed so there is involvement and commitment on the part of the user. In the case of children, this understanding must be created primarily with the parents or guardians. According to Lichtig (2004), cited by Goldfield<sup>6</sup>, the awareness of the children's guardians about the specific needs of a deaf person is very important<sup>6</sup>. The child lacks the maturity and autonomy to guarantee the continuous and daily use of the hearing aids and the adherence to the therapeutic process involved.

According to Frota and Goldfield (2006)<sup>6</sup>, each family has its own private story, in which the pain, attitudes and reactions of each member of the family can not be generalized, and the socioeconomic and family background of the guardian(s) for the deaf child have to be taken into consideration due to the asymmetry of values and perceptions. Yet according to the authors, these values and perceptions vary according to the degree of formal education and economic conditions, making support and orientation fundamental in the the language development process<sup>6</sup>. In the hospital where this research was

conducted, the process of raising the guardian's awareness starts with the reception with the speech therapist in the speech therapy service. A team composed of a social worker, speech therapists and doctors ensures that the guidelines regarding the full development of the child are clearly and objectively transmitted. The non-association of the family income or the degree of formal education of the guardians (Tables 2 and 3), successfully adapted, in this study, reflects the effectiveness of this team's guidelines, so that even in families with very low income and education levels, cases of successful adaptation of the AASIs in the people studied were prevalent. The success was verified by the patient's attendance in the follow-up visits in the period of a year after the donation of the AASIs, portraying the awareness, the perception and the commitment of the guardians to the process of full development of their children's hearing.

## ■ CONCLUSION

The family income or education level of the guardians of the children attended at HUCFF/UFRJ did not influence the adherence to the use of hearing aids.

## RESUMO

**Objetivo:** verificar se o nível de educação formal dos responsáveis pelas crianças atendidas no serviço de Saúde Auditiva de um Hospital Universitário, assim como a suas rendas familiares e o grau das perdas auditivas das crianças, influencia na adesão ao uso de próteses auditivas. **Métodos:** foi realizado um estudo retrospectivo por meio de um levantamento de dados secundários contidos em fichas técnicas no Laboratório de Exames Complementares do referido Hospital. Foram verificados os dados sobre o tipo e o grau das perdas auditivas, tipo de adaptação, renda familiar e escolaridade dos pais ou responsáveis. A adesão ao uso de próteses auditivas foi verificado por meio da presença em consulta anual após alta. **Resultado:** foram verificados dados de 105 pacientes. Em 35 (10,47%) casos, os entrevistados relataram até um salário mínimo como única renda familiar, 54 (51,4%) entre um e três salários mínimos, 4 (3,8%) entre três e 10 salários mínimos e em 12 (11,4%) casos esse dado não foi informado na entrevista. Em relação à escolaridade dos responsáveis pelas crianças, 51 (48,5%) responsáveis relataram ter no máximo, ensino fundamental I, 39 (37,1%) iniciaram ou completaram o ensino médio, 5 (4,7%) iniciaram ou completaram um curso superior e em 10 (9,7%) entrevistas não constava essa informação. Em 94 casos foi encontrada adesão e em 11, não adesão. Não houve significância estatística entre a renda familiar ou escolaridade dos responsáveis com o sucesso na adesão de crianças atendidas no Hospital Universitário. **Conclusão:** a renda familiar ou a escolaridade dos responsáveis não influencia na adesão em crianças de até 12 anos atendidas no Hospital Universitário.

**DESCRITORES:** Perda Auditiva; Assistência Social; Renda; Educação

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Mailing address:

Karla Anacleto de Vasconcelos  
Rua Botucatú, 460 – bloco 4 apt 305, Grajaú  
Rio de Janeiro – RJ – Brasil  
CEP: 20541-340  
E-mail: [karla.fono@hotmail.com](mailto:karla.fono@hotmail.com)