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INEUROPSYCHOPEDAGOGICAL INTERVENTION IN LEARNING PROBLEMS IN ATTENTION DEFICIT HYPERACTIVITY DISORDER

Rosana Moura da Silva
Diogenes Jose Gusmão Coutinho

RESUMO: É na escola que a criança testa suas capacidades físicas, intelectuais e emocionais, dividindo o mesmo espaço físico. Nesse contexto o professor se vê diante de comportamentos desafiadores por parte de alguns alunos como: desorganização, falta de motivação, dificuldade em prestar atenção, problemas em concluir tarefas, agitação em demasia, dificuldade no aprendizado e algumas vezes agressividade, casos complicados, difíceis de serem trabalhados. Um dos casos mais comuns é o Transtorno do Déficit de Atenção e Hiperatividade – TDAH. Surge a necessidade de procurar apoio em especialidades profissionais extraclasse. Será abordado sobre a intervenção da Neuropsicopedagogia nos transtornos de aprendizagem decorrentes do TDAH.

Palavras-chave: TDAH. Transtorno de aprendizagem. Neuropsicopedagogia.

ABSTRACT: It is at school that the child tests his physical, intellectual and emotional capacities, sharing the same physical space. In this context, the teacher is faced with challenging behaviors on the part of some students such as: disorganization, lack of motivation, difficulty in paying attention, problems in completing tasks, excessive agitation, difficulty in learning and sometimes aggressiveness, complicated cases, difficult to be worked. One of the most common cases is Attention Deficit Hyperactivity Disorder – ADHD. There is a need to seek support in extra-class professional specialties. It will be approached about the intervention of Neuropsychopedagogy in learning disorders resulting from ADHD.

Keywords: ADHD. Learning disorder. Neuropsychopedagogy.

1 INTRODUCTION

It is at school that the child tests his physical, intellectual and emotional capacities, sharing the same physical space. In this context, the teacher is faced with challenging behaviors on the part of some students such as: disorganization, lack of motivation, difficulty in paying attention, problems in completing tasks, excessive agitation, difficulty in learning and sometimes aggressiveness, complicated cases, difficult to be worked. One of the most common cases is Attention Deficit Hyperactivity Disorder – ADHD. There is a need to seek support in extra-class professional specialties. It will be approached about the intervention of Neuropsychopedagogy in learning disorders resulting from ADHD.

Generally, students who have learning disorders are labeled incapable, which impairs their school development, often leading to dropping out. How can Neuropsychopedagogy contribute to the work with students who have learning disorders related to ADHD?

Teachers commonly report complaints of low school performance, constant conversations, restlessness, indiscipline, forgetfulness of the material, demotivation during activities, incomprehensible lettering, among others. It is in the school environment thatthe problems originated in ADHD stand out.

Many teachers are not pedagogically prepared to work differently with students who have special learning needs.

Obtaining information about ADHD with the neuropsychopedagogo, can help teachers to work with a more appropriate methodology.

Neuropsychopedagogy will tend to contribute in a valuable way to the structuring of pedagogical strategies in which the student can be motivated to participate, reducing the distraction, creating anenvironment conducive to learning.

Neuropsychopedagogy should act as a facilitator for education professionals to understand what ADHD is, the neurological areas affected, the clinical picture, and may lead to educational practices that bring more significant progress in learning.

2 OBJECTIVES

2.1 General Objective

To analyze the Neuropsychopedagogical intervention in students with Attention Deficit Hyperactivity Disorders.

2.2 Specific Objectives

- Characterize the brain areas affected in ADHD;
- Describe the picture presented by students with ADHD;
- Specify learning problems related to ADHD.

3 JUSTIFICATION

Taking into account the learning difficulties of students with ADHD, as well as those of teachers in working effectively with these students, we have seen how important it is to study

neuropsychopedagogy as a tool that comes to make the associationbetween learning disorders and the respective neurological areas involved and thus establish effective strategies of action.

4.LITERATURE REVIEW

4.1 Brain areas affected in ADHD

Attention deficit hyperactivity disorder (ADHD) is a neurobiological disorder of genetic causes that can accompany the individual throughout his or her life.

It is characterized by symptoms of inattention, restlessness and impulsivity, threehallmarks of the disorder in children and adolescents. According to applied research, it occurs in 3 to 5% of children and follows in their school life.

Scientific studies show that the individual with ADHD has changes in the frontal region and its connectionswith the rest of the brain. The frontal region is one of the most developed in humans compared to other animal species and is responsible for controlling or inhibiting behaviors, the ability to pay attention, memory, self-control, organization and planning.

For Marcos Ferreiro (2009) there are dysfunctional brain regions responsible for the symptoms of ADHD. Children have symptoms such as: inattention. Restlessness, impulsivity and hyperactivity. The neurotransmitters DOPAMINE and NORADRENALINE have important roles in ATTENTION and CONCENTRATION, as well as in related cognitive functions such as motivation, interest, and task learning.

The importance of the prefrontal noradrenergic pathways in maintaining focus and attention, as well as in mediating disposition, fatigue, motivation and interest, is emphasized.

The first altered region is the neurotransmitter-dopamine system, the second altered region is the posterior system (composed of thalamus and parietal lobe), the relevant neurotransmitteris norepinephrine that most influences mood, anxiety, sleep and eating. These neurotransmitters are responsible for passing information between neurons during synapses.

For Solanto (2001), in the neurochemical aspect, ADHD is seen as a disorder in which catecholaminergic neurotransmitters work with low activity, are located in the CNS and have the function of regulating movement, attention and mood.

The functioning of the brain of a child with ADHD is different from a child who does not have a disorder. Doctors and scientists from 23 research centers around the world have observed delayed brain development in ADHD patients.

For CORTES AND CASTELANO (2003) the first studies by MRI (Imagem and Magnetic Resonance) showed several morphological differences between the brain of the individual with ADHD. According to the authors, changes in structural connectivity were detected in the pathways of the right pre-frontal cortex to the basal ganglia, as well as in the pathways that connect the cingulate gyrus to the entorhinal cortex.

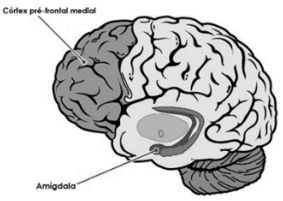

Figura 1. Principais áreas cerebrais afetadas em paciente com Transtorno do Déficit de Atenção/Hiperatividade (TDAH).

4.2 Table presented by students with ADHD

In 1954, Strauss and Lehtinen (1947 *apud* ROTTA, OHWEILLER and RIESGO, 2016) called a syndrome as *Minimal Brain Injury* (MCL) that presentedsymptoms equivalent to what we now know as ADHD,

> [...] it was characterized by irregularities in learning, psychic function, behavior and motor skills. They stated that the child, because he is hypervigilant, that is, because his brain has difficulty controlling the intense reactivity, when exposed to broad and continuous stimulation, cannot control his impulses.(...) On the other hand, they also commented on the existence of another type of child facing the learning situation: the one that draws attention for being slow, torpid, and that is also inattentive, with its attention fixed on situations that, for a normal child, would go unnoticed. (ROTTA, OHWEILLER and RIESGO, 2016. p.275)

We can see that the concern with the diagnosis and consequentlywith the improvement of quality of life of individuals who present the symptoms of ADHD, has been much studied. Over the years and the growth of studies involving ADHD, there have been changes in its description and classification, which has allowed a better understanding of the condition of the affected individuals, in the diagnosis and consequently in the forms of treatment. Rotta, Ohweiller and Riesgo (2016) bring an expanded concept of ADHD:

> [...] a neurobehavioral syndrome with symptoms classified into three categories: inattention, hyperactivity, and impulsivity. Therefore, ADHD is characterized by an inadequate level of attention in relation to that expected by age, which leads to motor, perceptual, cognitive and behavioral disorders. (ROTTA, OHWEILLER and RIESGO, 2016.p.276).

The ADHD classifications and diagnostic criteria are also present in the DSMV, which presents the following concept for ADHD:

> Neurodevelopmental disorder defined by detrimental levels ofattention, disorganization, and/or hyperactivity – impulsivity. Inattention and disorganization involve inability to stay on a task, (...) and loss of materials at levels inconsistent with age or level of development. Hyperactivity – impu lsivity implies excessive activity, restlessness, inability to remain seated, intrusion into the activity of others and inability to wait – symptoms that are excessive for age or level of development. (DSMV, 2014, p.32).

Still according to the DSM-V classifies ADHD with 3 different characteristics, ADHD predominantly hyperactive, ADHD predominantly inattentive and ADHD combined. We must consider that the disorder is only one, the symptoms begin to be presented in childhood and remain until adulthood, however with the appropriate treatment it is possible that there is no permanence of the symptoms that will bring harm to the quality of life of the individual. Understanding the predominance as something that reaches the individual in a differentphase, we understand that the predominance can change throughout life, that is, an individual who was predominantly inattentive in childhood, may present hyperactivity in adulthood.

The literature shows that the prevalence of children with ADHD in Brazil is 3 to 6% of children between 7 and 14 years old, with a higher frequency in boys. Research also shows that in the world the rate of children diagnosed with ADHD in school age is between 3 and 30%, decreasing in adulthood, still according to research, hyperactivity pictures are predominant in boys and more expressive inattention in girls. Research also shows that in cases of ADHD, a portion of 60% have evidence of Oppositional Defiant Disorder (ODD) associated with irritability and mood swings.

About the learning process it is known that ADHD interferes, by affecting the ability to absorb information, due to inattention or hyperkinesis, and may cause problems in the academic life of the student, however, there will not necessarily be a low academic performance configured, so it is important to emphasize that ADHD is not a Learning Disorder (LD), which according to the DSMV(2013), were characterized by:

> persistent difficultiesin learning fundamental academic skills (...) which include accurate and fluent reading of single words, reading comprehension, written expression and spelling, arithmetic calculations and mathematical reasoning (mathematical problem solving). Unlike walking or talking, which are acquired developmental milestones that emerge with brain maturation, academic skills (e.g., reading, spelling, writing, mathematics) need to be taught and learned expletively. Specific learning disorders disrupt the normal pattern of learning academic skills; they are not simply a consequence of a lack of learning opportunity or inadequate school education. (...) Learning difficulties(in AT) are persistent and not transient. In children and adolescents, persistence is defined as limited progress in learning (i.e., absence of evidence that the individual is reaching the same level as peers) for at least six months despite additional help being provided at home or at school. For example, difficulties in learning to read

> isolated words that do not resolve completely or quickly with the provision of instruction in phonological skills or word identification strategies may indicate a specific learning disorder. (DSMV, 2013.p.109)

The diagnosis for ADHD is given clinically. Therefore, it is relevant to investigate the development of some aspects such as language,motor and cognitive, specific to age. And yet, it is necessary to investigate the family history, taking into account previous generations.

4.3 Learning Problems and ADHD

It is a fact that Attention Deficit Hyperactivity Disorder (ADHD) and learning problems affect a child's school performance.

According to a publication by the Neurosaber Institute, it is important to make a distinction between the two. Learning problems are related to the student's difficulty in some function in school life. They originate in brain activity. ADHD can be defined as a neurobiological disorder, with a high influence of genetic load, usually manifests itself in childhood, and can last until adulthood. This disordermay be accompanied by comorbidities such as ODD (Oppositional Defiant Disorder), Depression, GAD (General Anxiety Disorder), among others.

As main learning problems reported in the school environment we have: Dyslexia (difficulty to perform reading), Dyslalia (difficulty in speech, with changes in the normal formation of the phonatory organs, which prevents the formation of certain sounds), Dyscalculia (difficulty for calculations, which prevents the student from performing mathematical operations and identifying the function of the signals.

The most common features of ADHD are restlessness, inattention, and the behaviors of impulsivity. There is the combined ADHD and the inattentive. The combined is the one that has hyperactivity and associated compulsivity. Theinattentive is characterized by a lack of attention. The inattentive type is more likely to have pedagogical difficulties, presenting problems with reading, literacy, among others.

A study by Suzan Meyers (2000) points out that 65% of children with ADHDhave difficulties reading, writing and calculus.

According to an article by Dr. Rosemary Tannock in 2016, inattentive ADHD has 40% more difficulty in math, 90% more difficulty in reading, and 80% more difficulty in writing. The combined ADHD shows the following data: 20% reading, 40% writing and 30% math.

Also according to Dr. Tannock (2016), the ADHD carrier is slow in speed and processing, presents a different rhythm from others, says that it is necessary to have patience and stimulate the reasoning of thecriança.

According to (ROHDE et al., 2000), not every individual with ADHD has learning difficulties. Attentional difficulties can be compensated by the use of good intellectual potential, interest in knowledge and adequate didactics.

According to Brown (2007), the fact of growing up with the disorder without any treatment can expose the individual to daily frustrations and embarrassments that cause enormous damage to self-confidence and personal behavior.

According to the Brazilian Association of Attention Deficit (2011), the treatment of ADHD should be multimodal, that is, a combination of medications, guidance to parents and teachers, as well as specific techniques taught to the carrier.

The neuropsychopedagogical orientation is of great importance, because it combines three areas of knowledge, enabling a broad view of ADHD, contributing to follow-up with more significant results of cases, both at school and in the family and social environment.

5 METHODOLOGY

The following research seeks to analyze Neuropsychodagógic intervention in learning problems resulting from Attention Deficit Hyperactivity Disorder (ADHD), to perform it we will use a bibliographic analysis research. Segundo Gil (2008): "The main advantage of bibliographic research lies in the fact that it allows the investigator to cover a much wider range of phenomena than that which he could search directly."

To achieve the objectives presented in the introduction, we will develop a script for carrying out the readings, Salvador (1986) stresses that it is necessary to perform successive readings of the material from which the data necessary for the research will be taken.

To present the results of the research, we will perform an interpretive reading, which aims to relate the data obtained in the readings carried out throughout the research, with the problem to which our research seeks an answer. We estimate the deadline of five months to carry out the research.

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