

CORRELATION BETWEEN THE LEVEL OF HEARING LOSS AND SCHOOL PERFORMANCE IN CHILDREN UNDER 5 TO 7 YEARS IN THE PROVINCE OF GUAYAQUIL'S SCHOOLS

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Abstract

Hearing loss is defined as the decrease in auditory perception, being one of its causes: congenital, hereditary, traumatic, by prolonged exposure to noise, drug, among others. It is a public health problem that affects people of all ages and backgrounds, altering the quality of life in all its aspects, especially in the development of spoken language (communication) directly interfering in the academia. [1, 2, 3,4].

Keywords:
hair loss

Introduction

Hearing loss is defined as the decrease in auditory perception, being one of its causes: congenital, hereditary, traumatic, by prolonged exposure to noise, drug, among others. It is a public health problem that affects people of all ages and backgrounds, altering the quality of life in all its aspects, especially in the development of spoken language (communication) directly interfering in the academia. [1, 2, 3,4]

In 2004, over 275 million people worldwide suffering from moderate hearing impairment and profound; 80% of them living in low and middle income countries (according to WHO). Audio loss affects approximately 17 in 1,000 children younger than 18 years (according to statistics of Joint Committee on Infant Hearing of 2010), being this group most affected because it alters the normal development of language and learning. According to the Foundation against noise pollution (FUNCORAT) 20% of the Ecuadorian population has some degree of deafness. [1, 4, 5,6]

Hearing loss is one of the major factors that adversely affect academic performance worldwide, with the vast majority not diagnosed properly.

Depending on the intensity of hearing, hearing loss is classified into several groups:

World Ranking according to quantitative lost hearing loss, the BIAP (Bureau International d'Audiophonologie) [30]

Normal hearing up to 20 db HL

Mild hearing loss of 20 to 39 db HL

Moderate hearing loss of 40 to 69 db HL

Severe hearing loss of 70 to 89 db HL

Profound hearing loss > 90 db HL

In mild hearing loss hearing impaired only at the very low voice and in noise arise. Moderate difficulties in capturing the normal voice so there are some problems in language acquisition and in the correct production of speech sounds are appreciated. In severe when only hear screams and amplification should be used. You cannot develop language without therapeutic help. In deep understanding is negligible, even with amplification. Spontaneous language development occurs: [1, 2, 3,5]

There are methods to assess hearing in any age group. Tests of auditory brainstem response (ABR), auditory evoked potentials and otoacoustic emissions (OAE) are the most advanced techniques and have enabled the hearing evaluation from the first days of life. The audiometric tests are the most used, as they are very inexpensive, easy to perform them and permit screenings at large scales. ^[1,2,3,5]

Methodology

A cross-sectional study was conducted in children / as 5 to 7 years who had low academic performance and degree of hearing loss in tax and private schools in the province of Guayas in 2013.

Schools that participated in our study were:

- a) Tax: Pedro Franco Dávila Ruiz and Enrique Grau
- B) Private: Saint Thomas Moore, and Soler Duplos

The universe consisted of all children between 5-7 years of the schools studied that showed a general <16/20; the sample is 98 students with low academic performance which underwent audiometric study. The dependent variables studied were: hearing loss in children with poor academic performance, language impairments. And independent variables: sex, age, type of institution (public or private), changes in language.

To collect the data, the following inclusion criteria were considered: students submit poor academic performance (average 16-20 below), students who are between 5 and 7 years, children / as in which otologic complications linked on the school stage in the study, children backed by the support of teachers and / or their parents to research is evident.

Children / as show evident congenital malformations that produce hearing loss, children / as with a level of moderate or severe mental disabilities, children / as not included in the study group, children: Also the following exclusion criteria were used / as using sound amplifiers for external use (otoamplifonos or equipment integrated amplification, cochlear implants).

For data collection the audiological screening be conducted by tonal audiometry laptop BELTONE D 12 A High Attenuation Headset.

Hearing loss is considered the decline of hearing in the tonal frequencies ranging from 250-4000 Hz, below 20 decibels of sound intensity. ^[10,11]

In cases decline, more than 20 db, is in some of the frequency audiometry shall be by bone conduction to determine the degree and type of hearing loss. In addition to children / as it will be evaluated with a protocol language to determine if they have a language disorder or joint. Both studies were carried out by a professional audiologist in the above campuses. ^[8,9]

Programs used for tabulation and presentation of the results were:

- Microsoft Excel 2012
- STATA version 11

Results

Of the children / as studied a sample of 98 children who had low education and had no known history of hearing loss so far was taken, ages comprising the study range from 5 years to 7 years, corresponding school - a preschool.

From this, the age with the highest percentage of children / as studied was 7 years with a number of 37 children / as corresponding to 37% of the sample, followed by the group of 5 years with a total of 32 children / as corresponding to 33% of the sample, finally Group 6 with 29 children / as corresponding to 30% of the total.

As the dominant sex in the study was male, with 62 children; corresponding to 64% of the sample.

Of the total sample of 98 children / as, found that 33 children / as presented a degree of hearing loss, which corresponds to 34% of the sample. Of the children / as who had hearing loss in groups of 5 and 7 years, the largest percentage of cases is evidenced by a total of 47% (15 children / as) and 41% (14 children / as), while the group 6 years formed 12% of the cases found (4 children / as). (Table 1)

As for language disorders was demonstrated that 40% (39 children / as) in the study group showed the same disorders. Of this group 67% (22 children / as) was associated with a degree of hearing loss (Table 2, Chart 2). By chi2 test statistic was found that the validation is p 0 being statistically significant relationship between hearing loss and language disorders. (Table 3)

Of the 33 children / as who had a degree of hearing loss, audiometric performing other studies (via bone) found that the main type of hearing loss was "Drive", a total of 24 children (72%). While the rest, 9 children (28%) had a hearing loss "Perceptual" mild type. (Table 1)

Of the 98 children / as studied 50 were from private schools (51%), while 48 were from public schools (49%). Both groups had a close number of cases of hearing loss; Fiscal institutions in 17 cases (51%), while 16 occurred in private (49%).

Discussion

To determine the incidence of any type of hearing pathology within the learning problems we decided to perform audiometric, simple studies of airway, children / as that according to their teachers had changes in school performance and language problems or joint. [12, 13]

Tonal audiometry was used, audiometric screening as it is the primary global method for detection of this disease. The study sample could have been higher but for lack of a family support group of children who did not attend the second part of the study (via noise site marrow) for determining the type of hearing loss and those who attended the second of audiometry, even place being explained to parents the need for intervention Otorrinolaringologica, in certain cases, or speech therapy, it is regrettable that did not follow the stated guidelines. [14, 15]

It is very relevant pathologies found the relationship between private and fiscal escuelas, as the number of children / as is much higher tax therefore a greater chance of finding this disease.

Conclusions

According to the study, a third of the population with poor school performance showed some degree of hearing loss. It reaches the same conclusion with studies Martínez-Cruz et al Gierk et al Kesser et al, Santana et al, among others, hearing loss, indifferent to their cause, has a direct impact on academic performance children.

The relationship that existed between the children who had some degree of hearing loss and language disorders was significant, 67% of them had a defect in language. Obtaining similar studies Schonhaut et al Khairi et al, Santana et al results; coming to the same conclusion that hearing loss is one of the main factors associated with language disorders in children in preschool stages - school, affecting the quality of life and psychosocial learning and development thereof. (Graph 2)

In addition it was found that the main type of hearing loss in preschool - school is "Conductive", being produced by a number of pathologies in the outer and middle ear which are mainly in childhood.

It was observed that in the public schools a greater number of cases in relation to private schools were found. Only in the 2 public schools collecting the sample collected in 3 private schools was equal to or. Although it is very relevant because the number of students in schools in the state sector is much larger than in private.

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Annexes

Table 1. Summarize of variables

Variables	N (98)
Age	
5 years	33 (32%)
6 years	29 (29%)
7 years	37 (36%)
Sex	62 (63%)
Male	36 (37%)
Female	
Hearing loss	
Present	33 (34%)
Absent	65 (66%)
Types of hearing loss	
Conductive	24 (73%)
Perceptive	9 (27%)
Language disorder	
Present	39 (40%)
Absent	59 (60%)
Types of School	
Public	17 (48%)
Private	16 (52%)

Table 2. Differences between males & female by hearing loss

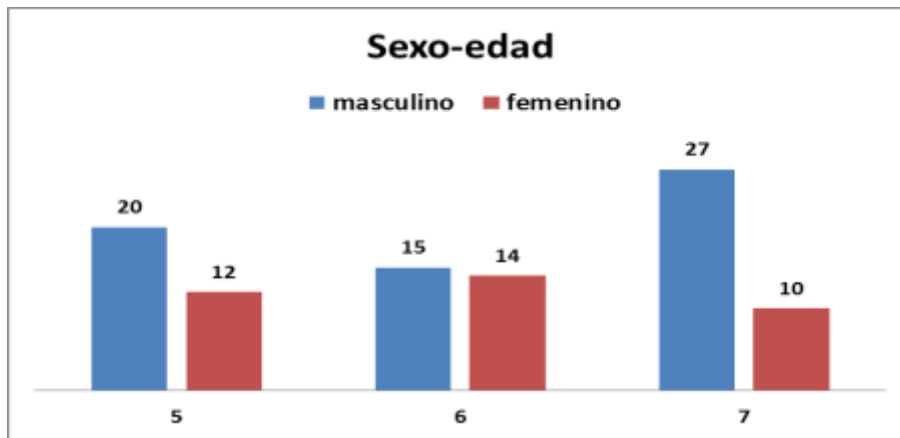
Age (years)	Hearing loss	
	Male n (21)	Female n (12)
5	9	6
6	3	1
7	6	5
Total	21	12

Table 3.

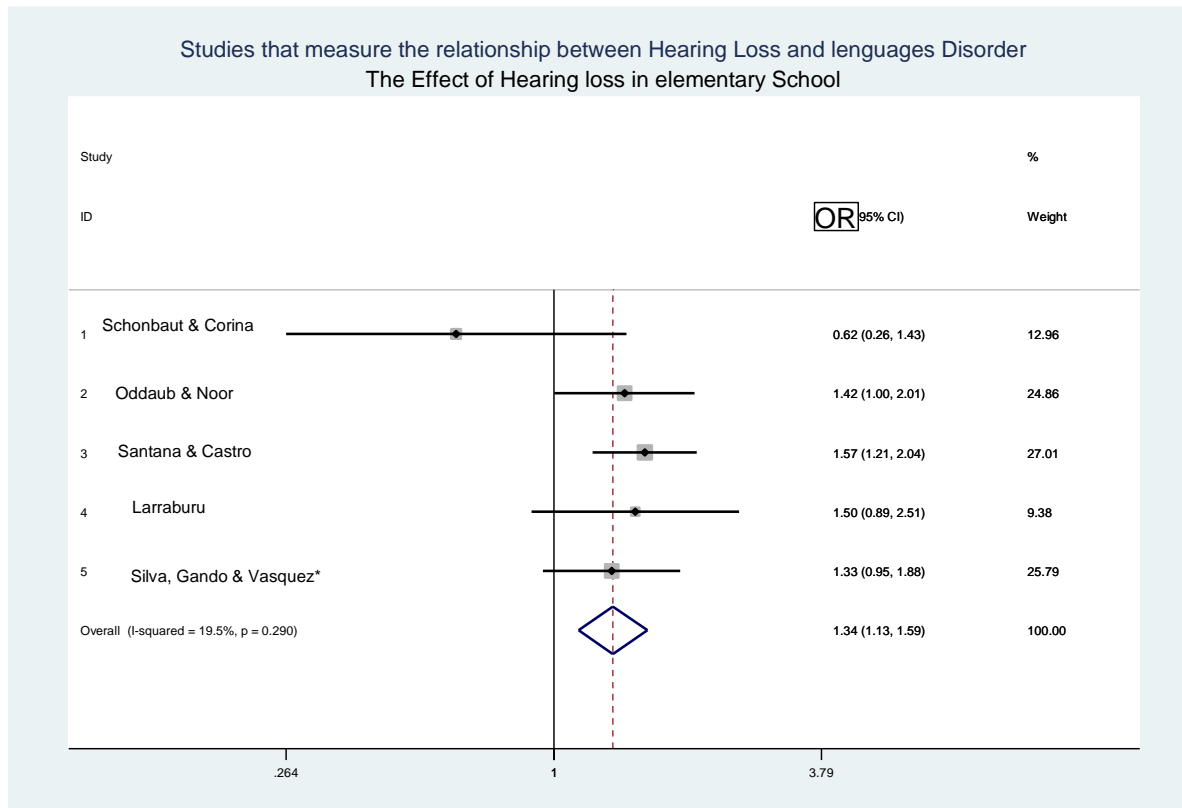
Key			
<i>frequency</i>			
<i>column percentage</i>			
hipoacusia	trast lengua		Total
	0	1	
0	11 18.64	22 56.41	33 33.67
1	48 81.36	17 43.59	65 66.33
Total	59 100.00	39 100.00	98 100.00

Pearson chi2(1) = 14.9941 Pr = 0.000
 Fisher's exact = 0.000
 1-sided Fisher's exact = 0.000

Graph 1. Relation between ages and sex in Hearing loss



Graph 2.



Our study related to the others