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Sustained auditory attention in children with attention deficit hyperactivity disorder: the effects of medication

Atenção auditiva sustentada em crianças com transtorno de déficit de atenção e hiperatividade: o efeito da medicação

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ABSTRACT

Purpose: To compare the auditory attention ability in children with Attention Deficit Hyperactivity Disorder (ADHD) before and after the use of psychostimulant medication. **Methods:** Eight male children with ADHD participated in the study, between eight and ten years old. All participants used psychostimulant drugs. To assess auditory behavior, the Scale of Auditory Behaviors (SAB) and SNAP-IV questionnaires were applied to identify possible symptoms of inattention and/or impulsivity. To assess auditory attention ability, the Sustained Auditory Attention Ability Test (SAAAT) was applied before and after the use of the psychostimulant medication. In this test, the errors of inattention, impulsiveness and decreased vigilance were analyzed. For data analysis, the Wilcoxon and Spearman correlation tests were used. **Results:** The SAB questionnaire showed changes in most children, who also showed signs of inattention and/or impulsivity in the SNAP-IV questionnaire. In the SAAAT, a difference was observed in the item inattention (p=0.017) and in total score of errors before and after medication (p=0.025). **Conclusion:** There was an improvement in the test performance assessing the auditory attention ability after the use of psychostimulant medication, with emphasis on the item inattention.

Keywords: Attention; Auditory perception; Hearing tests; Attention deficit hyperactivity disorder; Child

RESUMO

Objetivo: Comparar a habilidade atencional auditiva em crianças portadoras de transtorno de déficit de atenção e hiperatividade/impulsividade (TDAH) antes e após o uso da medicação psicoestimulante. **Métodos:** Participaram do estudo oito crianças do gênero masculino, com TDAH, entre 8 e 10 anos de idade. Todas faziam uso de medicamentos psicoestimulantes. Para avaliar o comportamento auditivo, foi aplicado o questionário *Scale of Auditory Behaviors* (SAB) e para identificar possíveis sintomas de desatenção, o *Swanson, Nolan e Pelham* (SNAP-IV). A habilidade auditiva atencional foi avaliada pelo Teste de Habilidade de Atenção Auditiva Sustentada (THAAS) pré e pós-uso do medicamento psicoestimulante. Neste teste, foram analisados os erros de desatenção, de impulsividade e de decréscimo de vigilância. A análise dos dados foi feita com base nos testes Wilcoxon e Correlação de Spearman. **Resultados:** O questionário SAB mostrou-se alterado na maior parte das crianças, as quais também apresentaram sinais de desatenção e/ou impulsividade no questionário SNAP-IV. No THASS, observou-se diferença nos quesitos desatenção (p=0,017) e pontuação total de erros pré e pós-medicação (p=0,025). **Conclusão:** Houve melhora no desempenho do teste que avaliou a habilidade atencional auditiva após o uso da medicação psicoestimulante, com destaque para o item desatenção.

Palavras-chave: Atenção; Percepção auditiva; Testes auditivos; Transtorno do déficit de atenção e hiperatividade; Criança

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INTRODUCTION

The attentional mechanism is absolutely essential in cognition as it is a basic neuropsychological process of the executive functions[1]. One of its purposes is to allow the subject to perceive and analyze different auditory stimuli at any time[2], decisively contributing to the acquisition of acoustic and phonetic aspects of linguistic patterns, which are fundamental for the evolution of communicative and learning skills[3].

For information to be processed, there are different types of attention, including sustained attention, which allows individuals to start and finish a task in a certain period of time[4,5]. Deficits in this ability causes individuals to lose or not to record information in their memory, which turns them into inattentive and distracted[6] subjects.

Auditory attention deficits can be found in other diagnoses, such as language disorder, attention-deficit/hyperactivity disorder (ADHD) and central auditory processing disorder (CAPD)[7]. CAPD corresponds to a deficit in the efficacy and effectiveness with which the central nervous system (CNS) processes and interprets verbal or nonverbal sounds[8]. Furthermore, CAPD must be understood as a disorder that can be isolated or associated with other comorbidities[7].

In 2017, clinicians and researchers published the European Consensus on CAPD[9], pointing out the ideal path for diagnosis and adequate case management. According to the document, central auditory processing (CAP) evaluation should be indicated in the presence of ADHD, especially in cases which an appropriate therapy and educational contribution have not shown expected or adequate results[9].

ADHD is defined as a neurodevelopmental disorder, characterized by presenting frequent levels of inattention, hyperactivity and impulsivity[10]. Currently, the close relationship between ADHD and CAPD has attracted the attention of scholars, due to the difficulty in making the differential diagnosis[11-13]. It is extremely important to investigate these manifestations as early as possible, especially when they start to interfere with learning, causing academic and social impairment[12].

The literature reports extensive lists of positive factors on the use of medication for ADHD. Among the benefits, the improvement on the performance in the CAP special tests in children after the use of the medication is highlighted[14].

The choice for drug treatment stands out in relation to social, psychological and behavioral interventions. The most commonly used substance worldwide has been methylphenidate, which acts in stimulating the CNS, causing increased attention and decreased restlessness in hyperactive children[14].

Recently, the Sustained Auditory Attention Ability Test (SAAAT) has emerged to assess auditory attention. SAAAT assesses the auditory attention level over a prolonged period of time[6]. At the Forum: Audiological Diagnostics, held by the Brazilian Academy of Audiology[15] in 2016, SAAAT was recommended to be part of the minimum CAP evaluation protocol for children with attention difficulties. In accordance with the guidance and due to the scarcity in the national literature of investigations with SAAAT in individuals with ADHD, this study sought to highlight the importance of its implantation in the CAP test battery, and to contribute to the clinical use of the assessment of sustained auditory attention ability.

In this context, this study aimed to compare the auditory attention ability in children with ADHD before and after the use of psychostimulant medication.

METHOD

This is a cross-sectional, descriptive and observational study. The collection was carried out in a primary way and the selection of the population, in a non-probabilistic way, for convenience.

The research was approved by the Ethics Committee in Research of the Federal University of Santa Catarina, under protocol number 64362517.5.0000.0121 and review number 3,758,303. All the children's legal guardians were informed about the research objectives and, after their consent, they signed the Free and Informed Consent Form. Data collection was performed in the Audiology sector of the Clinic-School of Speech Therapy at the Federal University of Santa Catarina, from March to September 2018.

Eight children between 8 and 10 years, all male, participated in this study, with a medical diagnosis of ADHD. The group of children with ADHD was diagnosed and monitored by the multidisciplinary team of Núcleo Desenvolver of the University Hospital Professor Polydoro Ernani de São Thiago at the Federal University of Santa Catarina - UFSC, which performed the diagnosis provided in Diagnostic and Statistics Manual V (DSM-V).

The following eligibility criteria were adopted: children with a medical diagnosis of ADHD, who used psychostimulant drugs, with normal hearing thresholds, bilaterally, who spoke Brazilian Portuguese as a native language. Exclusion criteria were: diagnosis of ADHD with altered psychometry and/or presence of other comorbidities (dyslexia, autism, oppositional defiant disorder, etc.)

In order to characterize the population, an anamnesis was conducted with the legal guardians for addressing issues related to learning, hearing, speech and language development, sleep, behavioral characteristics of the individuals and medicalization, and monitoring with other professionals. Subsequently, the SNAP-IV and Scale of Auditory Behaviors (SAB) questionnaires were applied.

The SNAP-IV questionnaire is an instrument developed and based on the symptoms of the Diagnostic and Statistics Manual - IV Edition (DSM-IV) of the American Psychiatric Association. The test aims to track information about possible initial symptoms present in individuals with ADHD, and is useful to evaluate the first diagnostic criterion of ADHD. The questionnaire has 18 items divided into two parts, the first part related to symptoms of inattention and the second part to symptoms of hyperactivity and impulsivity. If six or more items are marked in one or both parts as "quite a bit and/or very much much", it means that there are more symptoms of inattention and/or hyperactivity than expected for a child or adolescent without these changes[16]. For analysis of the SNAP-IV questionnaire, the items of inattention that were marked in questions 1 to 9 as "quite a bit and/or very much" were named part A. Likewise, in part B, items 10 to 18, referring to hyperactivity and impulsivity.

The SAB questionnaire consists of 12 questions and aims to assess behaviors related to hearing and attention. The legal guardians have answered it, indicating the option that shows the frequency of a behavior in their child, according to the

following scale: (1) frequent, (2) almost always, (3) sometimes, (4) sporadic, and (5) never. After filling in, the answers were added to obtain the total score. The final score, when under 36, was considered suggestive of risk for CAP alteration[17].

After completing the questionnaires, SAAAT was applied to the patients. SAAAT was developed and based on the Auditory Continuous Performance Test (ACPT), with the objective of evaluating the auditory attention behavior in children. The test stimulus consists of 21 randomly-repeated monosyllabic words, forming a list of 100 words. The target stimulus of the test is the word "no", which occurs 20 times, randomly, in each list. The individual initially listens to a training list and then six lists with 100 words in a row. When the target word is heard, the individual should raise their hand. The test, which has an average duration of 11 minutes[6], was presented binaurally at 50dBSL, based on the tritonal average of the frequencies 500Hz, 1000Hz and 2000Hz. Available at THAAS[18], in this study, the test was coupled to the Madsen Astera^2 audiometer. The following error patterns are analyzed: total error score, inattention, impulsivity and decreased vigilance.

The inattention error is characterized when the child does not raise his hand in response to the word "no" before the presentation of the following word. The impulsivity error, on the other hand, occurs when the child raises his hand to another word, instead of the word "no". The counting of the numbers of inattention and impulsivity errors allowed to obtain the total error score of the SAAAT. Decrease in vigilance is calculated by subtracting the number of correct answers from the first presentation by the number of correct answers from the last presentation. Feminan and Lemos[6] normality criteria was used for SAAAT age group.

It is worth mentioning that the participants' assessments were scheduled on a previously established day and time, and lasted one hour and twenty minutes, on average. All individuals were assessed at two different moments, with a one-week interval between them. In the first moment, all special hearing tests were performed without the effect of the medication and, in the second moment, with the use of the medication, in variable doses, according to the medical prescription.

All assessments took place in the morning, so that the chances of fatigue were mitigated. It is noteworthy that, for the reassessment, the guardians were asked to bring the patients to perform the exam as early as possible, so as not to compromise the routine of drug use administration. In the analysis of the simplified CAP evaluation, individuals who had at least one altered test were considered altered and, in the SAAAT, when there was a change in at least one evaluated item.

The equipment used to perform the auditory assessments was the Otometrics audiometer, model Madsen Astera^2, with a Sennheiser HDA 200 circum-aural headset, in an electrically-shielded and sound-attenuated booth. This equipment was coupled to a computer, in which the tests were recorded in MP3 format.

Data were computed in Microsoft Excel spreadsheets and received descriptive statistical analysis, through the frequency distribution of categorical variables and measures of central tendency and dispersion of continuous variables. Data were analyzed statistically using the software MedCalc®, version 18.10 (MedCalc Software bvba 1993-2018, Belgium) and IBM SPSS 25. In this study, Wilcoxon statistical tests (nonparametric) were used to compare medians in paired samples and Spearman correlation. The p-value was considered significant for values under 5% ($p < 0.05$) and was represented with a superscript asterisk (*).

RESULTS

The study included 8 male children, 3 children with 8 years, 4 with 9 years and one with 10 years. As for their education level, half (50.0%) were in the 4th grade of elementary school. All of them used psychostimulant medication, with 7 (87.5%) using methylphenidate and one (12.5%) using lysdexamphetamine. The duration of medication use varied from 1 to 12 months (mean time 7.28 months), with the daily dose ranging from 1 to 3 tablets. It was observed that most of the children presented human communication disorders (Chart 1).

To verify the association between the SAB and the SNAP-V questionnaires, Spearman's correlation coefficient was calculated, however, there was no significant difference between them ($p = 0.275$ for comparison between the SNAP-IV and the SAB, and $p = 0.729$ for comparison between part A and the SAB) (Table 1).

Regarding the analysis of the types of errors of the SAAAT, it was observed that there was a difference in the item inattention ($p = 0.017$), and total score of errors before and after medication ($p = 0.025$) (Table 2).

Figure 1 shows the graphical representation of the SAAAT performance data as for median, amplitude, symmetry or asymmetry of the data. It was found that the performance of all individuals improved in the evaluation with the use of medication, and that the median showed less variation among the individuals tested after medication, except in relation to the item impulsivity.

Chart 1. Schooling and school and communication difficulties of individuals with attention deficit hyperactivity disorder (n=8)

	Schooling (years)	School/Communication difficulty
Patient 1	3	-
Patient 2	3	Speaking/ Reading/ Writing
Patient 3	4	Speaking/ Reading/ Writing
Patient 4	2	Speaking/ Reading/ Writing
Patient 5	4	Speaking/ Writing
Patient 6	4	Speaking/ Reading
Patient 7	2	Speaking/ Reading/ Writing
Patient 8	4	Reading/Writing

(-) = does not present any school or communication difficulty

Table 1. Individuals' Performance on the Scale of Auditory Behaviors and on the Swanson, Nolan and Pelham questionnaires in absolute data (n=8)

	SAB	SNAP-IV	
	N	A	B
Patient1	39	5	0
Patient2	30	7	6
Patient3	15	7	2
Patient4	17	2	8
Patient5	18	4	7
Patient6	25	6	3
Patient7	22	7	6
Patient8	25	7	2
Mean	23.87	5.62	4.25
Standard Deviation	7.86	1.84	2.86
Median	23.5	6.5	4.5
Maximum	39	7	8
Minimum	15	2	0

Subtitle: SAB = Scale of Auditory Behaviors; SNAP-IV = Swanson, Nolan and Pelham; N = absolute number; A = First part of the questionnaire; B = Second part of the questionnaire

Table 2. Exploratory analysis of the types of errors in the Sustained Auditory Attention Ability Test before and after medication, in absolute values (n=8)

	Inattention	Impulsiveness	Decreased vigilance	Total score of errors
Mean Pre	26.50	7.50	2.25	34
Mean Post	10.12	7.50	1.87	17.62
Median Pre	20.50	6.50	1.50	25
Median Post	5.50	6.00	1.50	11.50
Maximum Pre	66	17	6	83
Maximum Post	41	20	7	61
Mínimum Pre	2	3	0	9
Mínimum Post	0	2	0	5
P value*	0.017*	0.865	0.786	0.025*

*Wilcoxon Test

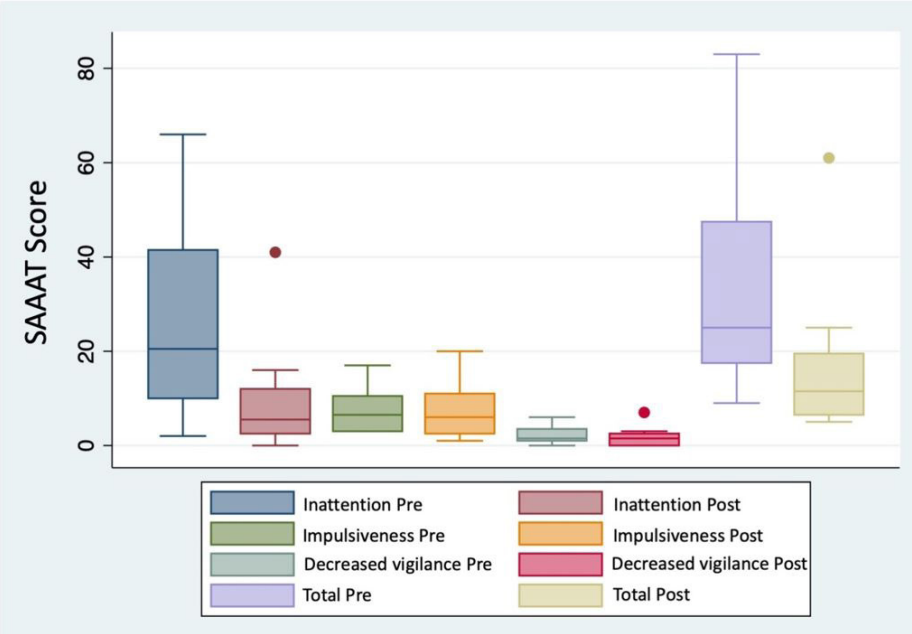

Figure 1. Analysis of distribution results of the Sustained Auditory Attention Ability Test before and after medication
Subtitle: SAAAT = Sustained Auditory Attention Ability Test

DISCUSSION

In ADHD, the difficulty in sustaining attention is among the most prevalent symptoms, present in individuals often labeled as undisciplined and distracted. The compromise in maintaining an attentional focus impairs the ability to simultaneously concentrate on one task and inhibit other stimuli, which directly and indirectly affects the success of activities. These individuals may have varying degrees of learning and behavioral difficulties, worse academic performance and damage to family and social interactions. This can happen due to the deficiency of attention abilities and inhibitory control, which compromises the phonological, syntactic and pragmatic system of language[10].

The present study verified that 87.5% of the children had changes in oral communication and learning, and many needed specialized assistances. CAP evaluation has been increasingly recommended in children with learning difficulties, as the examination allows the recognition and understanding of the difficulties the individual may have[17,19].

Questionnaires are allies in diagnostic analysis and have been frequently used by professionals. The use of these instruments provides rich information about patients and their families. In the literature, there are a multitude of questionnaires to be used to complement CAP evaluation[20].

In the present study, the SAB questionnaire score was low in seven individuals (87.5%). Nunes et al.[17] signaled that the score below 36 suggests a risk for CAPD and that, in these cases, children should be referred to perform the CAP evaluation. Regarding the SNAP-IV, it was observed, according to the changes in parts A and B, that two children had combined type ADHD, two with a predominance of inattention and two with a predominance of hyperactivity/impulsivity, as they obtained scores equal to or above 6 in parts A and/or B. It was also found that all individuals who had changes in the SAB score showed changes in at least one of the items in the SNAP-IV, that is, 87.5% of the evaluated children.

Miranda et al.[20] demonstrated that the SAB questionnaire is an important resource for screening, allowing early identification of hearing disabilities and also measuring the effectiveness of therapies, and therefore can be indicated for routine use in clinics. In addition, the study showed that the SAB results are highly correlated with behavioral tests, such as Test-Driven Development. Another study[21] also reported the use of the SNAP-IV as a form of screening, recommending its use by

education professionals, to assist in the identification of possible symptoms related to ADHD in the school environment.

Thus, the use of questionnaires, in the anamnesis, which assess the attention ability in subjects with signs of inattention is relevant in the clinical context and provides the appropriate patient management, as the possible changes in the CAP tests may be linked to other deficits, such as those of attention. The use of these instruments can contribute to the development of strategies to improve auditory or attention abilities, and also to monitor these disabilities[16,17,21].

It is worth mentioning that the questionnaires are important tools to assist the diagnosis, however, in the case of diagnosis conclusion of ADHD, the DMS-V assigns four other criteria for its final conclusion. Therefore, the investigation of the disorder cannot be carried out exclusively through a questionnaire, but through different tests and procedures in order to have a reliable diagnosis[21].

The literature shows that there is an improvement in the CAP behavioral tests after the use of psychostimulant medication. The data from this research is in line with the study by Cavadas et al.[12], in which the effect of the use of the medication methylphenidate on the performance of children and adolescents with ADHD in the standardized CAP behavioral tests was investigated. The results revealed an improvement in test performance after using the drug. The authors reported that the changes in the CAP in these individuals would be due to an alteration underlying inattention, such as learning difficulties.

A study has shown positive effects of using the drug methylphenidate in adults diagnosed with ADHD. The temporal auditory processing of these patients under the effect of medication was the same as that of adults without attention deficit. The authors reported that, due to the association between auditory temporal processing and language skills, the beneficial effect of methylphenidate on the adult individual may have positive results in their academic performance[22].

Another study[11] found no significant difference between one evaluation and another, in the CAP tests. Thus, the study concluded that, as it is a new procedure for these individuals, they would have more attention during testing. The authors advised that the CAP evaluations be carried out with medication, to avoid stressful factors for patients and for the evaluator, in addition to allow short breaks between tests, removing earphones and reinforcing instructions. The aforementioned study[11] differs from the present investigation, as the authors found no difference in results between the use of psychostimulant medication in the evaluations.

It is suspected that the learning effect of the tests may be related to the divergences in the results in the studies that tested the effect of the medication. However, the hypothesis that school learning problems in ADHD patients are also factors that can influence the results of the CAP is not ruled out. In addition, the reduced sample can also be a contributing factor to these results.

There is no consensus in the literature regarding neurocognitive associations and dissociations between ADHD and CAPD, which makes it difficult to accurately diagnose the deficits that characterize a particular disorder or its comorbidity[19].

It is known that sustained attention is a complex ability mediated by the prefrontal cortex[3], which allows the individual to start, maintain and finish a task within a certain time interval[4,5], which, in turn, is fundamental in understanding language in real time.

The present study observed, in the SAAAT results, a significant improvement in the performance of the participants after the use of the medication, considering the items inattention and total score of errors. A study carried out with the SAAAT[23], using earphones in free field with normal hearing children, verified the learning effect in the tests, as most children improved in the second test.

As the SAAAT is a relatively new instrument, the literature on its impact is still scarce. Studies[2,3,23] that sought to assess children using the SAAAT observed that the instrument proved to be efficient and highly suggestive in detecting alterations in sustained attention.

Researchers[24,25] have sought to evidence the link between the CAP and children's attention abilities. A study[24] that used the CAPD to evaluate the attention of individuals with ADHD before and after medication demonstrated the improvement in tests after using the psychostimulant, a fact that is in line with the present study. Another study[25] showed that the relationship between inattention and the CAPD is not direct, but that both can be related, as the probability of altering the CAPD increases when associated with inattention.

The present study found that, without the use of medication, five children had changes in one SAAAT item. After use, only three remained with an altered item. Tillery et al.[11] used ACPT to analyze sustained attention and CAP tests in 32 children with ADHD before and after medication and found that, in the CAP tests, there was no improvement in performance after using the medication. However, there was an improvement in the performance of attention/impulsivity in the ACPT test[11]. Thus, the study revealed that the medication seems to act in sustained auditory attention, reducing the symptoms of impulsivity and inattention, according to the results of the ACPT test[11]. This fact also confirms the present research regarding the results found of the SAAAT in the item of inattention, in which a significant improvement in the performance of the patients was observed after the use of the medication.

It is noteworthy that, in the present study, all evaluated children were male, who, according to researchers, usually develops impulse control later, with more symptoms of impulsivity[26]. Another factor that must be taken into account is that these children were between 8 and 10 years old, and that the age factor can influence the impulsivity question. Research[6] observed that the younger the child, the greater the tendency to be impulsive.

In relation to the item total score of errors, therefore, there was also an improvement in performance, as this item is formed by the sum of inattention errors with impulsivity errors. Thus, the improvement in the inattention item directly influenced the improvement in the total error score.

As for the question of vigilance, the results showed no significant variations, indicating that the individuals showed no difference in performance between the beginning and the end of the test, before and after the use of the medication. Researchers[6] pointed out that the decrease in vigilance can appear in conditions that require an attentional level for a long time and that a small decrease is considered normal. However, when errors start to appear due to decrease in vigilance, children tend to be anxious, reflecting on the worsening of their performance. In addition, impulsivity errors can appear due to the long duration of the test.

In the present study, the mean decrease in vigilance was 2.25 before, and 1.87 after using the medication, approaching the normality pattern found by Feniman[6], which is 1.5.

It was also observed that most children presented changes in speech, as well as changes in sustained attention. Moraes et al.[5] confirm the findings of this research, showing that the presence of changes in the auditory attention ability increases the probability of changes in speech, as a result of the greater difficulty these subjects have in dealing with sound stimuli.

Studies that used the SAAAT revealed that, when the aspects of vigilance and sustained attention are changed, one can point to concentration impairment, which can interfere with learning[6], as the present study also indicates. Thus, the auditory attention ability is intrinsically related to performance, acquisition and consolidation of learning, functioning as an essential predictor and basic requirement for achieving and mastering acoustic and phonetic aspects of linguistic structures, especially during the literacy period[2]. Therefore, the use of the SAAAT can contribute in these cases, considering the assertion that the greatest school losses of children, currently, result from inattention[3].

It can also be verified that the SAAAT allows to observe the subjects' behaviors and it deals with relevant and irrelevant stimuli in their environment. The medication seems to influence the improvement of the attentional focus, showing that, after its administration, the children's performance in paying attention and concentrating on a task for a period of time was better, considering the intentional action toward a stimulus, inhibition and resistance to distraction[5]. This result confirms other studies[11,14] that indicated the improvement of attention by stimulating the CNS through the use of medication. However, the possibility that the learning effect has occurred must be considered, as intervals between tests were relatively short.

Treatment using pharmacological drugs in the ADHD population has been increasing year after year, with methylphenidate as the most consumed psychostimulant in the world. The substance acts as a CNS stimulant, increasing the availability of the neurotransmitters dopamine and noripinephrine in the synaptic cleft. During the use of medication, the expected effects are decreased motor restlessness and increased concentration, attention and memory[14]. Furthermore, it is expected to improve the performance of the CAP tests in children with ADHD, after using the medication[14].

It is reinforced that medicalization is not the only possible means of intervention and that, due to the high potential for abuse and dependence on psychostimulant substances, it is necessary to reflect on the use of these drugs, which should be prescribed with caution[14,27]. In addition, the medication can modify behavior in some situations[14]. For these reasons, its use is more indicated in cases low school performance and/or problems with interpersonal relationships are evident[1].

Therefore, diagnosing the attentional mechanisms through instruments that assess attentional performance is quite pertinent in the clinical and school context[23]. When there is a change in this ability, the focus should be on training of attention. However, when impulsivity is the cause of inattention, the child first needs to learn to control the response time, before training attention[28].

Some limitations of this study must be mentioned, such as the difficulty in grouping patients diagnosed with ADHD without other related comorbidities. In addition, there were problems with the supply of the medication Ritalina Comum and Ritalina LA in pharmacies during the data collection period, causing many children to be without the medication, and thus impacting the number of patients in the sample, which was reduced.

Despite these difficulties, the study contributes to the reflection that it is important to evaluate multimodal abilities, such as attention, especially in individuals with ADHD. In this way, it is possible to quantify the benefit of medication in terms of attention, which can also contribute to the implementation of other forms of treatment. Cacace and McFarland[29] recommended multimodal evaluations be inserted in the CAP test battery.

The relevance of this study was to show the effects of medication on the sustained care of children diagnosed with ADHD. It is believed that the psychostimulant medication, when correctly indicated, assists the speech therapist in the accurate diagnosis in the CAP evaluation, as behavioral changes are less evident and hearing abilities can be assessed more reliably. Further research is suggested to assess the correlation between the CAP and ADHD to assist the process of reorganization of the individual, improving their quality of life.

Despite the few studies in the literature on the SAAAT, more studies using this instrument to assess sustained care is deemed of extreme importance, in order to contribute with more appropriate and sensitive instruments for a differential diagnosis and for the delimitation of its clinical use.

CONCLUSION

There was an improvement in the performance of the test evaluating the auditory attentional ability after the use of psychostimulant medication, with emphasis on the item inattention of the SAAAT test.

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