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ORIGINAL ARTICLE

Epidemiology of communication disorders in childhood phoniatric clinical practice☆,☆☆

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Abstract
Introduction: Language acquisition and development require an understanding of physical and psychosocial aspects during diagnosis and treatment. At this point, a partnership between phoniatric physicians and other health professionals is often a determinant for favorable prognosis.
Objective: To identify the clinical and epidemiological characteristics of a pediatric population attending a phoniatric clinical practice.
Methods: Study design: Cross-sectional cohort. Retrospective, epidemiological study of 297 children, seen in phoniatric appointments between 1976 and 2005. Outcome variables were referral origin, gender, age, mean age, diagnosis, and treatment approach.
Results: 66% were male and 34% were female, with a mean age of 6.4 years. The largest number of referrals for phoniatric treatments came from speech therapists (38%). The predominant complaint was alteration in speech (35%); the diagnostics in speech, language, and fluency (49.5%) are noteworthy. Considering the total of the patients analyzed, 28.2% were referred for speech therapy and 11.8% for psychotherapy.
Conclusion: The studied population is predominantly male, the diagnosis points to a higher incidence in cases of impairment in speech, language, and fluency; the most common treatment was speech therapy.

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PALAVRAS-CHAVE
Linguagem infantil;
Desenvolvimento da linguagem;
Distúrbios da fala;
Epidemiologia

Epidemiologia dos distúrbios de comunicação na infância em clínica foniátrica

Resumo
Introdução: Aquisição e desenvolvimento da linguagem demandam cuidados exigindo compreensão dos aspectos orgânicos e psíquicos no diagnóstico e tratamento. Assim, parceria entre foniatra e outros profissionais é, muitas vezes, determinante de um prognóstico favorável.
Objetivo: Caracterizar clínica e epidemiologicamente os distúrbios de comunicação em crianças na prática clínica.
Método: Coorte transversal histórica. Estudo epidemiológico retrospectivo de 297 prontuários de crianças atendidas em consulta foniátrica no período entre 1976 a 2005. Variáveis: origem do encaminhamento, gênero, média da idade, diagnóstico e conduta para tratamento.
Resultados: 66% foram do gênero masculino e 34% do feminino com média de idade de 6,4 anos. Maior número de encaminhamentos foi realizado por fonoaudiólogos (38%). A queixa predominante era de alterações na fala 35% e ressaltam-se os diagnósticos na área da fala, linguagem e fluência (49,5%). Do total destacaram-se os encaminhamentos para: 28,2% fonoterapia e 11,8% psicoterapia.
Conclusão: A população atendida foi predominantemente masculina, o diagnóstico aponta maior incidência em quadros de comprometimento na fala, linguagem e fluência e o tratamento mais indicado foi fonoterapia.

Introduction

For the establishment of proper diagnosis and appropriate treatment, children with language disorders require the services of a coordinated medical and phoniatric team capable of considering that organic, psychological, and social factors can be part of the genesis of this problem.[1]

Even in cases where there is an obvious functional abnormality of an organ or system, e.g., in cases of hearing loss, cleft palate, and encephalopathy, it is critical to understand that the problems that arise in patients with communication difficulties are complex and sometimes difficult to understand. Affected children and their families, when seeking help for communication difficulties look for clinical responses that appreciate the biopsychic foundations of their language disorder.[2]

The otorhinolaryngologist involved in phoniatrics plays a key role in this complex process of human communication, not only at the time of diagnosis, but also during his/her communication with the team helping to formulate the best conduct and the most appropriate intervention for each patient.[3]

Similarly, due to the large number of potential diagnoses for a child with a language disorder – for example, specific language impairment, language delay, and articulation disorders, we believe that epidemiological studies are useful to help in selecting the composition of the team necessary to care for these children. In this sense, the aim of this study was to epidemiologically characterize the practice and the referrals made to a phoniatric clinic for communication disorders occurring in childhood

Methods

The study design was approved by the Ethics Committee of Pontifícia Universidade Católica de São Paulo, according to Declaration no. 06919712.6.0000.5482.

A retrospective study of a historical cross-sectional cohort was conducted. From a total of 843 patients with complaints of a disorder of communication submitted to phoniatric assessment and treatment in a private clinic in the city of São Paulo between June of 1976 and January of 2005 half, were analyzed (those registered with an even number). From these medical records, only children of both genders of between ages 1 year and 11 years and 11 months were included, totaling 422 records.

Exclusion criteria: incomplete or illegible records

During the phoniatric consultation, one semi-open interview took place, where data were collected on the complaint, previous history of the complaint, family history, schooling, family routine, feeding habits, neuropsychomotor development, and social and family relationships.

In addition to an otorhinolaryngological examination, the phoniatrist used games and symbolic play, drawing, and writing (depending on the child's age) to investigate aspects related to global and oral motor functions, auditory and visual perceptual functions, static and dynamic balance, and spatial orientation at body and graphic levels. The examinations provided by the child's parents during the consultation were also considered, and the physician ordered other appropriate tests to complement the data for evaluation.

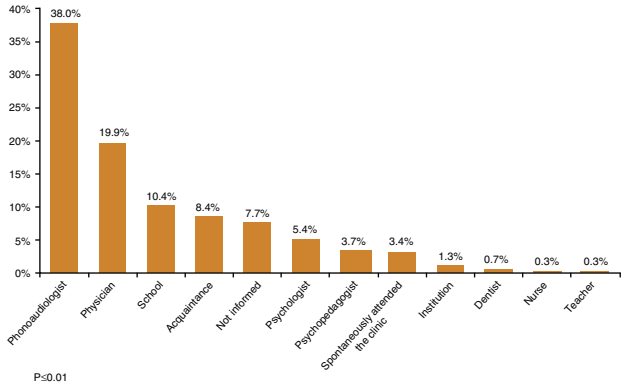

Figure 1 Distribution of referrals accepted by phoniatrists, according to the sources of origin.

For the analysis, the following variables were used: gender, mean age, referral source, family complaint, diagnosis, and conduct.

The statistical analysis was performed using an ANOVA parametric test (quantitative and continuous data) and the equality of two proportions nonparametric test (qualitative data). A significance level of $p = 0.05$ (5%) with a 95% confidence interval was established.[4]

Results

Of 422 medical records, 22 were excluded for incompleteness and 103 for being outside the stipulated age. Thus, 297 medical records were evaluated. Of this sample, most children were male ($n = 196$; 66%) compared to females ($n = 101$; 34%; $p < 0.001$) and the mean age was 6.3 ± 0.3 years. Most of the patients came from the city of São Paulo, i.e., 65.32% of cases ($p < 0.01$%). Most referrals to phoniatric consultation were made by speech therapists, 38% (Fig. 1). The main family complaint was a change in speech ($p \leq 0.01$; Fig. 2), and the most frequent diagnosis was established in the speech/language/fluency area (49.5%; $p \leq 0.01$; Fig. 3).

In the analysis of the gender and diagnostic variables, no statistically significant differences were found between the two genders with respect to ''hearing,'' ''neurological picture,'' and ''voice'' diagnoses (and also in ''no diagnosis'' cases). A statistically significant difference was found in those diagnoses related to speech/language/fluency areas, with a prevalence of 63.9% in boys and 36.1% in girls ($p < 0.001$) (Table 1).

The phoniatric diagnosis was analyzed considering three age groups, distributed as follows: 0–5 years, >5 and ≤10 years, and >10 years. In the first two age groups, speech/language/fluency was the most common diagnosis. However, in the group of children over 10 years of age, the most frequent diagnosis was established in the reading/writing/learning area, with 33.3%, but there was no statistical difference vs. the diagnoses established for speech/language/fluency and emotional disturbance (30.3% and 15.2%, respectively; Table 2).

The phoniatrist returned 46.7% of these patients to the professionals responsible for the patient's referral: 28.2% for speech therapy, 11.8% for psychotherapy, and 3% for educational psychology, as shown in Fig. 4. The remaining patients (10.3%) were to return to the phoniatrist for monitoring.

Discussion

Phoniatrics is an area of otorhinolaryngology which treats human communication disorders, focusing on voice, speech, language, hearing, and swallowing functions.[1] As a function of the complexity of the process of human communication and of the enormous range of possible diagnoses, it

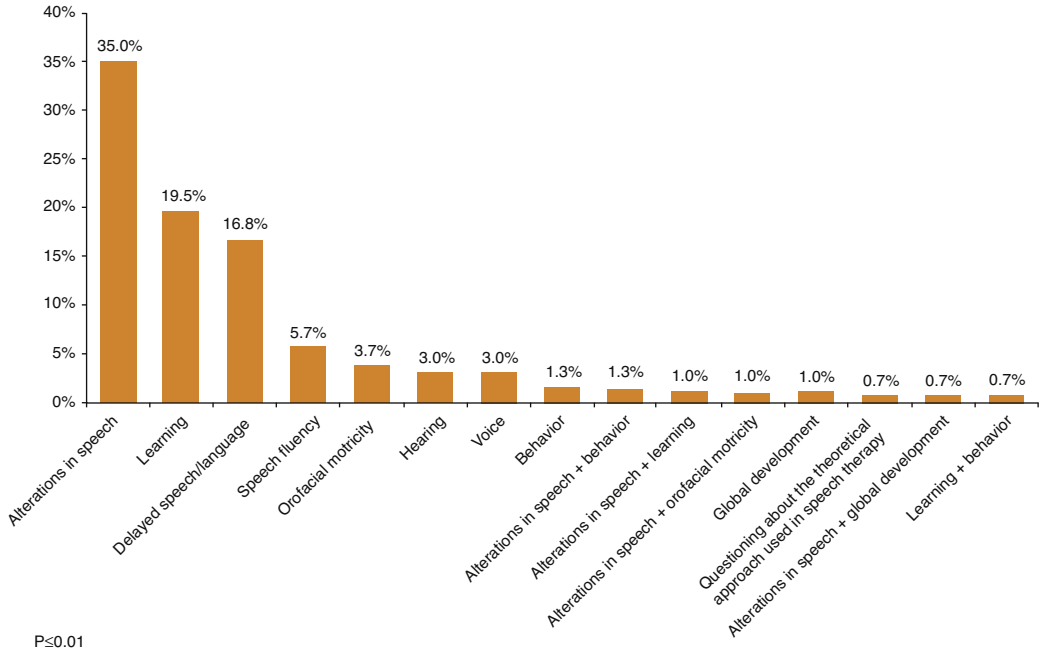

Figure 2 Distribution of complaints accepted by the phoniatrist.

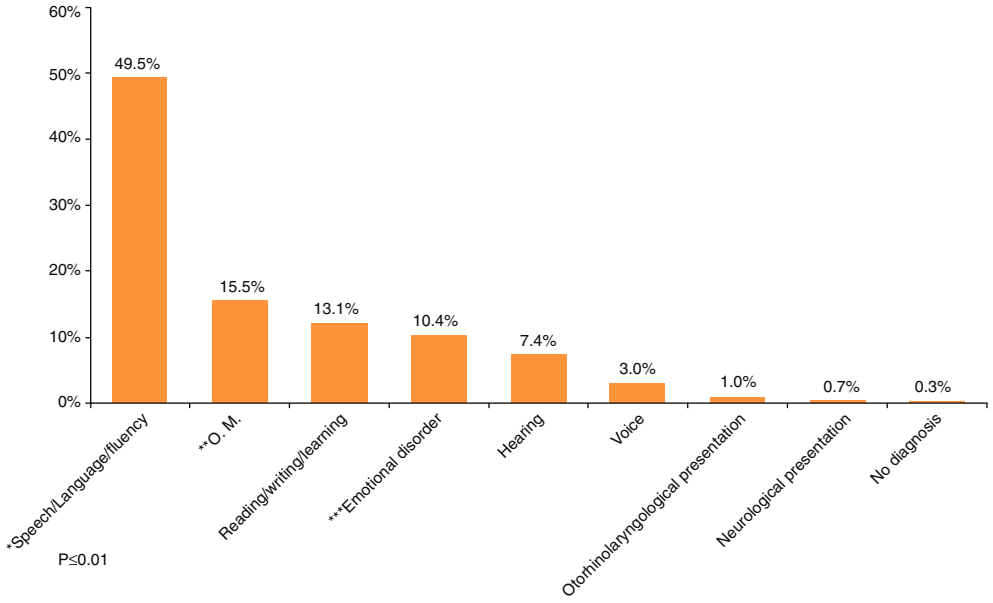

Figure 3 Diagnosis distribution according to main disorders found. * Speech/language/fluency – language deviations, language deviations delay, speech disorders, specific language disorder, dyspraxia, and disfluency. ** Articulation disorders, alterations in chewing, swallowing, and respiration, sigmatism, malocclusion, and tone deficit of OFA (O.M. = oral motricity). *** Inhibition, clinical pictures of psychosis, autism, psychic imbalance, and depression.

Table 1 Distribution of diagnostics by gender.

Disturbances (by area)	Female		Male		*p*-Value
	n	%	*n*	%	
Hearing	10	45.5%	12	54.5%	0.546
Emotional	10	32.3%	21	67.7%	0.005
Speech/language/fluency	53	36.1%	94	63.9%	<0.001
Reading/writing/learning	8	22.2%	28	77.8%	<0.001
Oral motricity	15	33.3%	31	66.7%	0.002
Neurological picture	1	50.0%	1	50.0%	1.000
Otorhinolaryngological	0	0%	3	100%	0.014
Voice	3	33.3%	6	66.7%	0.157
Without a diagnosis[a]	1	100%	0	0%	0.157

[a] Medical record without a diagnosis.

Table 2 Distribution of main diagnoses by age group.

Disturbances (by area)	≤5 years		>5 and ≤10 years		>10 years	
	n	%	*n*	%	*n*	%
Hearing	5	4.8%	14	9.8%	3	8.8%
Emotional	10	9.5%	16	11.2%	5	14.7%
Speech/language/fluency	73	69.5%	66	46.1%	10	29.4%
Reading/writing/learning	0	0.0%	23	16.1%	12	35.3%
Oral motricity	17	16.2%	24	16.8%	4	11.8%

is believed that the success of the treatment for communication disorders in childhood is intimately linked to an interdisciplinary strategy and to an effective interlocution among the team members.

The analysis of the population represented by the 297 successfully evaluated medical records reflects the findings in the literature. A significant majority of families seeking speech therapy services bring their boys to the medical

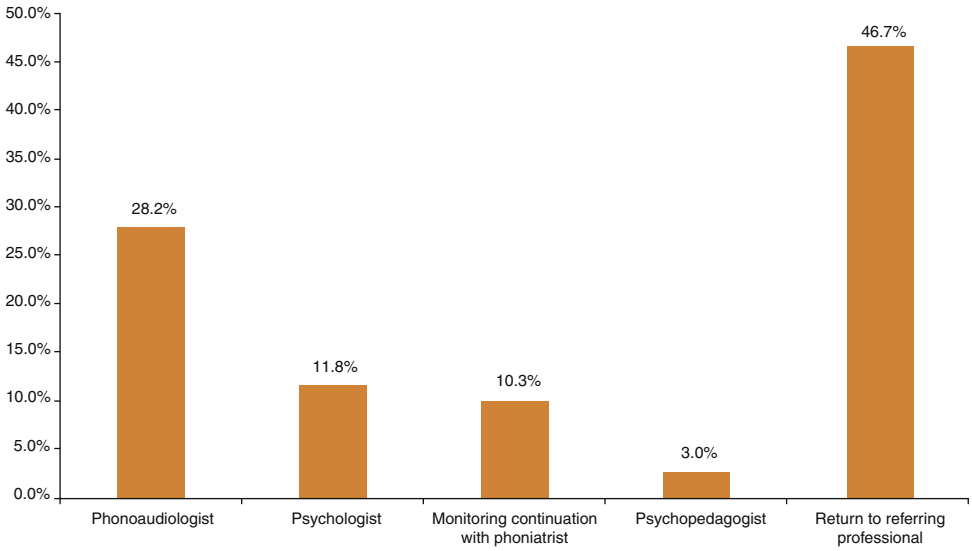

Figure 4 Distribution of phoniatrist conduct.

appointment with a complaint of speech disorder (Fig. 2).[5] However, when analyzing the phoniatric diagnosis (divided into broad areas, as a result of statistical adjustments), it can be noted that male gender represents a significant majority of alterations both in the speech/language/fluency area, the most frequent diagnosis group (Fig. 3) that includes language deviations, delays in language acquisition, speech disorders, specific language disturbance, dyspraxias, and dysfluency, as well as in the reading and writing alterations, oral motricity problems, emotional disorders, and otorhinolaryngological disorders (Table 1). This could be explained by hormonal issues in boys and their slower neurological maturity, and, according to some studies, also by the social demands that are incurred in these children, when, by cultural imposition, they are called upon to speak correctly. There are several explanations for the male predominance in the literature, but there is no definitive consensus.[6–8]

The age of children at the time of the phoniatric assessment was around 6 years, with a mean age of 6.4 ± 0.4 years, which may coincide with their entrance into elementary school. In this context, the child is inserted into the social group, interacting with peers and teachers; thus, there is a greater demand for communication, and this may highlight the existing differences in the group,[9,10] stimulating the child's referral and the search for a phoniatric evaluation.

However, in many cases – and depending on the severity of this delay – seeking specialized care and/or a phoniatric diagnosis only when the child reaches 6 years of age may have negative developmental consequences since good communication is essential for physical and mental development While 60% of children with language delay at the age of 2 years achieve language development similar to that of their normal peers in 12 months without treatment, the persistence of their symptoms brings adverse effects on learning, behavior, social skills, and mental health in adulthood; therefore, they should not be overlooked.[11]

It must also be considered that at the age of 6, the child begins to learn how to read and write, both necessary for developing literacy. A child who has not consolidated oral language may have lower chances of advancing in the written language at the same pace of other children, considering that part of oral skills are used in the writing process.[12]

Table 2 documents how speech and language delays can be long-lasting throughout childhood; this is the most frequent diagnosis under 5 years of age and between 5 and 10 years of age, and is almost as common as the reading/writing/learning alterations in children over 10 years.

We believe that an interdisciplinary approach in the phoniatrics clinic is critical to a good prognosis for communication disorders. Fig. 4 presents a good example of the interdisciplinary nature and, especially, of the composition of the team, since most of the patients returned to their original care providers at the conclusion of their phoniatric assessment, to proceed with the treatment.

In the formation of this team, a partnership between the phoniatrist and the speech therapist is of fundamental importance, whether in the treatment of clinically complex cases, in longitudinal follow-up pursuing a diagnosis, or interpreting specific data stemming from the language assessment.

The speech therapist stands out as the professional who often directs patients to phoniatric evaluation (Fig. 1); furthermore, he/she is the professional who receives the greatest number of indications of patients based on the phoniatrist's clinical conduct (Fig. 4). It must be emphasized that well-coordinated work between these specialties – phonoaudiology and phoniatrics – can contribute to greater efficacy in the treatment of children with speech and language disorders.[13,14]

The importance of the psychologist as a member of the interdisciplinary team for treating communication disorders is worth mentioning. In this series, 11.8% of patients were referred by the speech specialist for a psychological evaluation (Fig. 4). Considering that psychological disorders and suffering are directly related to language problems,[15–17] and are frequently the primary cause of the delay, an intervention that considers the child's psychic and language constitution will provide more specific therapeutic results.

Conclusion

The population studied comprised predominantly males, and the diagnosis points to a higher occurrence of problems in the speech, language and fluency area. The most commonly recommended treatment was speech therapy.

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Conflicts of interest

The authors declare no conflicts of interest.

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