

PREVALENCE OF SPEECH-LANGUAGE DISORDERS IN KINDERGARTEN CHILDREN OF PUBLIC SCHOOLS AND THE SOCIAL INDICATORS

Prevalência de alterações fonoaudiológicas em pré-escolares da rede pública e os determinantes sociais

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ABSTRACT

Purpose: to verify the prevalence of speech, language and orofacial motricity, and a potential association among these factors with social indicators like, socioeconomic status and parents' education in children aged between 4 to 6 years and 11 months, who are enrolled in kindergarten public schools from Santa Maria – RS. **Methods:** this research is a cross-sectional prevalence survey, in which 262 children aged between 4 to 6 years and 11 months took part. They were students from public schools. An interview with the guardians and a speech-language assessment (language, phonetics/phonology, articulatory and orofacial praxis, orofacial structures) were performed. The children were classified according to the criteria: family income, mother's and father's education, language, speech and orofacial motricity. The results had statistical analysis with Fischer Test and significance level fixed on 5%. **Results:** the most prevalent disorder was orofacial myology disorder (31,30%), followed by speech (21,37%) and language (4,58%) disorders. No association was found between speech-language disorders and social indicators. **Conclusion:** the analyzed sample showed high prevalence of speech-language disorders. This result indicates the importance of speech pathologists' work in the public schools. Probably, the uniformity of the sample caused no association between speech-language disorders and social indicators, suggesting the necessity of performing other researches with more varied samples.

KEYWORDS: Speech, Language and Hearing Sciences; Prevalence; Child; Child, Preschool

■ INTRODUCTION

Human communication is the means by which individuals share experiences, express feelings and emotions, transmit information and knowledge, and most importantly, are inserted in society. It is through language that all these aspects are consolidated,

and the development of this occurs as the physical structures necessary to produce sounds mature and the child becomes capable of associating sound and meaning, allowing social interaction and communication¹.

In order to express themselves verbally, and intelligibly, it is necessary to develop both the phonological aspect (organization) and the phonetic aspect (production) of the speech system. Regarding the phonetic aspect of speech production, it is necessary to exist a balance of oral motor structures, which are responsible for the handling capacity of the organs that enable the performance of the functions of sucking, swallowing, chewing, breathing and speech. A change in any structure involved in these functions can injure them, implying a need for intervention to functional suitability². Many

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speech-language disorders are found in children during growth. Among these, the speech and language are the most frequent problems in child development, with incidences ranging from 2-19%³. Another speech aspect that deserves mention is the change of orofacialmotricity. In a study of 31 children 5-7 years old, 24 showed changes of orofacialmotricity, indicating a high (77.5%) in the frequency of these manifestations in the sample⁴. In another study conducted in Minas Gerais – BR, with children 5-9 years, the prevalence of speech disorders in general was 26.8%, and orofacialmotricity was 39.4%⁵. In Rio Grande do Sul, Brazil, in a study of children ages 6 to 11 years, the percentage of speech disorders was 20.8%⁶. In São Paulo, Brazil, this percentage rose to 37% when conducted with children from 1st to 4th grade⁷. Although the studies cited above show that subjects with upper age is being researched here and already in phase of schooling, are considered important references in prevalence surveys. Furthermore, these children still were in development of speech and language, although in distinct phases.

Social factors can affect the biological conditions of individuals, risk behaviors, environmental exposures and access to resources for health promotion. Some social indicators as socioeconomic status and parental education level, may be related to speech pathology found in their descendants⁸. A study of nine children of a hospital in São Paulo, showed that there is relation between socioeconomic status and oral habits capable of promoting speech-language, otolaryngology and deontological changes⁹. Likewise, in a survey conducted in Salvador, Brazil, it was found that low parental education is associated with complaints of speech-language disorders present in children⁸. Another study that corroborates the foregoing was conducted in Minas Gerais, Brazil. When we analyzed the association of co-occurrences as complaint of language and changes of orofacial disorder, with variables of gender, age, education and income, showed a significant relation with the last three itens¹⁰.

Given the above, the objective of this study was to determine the prevalence of speech, language and orofacial disorders as well as a possible association of these factors with social indicators as socioeconomic status and parental education on children 4-6 years and 11 months old enrolled in municipal kindergartens in the city of Santa Maria - RS.

■ METHODS

This study is characterized as prevalence transverse and was approved by the Research

Ethics Committee of Universidade Federal de Santa Maria (UFSM), having as record the Certificate of Presentation for Ethics Appreciation number 0219.0.243.000-11.

The sample consists of data from assessments conducted with 262 children selected randomly in sampling by conglomerates, aged between 4-6 years and 11 months, students of municipal schools in the city of Santa Maria - Rio Grande do Sul. Data collection was conducted between November 2011 and August 2012.

All children who are part of the corpus of the present study were allowed to participate by signing the Informed Consent Form by responsible. Furthermore, they met the following inclusion criteria: age between 4 years and 6 years and 11 months, be enrolled and attending public school in kindergarten. Regarding exclusion criteria were the presence of hearing and loss and cognitive, psychiatric and / or neurological disorders detectable through observation.

An interview was sent to responsible to answer in writing questions about pregnancy, birth, psychomotor and language development, pathophysiological background and information about family income and parents' education.

As the interviews were answered and returned, screenings were performed. The results obtained in the trials were collected using specific protocols that assess expressive language and verbal compression, phonetics / phonology, the articulation and oral-facial praxis and orofacial structures of each child.

Through interaction, it was possible to rule out probable cognitive or neurological factors that could affect the child's global development. Through spontaneous situations as free dialogues and / or plays, aspects related to language were observed. To evaluate the speech the repetition of words and the spontaneous production of speech based on "Phonological Assessment of Child" were considered¹¹.

Oral praxis were evaluated using the evaluation protocol of dyspraxia¹². This protocol evaluates the realization of facial and articulatory movements. The reference values are derived from a comparison study of oral-facial, articulatory and manual praxis in children with articulatories and normal changes¹³.

For evaluation of the stomatognathic system, we used the protocol of orofacialmyofunctional evaluation with scores¹⁴ adjusted to the needs of the research. This allows the observation of: appearance, posture, tone and mobility of the articulators (tongue, lips, cheeks, soft palate, hard palate and teeth). Swallowing and chewing functions were not evaluated.

After obtaining up all data, subjects were grouped according to the following criteria: family income, parents' education, as well as language, speech and orofacial motricity changes.

The family income variable was divided into five categories established by the authors (A, B, C, D, E) according to the monthly income that was mentioned by the family: "The 'income up to R\$ 1,000.00; "B" of R\$ 1,000.01 to R\$ 2,000.00; "C" of R\$ 2,000.01 to R\$ 3,000.00; "D" above R\$ 3,000.01 and "E" unreported income.

Schooling was analyzed by both the paternal and maternal part and was classified as illiterate, primary school (complete and incomplete), secondary education (complete and incomplete), higher education (complete and incomplete) and not declared.

Thus, we sought to describe the variables mentioned, as well as to check the prevalence of speech-language disorders in this population and a possible association between family income and speech pathology; paternal education and speech pathology; mother's education and speech pathology. For this, we used the SAS (Statistical Analysis System) for Windows, version 9.2 with the Fisher exact test. The significance level used for statistical tests was 5%, in other words, $p < 0.05$.

■ RESULTS

In the sample of data obtained from 262 individuals, it can be seen that, as the average

monthly household income, 50.38% (132) of the children belong to the category "A"; 36.26% (95) to category "B"; 3.05% (8) to the category "C"; 1.53% (4) to the category "D" and 8.78% (23) had no income reported by parents.

Regarding maternal education, 0.38% (1) was not literate; 38.08% (99) reported schooling at primary level; 52.67% (137) reported secondary level; 8.85% (23) reported higher education and 0.76% (2) did not declare.

Regarding parental education level 0.42% (1) was not literate; 51.48% (122) reported schooling at primary level; 43.46% (113) reported in secondary level; 4.64% (11) reported in higher education; and 9.54% (25) did not declare their schooling.

Table 1 shows the prevalence of speech-language disorder observed from evaluations.

Table 2 shows the relationship between family income and the presence or absence of speech-language disorders.

Table 3 shows the relationship between parental education and the presence or absence of speech-language disorders.

Table 4 shows the relationship between maternal education and the presence or absence of speech-language disorders.

It was found that there were no statistically significant differences in the association between the presence or absence of speech-language disorders and researched socioeconomic variables.

Table 1 - Prevalence of speech-language disorders

N	Disorder of language	Disorder of orofacial motricity	Disorder of speech	No disorder
262	4,58%	31,30%	21,37%	42,75%

Legend: N = number of respondents; % = Percentage

Table 2 – Family income and speech-language findings

Income	Disorder of language	Disorder of orofacial motricity	Disorder of speech	No disorder	P value
A	6,06%	25,76%	26,52%	41,67%	p = 0.730
B	3,16%	37,89%	16,84%	42,11%	
C	0%	37,50%	12,50%	50%	
D	0%	25%	25%	50%	
E	4,35%	34,78%	13,04%	47,83%	

Legend: % = percentage. Statistical test used: Fisher exact test, with $p < 0.05$

Table 3 - Paternal education and speech-language findings

Paternal Education	Disorder of language	Disorder of orofacial motor	Disorder of speech	No disorder	P value
Primary	3,28%	33,61%	22,13%	40,98%	p = 0.243
Secondary	3,88%	28,16%	20,39%	47,57%	
Higher	0%	54,55%	9,09%	36,36%	
Illiterate	100%	0%	0%	0%	

Legend:% = percentage. Statistical test used: Fisher exact test, with $p < 0.05$.

Table 4 – Maternal education and speech-language findings

Maternal Education	Disorder of language	Disorder of orofacial motricity	Disorder of speech	No disorder	P value
Primary	3,03%	29,29%	23,23%	44,44%	p = 0.408
Secondary	6,57%	32,12%	21,90%	39,42%	
Higher	0%	39,13%	8,7%	52,17%	
Illiterate	0%	0%	100%	0%	

Legend:% = percentage. Statistical test used: Fisher exact test, with $p < 0.05$.

■ DISCUSSION

The studied sample, representative of the municipal early childhood education, provided knowledge about speech-language disorders and social indicators such as family income and parental and maternal education.

It can be seen that 42.75% of those individuals who took part of the research did not present any speech-language disorders, demonstrating that the normal development of speech, language and orofacial motricity may or may not be related to the social indicators.

Some authors describe the development of language derives from the hereditary characteristics^{15,16}. In this sense, other authors¹⁷ propose that more population surveys can contribute to the analysis and comparison of other factors that may influence on the association between school performance and changes in children's oral communication.

The highest prevalence of change was in relation to the orofacial motricity. However, some findings in the literature indicate that the most prevalent change is of the speech, followed by changes in language and orofacial motricity^{18,19}. Corroborating the data of this research, a study with children 5-7 years found high prevalence (77.5%) of the orofacial motricity disorders⁴. The high rate of orofacial motricity changes probably due to inadequate oral

habits such as prolonged use of pacifier and bottle, feeding with doughy consistency, among others.

International population studies conducted with school point lower prevalence of speech disorders, ranging from 3.8% to 7.5%^{16,20}. However, in the current study it was found that the prevalence of speech disorders was estimated at 21.37% of the studied population, which was similar to another study, which showed a prevalence of 24.6%.¹⁷ The substantial differences between studies with this issue, are justified due to correlation factors, such as socio-demographic distinct profile¹⁷. Still, the differences from the American studies may be due to public policies adopted in both countries. While in the United States, the speech therapists are active in school, agents in Brazil, this practice is very limited. In any of the surveyed schools here had speech therapy in the prevention and health promotion. Thus, it is proven the need and importance of this work in the schools.

According to this study, 51.4% of parents interviewed, mentioned education in primary school level. Similarly, another study found that the average parental education level ($n = 1,399$) was 6.6 years, which points to the education in primary level. As for maternal education, 52.67% alluded education at the secondary level. In the same study mentioned above, the average maternal education ($n = 1,577$) was 6.55 years, which refers to primary school level¹⁷. It can be seen that in this study there was no

correlation between the speech-language disorders and parents' education.

The socioeconomic disadvantages have been identified as a risk factor for development, for the child who lives in a poor environment is more susceptible to deprivation of stimuli that can result in behavior and socialization problems, impairing learning, and the development of language²¹. In this study, it can be seen that there is no relation between parental income and speech-language disorders. However, in another study carried out through the use of questionnaires, it can be seen that complaints of orofacial and vocal motricity are statistically associated with parental income equal to or less than a minimum wage⁸. Socioeconomic status is a factor able to increase the risk for speech-language disorders. However, its real influence on the development of speech and language is still inconclusive, requiring deeper researches in this subject²².

It is believed that the lack of statistical significance between the studied variables is due to the homogeneity of the sample, because the income, the vast majority of households stood in categories A and B, and parents' education focused on the levels of primary and secondary schools. Thus, we suggest more research like this using samples

that demonstrate greater social differences, using of children enrolled in private schools, where generally the economic level of the parents is higher and comparing them to children enrolled in public schools.

■ CONCLUSION

The result of this research showed that the sample in question has a high rate of speech-language disorders, which highlights the importance of speech therapists of performance in public schools, in order to carry out prevention and health promotion, as well as the completion of the referral to appropriate treatment, in cases where there is need.

It was evident that there was no statistically significant relation between speech-language disorders, language and orofacial motricity in the studied population with the social indicators, which probably is due to the homogeneity of the sample. We emphasize the need for further studies with a larger number of subjects and / or in other school systems in order to verify whether such relation exist in a larger sample, or if the findings are characteristic of the region. Also it would be interesting studies comparing private schools to public schools.

RESUMO

Objetivo: verificar a prevalência de alterações de fala, linguagem e motricidade orofacial, bem como uma possível associação destes fatores com determinantes sociais como, condição socioeconômica e escolaridade parental em crianças de 4 a 6 anos e 11 meses de idade, matriculadas em escolas municipais de educação infantil da cidade de Santa Maria – RS. **Métodos:** a presente pesquisa caracteriza-se como transversal, de prevalência, em que participaram 262 crianças entre 4 a 6 anos e 11 meses de idade, estudantes de escolas da rede municipal. Realizou-se entrevista com os pais e avaliação fonoaudiológica (linguagem, fonética/fonologia, praxias articulatórias e buco-faciais e estruturas orofaciais). Os sujeitos foram agrupados conforme os critérios: renda familiar, escolaridade do pai e da mãe, alterações de linguagem, fala e motricidade orofacial. Os resultados passaram por análise estatística com o teste Exato de Fischer e nível de significância fixado em 5%. **Resultados:** a alteração mais prevalente foi a de motricidade orofacial (31,30%), seguida das alterações de fala (21,37%) e de linguagem (4,58%). Não foi encontrada associação entre as alterações fonoaudiológicas e os determinantes sociais. **Conclusão:** a amostra estudada apresentou alto índice de alterações fonoaudiológicas, o que evidencia a importância da atuação de fonoaudiólogos nas redes públicas de ensino. A não associação entre alterações fonoaudiológicas e determinantes sociais se deve, provavelmente, pela homogeneidade da amostra, sugerindo a realização de novos estudos com amostras mais heterogêneas.

DESCRITORES: Fonoaudiologia; Prevalência; Criança; Pré-Escolar

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