

Attention Deficit Hyperactivity Disorder and Speech-Language Disorders

Transtorno de Déficit de Atenção e Hiperatividade e alterações fonoaudiológicas

Trastorno por déficit de atención con hiperactividad y trastornos del habla y lenguaje

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Abstract

Introduction: Currently, Attention Deficit Disorder with Hyperactivity is one of the most frequent health conditions in children and adolescents, whose impact involves behavioral and social changes, as well as phonological, metalinguistic and auditory processing difficulties. **Objective:** To verify the occurrence of cases with diagnosis or suspicion of ADHD in a Speech-Language Pathology Clinic of a University Hospital and the occurrence of oral language, writing, auditory processing and phonological awareness alterations in this population. **Methods:** exploratory study, performed in a Speech Therapy Outpatient Clinic of a University Hospital. **Results:** In 2016, 14 children were referred to the outpatient clinic with suspected or diagnosed Attention Deficit Hyperactivity Disorder. Most of them presented inadequate results in simplified assessments of auditory processing, phonological awareness and reading and writing. **Conclusion:** The present study showed alterations in the auditory processing, phonological awareness and reading and writing tasks. We emphasize the importance of further studies with more robust samples, aiming to better elucidate the impacts of these changes in ADHD patients.

Keywords: Attention Deficit Disorder with Hyperactivity; Speech, Language and Hearing Sciences; Hearing Disorders; Language.

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Resumo

Introdução: Atualmente, o Transtorno de Déficit de Atenção e Hiperatividade é uma das condições de saúde mais frequentes na população infanto-juvenil, cujo impacto envolve alterações comportamentais e de convívio social, além de dificuldades fonológicas, metalinguísticas e de processamento auditivo. **Objetivo:** verificar a ocorrência de casos com diagnóstico ou suspeita de TDAH em um Ambulatório de Fonoaudiologia de um Hospital Universitário e a ocorrência de alterações de linguagem oral, escrita, processamento auditivo e consciência fonológica, nessa população. **Métodos:** estudo exploratório, realizado em um Ambulatório de Avaliação Fonoaudiológica de um Hospital Universitário. **Resultados:** No ano de 2016, 14 crianças foram encaminhadas ao ambulatório, com suspeita ou diagnóstico de Transtorno de Déficit de Atenção e Hiperatividade. A maioria apresentou resultado inadequado nas avaliações simplificadas do processamento auditivo, consciência fonológica e leitura e escrita. **Conclusão:** O presente estudo evidenciou alterações nas tarefas de processamento auditivo, consciência fonológica e leitura e escrita. Ressalta-se a importância de novos estudos, com amostras mais robustas, visando elucidar melhor os impactos dessas alterações em pacientes com TDAH.

Palavras-chave: Transtorno do Déficit de Atenção com Hiperatividade; Fonoaudiologia; Transtornos da audição; Linguagem.

Resumen

Introducción: El trastorno por déficit de atención con hiperactividad es actualmente una de las afecciones de salud más frecuentes en niños y adolescentes, y su impacto repercute en cambios de comportamiento e interacción social, además de dificultades de procesamiento fonológico, metalingüístico y auditivo. **Objetivo:** verificar la aparición de casos con diagnóstico o sospecha de TDAH en una clínica ambulatoria de fonoaudiología de un hospital universitario y la aparición de alteraciones en el lenguaje oral, la escritura, el procesamiento auditivo y la conciencia fonológica en esta población. **Métodos:** estudio exploratorio, realizado en una clínica ambulatoria fonoaudiológica de un hospital universitario. **Resultados:** en 2016, 14 niños fueron remitidos a la clínica con sospecha o diagnóstico de trastorno por déficit de atención e hiperactividad. La mayoría de ellos con resultados inadecuados en evaluaciones simplificadas de procesamiento auditivo, conciencia fonológica y lectura y escritura. **Conclusión:** El presente estudio mostró alteración en tareas de procesamiento auditivo, conciencia fonológica y lectura y escritura. Se enfatiza la importancia de realizar más estudios con muestras más robustas, con el objetivo de dilucidar mejor los impactos de estas alteraciones en pacientes con TDAH.

Palabras clave: Transtorno por Déficit de Atención con Hiperactividade; Fonoaudiologia; Transtornos de la Audición; Language

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most frequent health conditions in children and adolescents and part of the main causes in demanding for mental health care^{1,2}. Its etiology is multifactorial with symptoms that include hyperactivity, inattention and impulsivity^{2-5,6}. The diagnosis of ADHD follows diagnostic criteria such as those described in the Diagnostic and Statistical Manual of Mental Disorders (DSM-V)⁷. It is believed that about 5.0% of children worldwide suffer from this disorder^{3,8},

with impacts that involve changes in behavior and social interaction^{6,9,10}, in addition to difficulties in phonological, metalinguistic and auditory processing aspects, which may in turn be a cause in learning disorders^{2,9,11,12}.

Due to this context, the purpose of this communication is to verify the occurrence of cases with diagnosis or suspicion of ADHD in a Speech Therapy Outpatient Clinic of a University Hospital, as well as the occurrence of changes in oral language, writing, auditory processing and phonological awareness within this population.



Methods

This is an exploratory study, carried out in a Speech Therapy Outpatient Clinic of a University Hospital.

Data collection was done through the analysis of the medical records of children and adolescents who underwent speech therapy evaluation at the Outpatient Clinic in 2016. This Outpatient Clinic is the entry point to the Speech Therapy service of a University Hospital, in which all patients are referred from the services provided at the Hospital das Clínicas of the Federal University of Minas Gerais, being then submitted to a complete speech therapy evaluation.

The study included patients treated at the ambulatory clinic in 2016, referred with suspicion or diagnosis of ADHD and who completed the evaluation; those with hearing loss and cognitive impairments that could interfere with the test results were excluded.

The results of the following procedures were analyzed: tonal and vocal audiometry and immittance test; Simplified assessment of Auditory Processing¹³ according to the skills of localization and sound discrimination, non-verbal and verbal sequential memory, and cochlear-eyelid reflex; Phonological Awareness test¹⁴ (syllabic and phonemic synthesis; rhyme; phonemic segmentation, exclusion and transposition; School Performance Test (TDE)¹⁵: including writing, reading and arithmetic skills; the classification considered the total score based on the school year.

A descriptive analysis of the data was carried out, by means of the frequency distribution of categorical variables and analysis of measures

of central tendency and dispersion of continuous variables. Pearson's chi-square test was used for association analysis, and those with $p \leq 0.05$ were considered as statistically significant associations.

For data entry, processing and analysis, the research used SPSS software, version 21.0.

Results

Of 117 patients seen in the first and second semesters of 2016, 14 (12.0%) were referred due to suspected diagnosis of ADHD. Of those 14, eight (6.84%) had a diagnosis of ADHD. The mean age of these patients was 10 years and one month, median 9.50; standard deviation 2.49; minimum seven, and maximum 16 years.

Table 1 shows that the sample was mostly composed of female patients (57.1%), referred due to learning disorders and/or attention deficit (71.4%), diagnosed with ADHD (57.1%), using medication (64.3%). Most were referred by another medical specialty (pediatrician, ENT or general practitioner) other than the neurologist or psychiatrist (42.9%).

Regarding the speech-language assessment, most of the patients evaluated presented an inadequate result in the simplified assessments of auditory processing, phonological awareness and reading and writing, all with 85.7%. In addition, half of the referred patients (50.0%) were referred to therapy in the area of reading and writing.

The association between the diagnosis of ADHD and the area of referral for speech therapy did not show statistically significant results (Table 2).

Table 1. Descriptive analysis of the sample's characterization resulting from the speech-therapy evaluation

Variables	N	%
Sex		
Masculine	6	42.9
Feminine	8	57.1
Total	14	100.0
Reason for referral		
Learning Disorder and Attention Deficit	10	71.4
Suspected ADHD	4	28.6
Total	14	100.0
Practitioner referring the patient		
Psychiatrist	5	35.7
Neurologist	3	21.4
Pediatric/ENT/Clinician	6	42.9
Total	14	100.0
Diagnosis ADHD		
No	6	42.9
Yes	8	57.1
Total	14	100.0
Use of medication		
No	5	35.7
Yes	9	64.3
Total	14	100.0
Result of the Simplified Assessment of Auditory Processing		
Adequate	2	14.3
Inadequate	12	85.7
Total	14	100.0
Result of phonological awareness		
Adequate	2	14.3
Inadequate	12	85.7
Total	14	100.0
Results of School Performance Test - TDE		
Adequate	2	14.3
Inadequate	12	85.7
Total	14	100.0
Area for Therapy		
Oral language	2	14.3
Reading and writing	7	50.0
Oral language an reading and writing	5	35.7
Total	14	100.0

Legend: N = number of individuals; ADHD = Attention Deficit Hyperactivity Disorder

Table 2. Association between ADHD diagnosis and area of referral for speech therapy

Area of referral	ADHD diagnosis			p-value
	No N (%)	Yes N (%)	Total N (%)	
Oral language	1 (7.1)	1 (7.1)	2 (14.2)	0.542
Reading and writing	2 (14.3)	5 (35.7)	7 (50.0)	
Oral language an reading and writing	3 (21.5)	2 (14.3)	5 (35.8)	
Total	6 (42.9)	8 (57.1)	14 (100.0)	

Test: Pearson Chi-square

Caption: N = number of individuals

Discussion

Most individuals in the study were female. This finding is not in accordance with the literature, in which there is usually a higher prevalence of ADHD in males^{5,7,16-18}. However, such prevalence was also observed in a previous study, carried out in a public school in Bahia, whose objective was to verify the prevalence of ADHD in the studied population¹⁷. It is noteworthy that in the present study, only eight of the 14 participants had completed the diagnosis of ADHD.

Regarding the speech therapy changes, it was possible to observe that in all the evaluations performed, more than two thirds of the individuals presented inadequate results in the tests.

Studies addressing ADHD and auditory processing, although scarce in the literature, point to worse performance of children with the disorder as in this research^{2,19,20}. The poor performance can be justified by the difficulty of attention, the impulsiveness and the impairment of executive functions, characteristic of ADHD. It is noteworthy, however, that in a systematic review of the literature, carried out with the objective of verifying the speech language disorders in patients with ADHD², it was observed that the studies point to the lack of relationship between ADHD and changes in auditory processing, although they may be comorbidities¹⁹. It should also be noted that in this study, done in a generalist clinic, the evaluation used does not include all processing skills. Therefore, the presence of alterations indicates the need for a complete evaluation.

Regarding the result in the phonological awareness test and in school performance tasks (reading and writing), it is emphasized that, among metalinguistic skills, phonological awareness is essential for the development of reading^{13,22-24}. Thus, an inadequate performance in this task presupposes an inadequate result in reading. For an adequate reading, it is necessary, in addition to the adequacy of phonological awareness, that there is no impairment in terms of working memory, attention and executive function, aspects also compromised in individuals with ADHD^{16,21,24-26}.

Considering these findings, the importance of new studies is reinforced, with representative samples to verify the impact of these changes in ADHD patients, as well as to further investi-

gate their association with changes in auditory processing.

Conclusion

The present study showed a higher prevalence of female patients with changes in the tasks of auditory processing, phonological awareness and reading and writing. The association analysis did not identify a statistically significant difference between the test results of children with suspicion and with diagnostic of ADHD.

Studies with more robust samples may better elucidate the impacts of speech-language disorders in patients with ADHD.

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