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Research Article

Conners Test for Screening of Traits Suggestive of Attention Deficit and Hyperactivity Disorder in Healthy School Children

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Abstract

Attention deficit hyperactivity disorder (ADHD) dysfunction of neurobiological origin manifested by immaturity in the systems that regulate the level of movement, impulsivity and attention in children and adolescents who suffer it. The study is framed under the non-experimental design of Field, descriptive level, using live sources taking the information in a single moment of time, the present, contemporary transectional design allowing the application of the Conners test in healthy schoolchildren in the Private Educational Unit "San José Maristas". July – August 2022. Maracay – Aragua. To detect traits suggestive of attention deficit hyperactivity disorder in this group of schoolchildren applied by parents and teachers. Obtaining as a result that the most prevalent sex is male in more than 70% of schoolchildren. There is no difference between the score established by both parents and teachers to establish the orientation of suspected cases of children with ADHD, observing differences in the clinical manifestations observed by parents, greater emphasis on inattention, hyperactivity and impulsiveness, in relation to teachers where they register behaviors related to greater frustration, impulsive, fighting, do not respect the rules and defy limits.

***Keywords:** Attention Deficit Hyperactivity Disorder, Behavior, Diagnostic Orientation*

Introduction

Attention deficit hyperactivity disorder (ADHD) has been identified by the World Health Organization (WHO) [1] as a priority concern based on its prevalence, its potential to cause disabilities, its therapeutic possibilities of recovery and its long-term consequences. It is a neurobiological disorder that manifests itself in self-regulation difficulties in three specific aspects: the ability to maintain attention; control of impulsivity and degree of activity. Diagnostic criteria of ADHD, mention hyperkinetic disorders, being the main features attention deficit and hyperactivity, which produce uninhibited social relationships, antisocial behavior and low self-esteem.

In this order of ideas, the symptom of inattention is manifested in that the child has difficulties to focus and maintain attention while playing or performing any type of activity, including school, also shows an easy distraction and boredom in their occupations that prevent the successful completion of what has already begun. The problems of hyperactivity and impulsivity are appreciated because the infant moves excessively in inappropriate places and situations, is impatient, it is difficult for him to stop his actions.

On the other hand, in pediatrics, it is considered the most common neuro-psychiatric pathology in the global population; some authors [2] estimate that its prevalence is 5.29% worldwide, accounting in the United States for one in eleven children between 5 and 17 years old, with a 2:1 ratio between males and females respectively. However, there are authors who attribute this difference to the fact that in boys hyperactivity is more marked and in girls inattention, a condition that is relatively more unnoticed.

Currently, there are instruments designed and validated by specialists for the evaluation of symptoms in children, adolescents and adults, among the most used are those published by the American Psychiatric Association (DSM-5) and the one recommended by the WHO (ICD-10, International Classification of Diseases until 2017); as well as other instruments to assess the disorders that occur most frequently together with ADHD. However, it is important to define that the scales, despite their usefulness, do not have absolute power within the definitive diagnosis, but they do represent an excellent support tool.

Because ADHD is cataloged among the first mental health problems that affects the population of children, adolescents and adults, and that leads to severe implications in the family, school, work and socioeconomic environment of individuals who suffer from it, it is considered the realization of the present study with the application of the Conners Test for the screening of features suggestive of attention deficit and hyperactivity disorders in schoolchildren healthy of the Private Educational Unit "San José Maristas". July-August 2022. Maracay – Aragua, so the following questions arise that are the reason for the investigation:

What is the predominant sex of schoolchildren with features suggestive of attention deficit hyperactivity disorders?

What is the rate of schoolchildren with features suggestive of attention deficit and hyperactivity assessed by teachers?

What is the rate of schoolchildren with features suggestive of attention deficit hyperactivity rated by parents?

What are the behaviors observed in schoolchildren who present features suggestive of attention deficit and hyperactivity according to the assessment of parents and teachers?

Materials and Methods

Attention deficit hyperactivity disorder (ADHD)

It is a childhood behavior disorder, of genetic basis, in which various neuropsychological factors are involved, which cause attentional alterations, impulsivity and motor overactivity in the child. It is a generic problem of lack of self-control with broad repercussions on their development, their learning capacity and their social adjustment.

Since 1902, when the disorder was first defined, until now there have been diverse proposals for conceptualization, diagnosis and treatment. Attempts to determine a prevalence rate are affected by a number of factors: variations in the clinical classification of diagnostic criteria (which has affected the number and combination of signs required for the diagnosis of ADHD: DSM-II, III, III-R, IV3, IV-TR4, ICD-9, 10) [3,4], the diagnostic evaluation methods used, the source of information (parent, teachers, caregivers), the type of sample (clinical, population) and sociocultural characteristics (sex, level of maturity and age, socioeconomic level, etc.).

The clinical approach assigns subjects to specific diagnostic categories. There are different classifications in this regard, although DSM-IV and ICD-10 have made efforts to converge. Currently, the DSM-IV [5] distinguishes three subtypes: combined (ADT-C), inattentional predominance (ADT-I) and hyperactivity/impulsivity predominance (ADHD); As the main novelty with respect to other diagnostic systems, it requires that the symptomatology occurs in two or more different environments.

In the ICD-10, the defining characteristics are extreme overactivity and inattention that manifest themselves in different situations (pervasive) and includes as a differential data of the DSM-IV that the symptoms of attention and motor overactivity should be observed directly and not based exclusively on the questionnaires of parents and teachers Despite the consensus in the scientific community about the biological substrate of this disorder, So far there are no clinical or laboratory markers that can clearly identify it, adding further confusion to its nosological location. If ADHD is considered a biologic disorder, it should have a relatively stable prevalence band.

Prevalence by age, sex and subtypes

Regarding gender differences, the trend is clearly favorable to a predominance of the disorder in males: according to the DSM-IV, 9:1 in the clinical population and 4:1 in the normal population. Both in the works of Du Paul et al [6] and Buitelaar and Engeland [7], the differences appear more attenuated, but always favorable to males. These differences seem to disappear in adolescents with ratios close to 1:1 (males: 47.8%; females: 52.2%). Another study also shows that the prevalence of the disorder remains stable in females, while in males it seems to decrease significantly with age. In this sense, in some reviews on the subject it has been pointed out that the fact of not using differential criteria by gender favors an underdiagnosis of girls.

Conners Test

The Conners scales were designed by C. Keith Conners in 1969. They are possibly the most used instruments in the evaluation of ADHD. Although these scales were developed to assess changes in the behavior of hyperactive children receiving drug treatment, their use has extended to the pre-treatment assessment process.

The Conners Parent Scale or Test (CPRS-93). The Conners scale for parents contains 93 questions grouped into 8 factors:

1. Behavioral alterations.
2. Fear.
3. Anxiety.
4. Restlessness-Impulsivity.
5. Immaturity- learning disabilities.
6. Psychosomatic problems.
7. Obsession.
8. Antisocial Behaviors and Hyperactivity.

Conners Scale or Test for Teachers (CTRS-39). The Conners scale for teachers is much shorter and is composed of 39 questions divided into 6 factors:

1. Hyperactivity.

2. Behavioral problems.

3. Emotional lability.

4. Anxiety-Passivity.

5. Antisocial behavior.

6. Sleep difficulties.

Each section of the scales contains symptom descriptions that correlate with the DSM-IV diagnostic criteria. The application of the Conners scale is very simple and allows parents and teachers to identify those students with ADHD, so that they can be guided to receive timely management that facilitates their school performance and quality of life within their families. From the pharmacological point of view, it should be known that stimulants usually calm these subjects and tranquilizers make them more nervous. [8]

Abbreviated Conners test

The objective of this test is to evaluate the presence of symptoms associated with hyperactivity.

The abbreviated version contains 10 items whose answer options are "nothing", "little", "quite" or "much". There are two ways, one aimed at parents and one at teachers.

Application: This questionnaire is self-applied, therefore, it must be answered directly by the mother, father or main caregiver and the head teacher of the child evaluated. So, for each student, two Interpretation questionnaires will be received.

Once the questionnaire has been answered, the health professional must assign value to the answers given by the parents or teacher, according to the following criteria: Nothing = 0, Little = 1, Quite = 2, Much = 3.

Once the answers have been evaluated, the scores obtained in each of the questionnaires (for teachers and for parents) are added independently.

For each questionnaire, a score of 15 points or higher indicates suspected risk. In this case, a medical consultation should be referred for diagnostic confirmation.

Results

In this study, the results obtained from the research are presented by processing the content analysis performed on the matrices, and then applying descriptive statistics to categorized data of the population studied. These results were obtained through the application of the Conners Test for parents and teachers to 60 schoolchildren attending Basic Education of the Private Educational Unit "San José Maristas" July-August 2022 in Maracay-Aragua.

Table 1: Frequency Distribution and Percentages. Sex dimension.

Sample of 60 schoolchildren attending Basic Education

Dimension	Categories	Indicators		Frequency		Porcentage		Total
Sex	Grade	Male	Female	Male	Female	Mal	Fem	
	1º grade	7	3	7	3	70%	30%	100%
	2º grade	9	1	16	4	90%	10%	100%
	3º grade	7	3	23	7	70 %	30%	100%
	4º grade	10	0	33	7	100%	0%	100%
	5º grade	10	0	43	7	100%	0%	100%
	6º grade	8	2	51	9	80%	20%	100%
	Total	51	9	51	9	-	-	-

Source: Application of the Conners Test (July-August 2022).

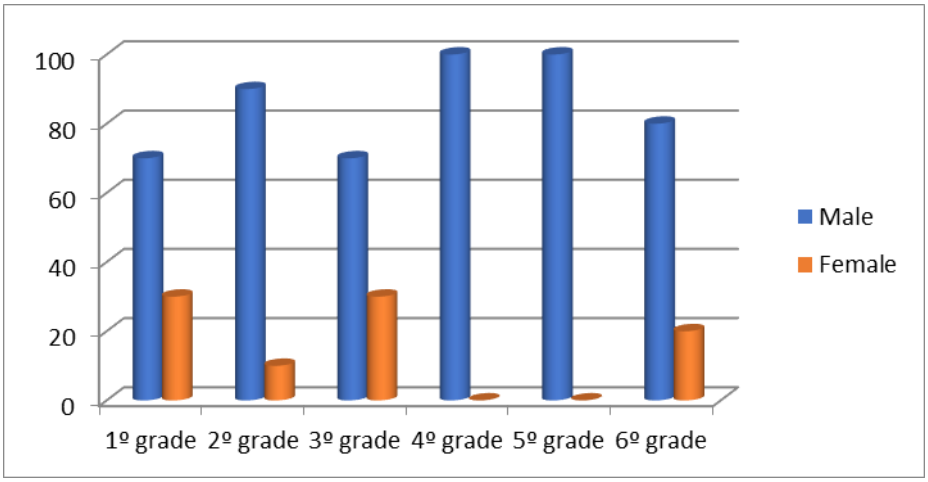

Figure 1: *Frequency Distribution and Percentages. Sex dimension. Sample of 60 schoolchildren attending Basic Education.*

Source: Application of the Conners Test (July-August 2022).

In relation to Table No. 1, related to the sex of highest prevalence in cases of Attention Deficit Hyperactivity Disorders, it is observed that in all grades of Basic Education the male sex is the most predominant specifically between the 4th and 5th grade, according to an article published in Mayo Clinic (2019) [9], Where symptoms are reported to begin before age 12 and, in some children, are noticed as early as age 3, it occurs more often in men than in women, and behaviors may be different in boys and girls. This strengthens the results obtained and that respond to the specific objective set, representing an important health problem due to its high prevalence during childhood, affecting 5-7% of the school population, being more frequent among boys; its early, disabling and chronic onset (the disorder begins in childhood, continues during adolescence and adulthood in up to 40-70% of cases).

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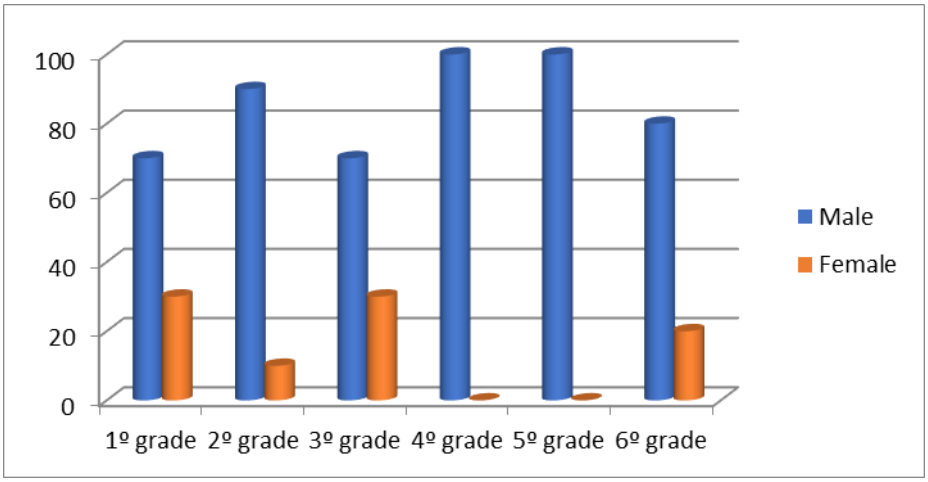

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Dimension	**Categories**	**Indicators**		**Frequency**		**Suspicion ADHD pts**	
Evaluation by the Parents	Grade	Male	Female	Male	Female	16-18	19-21
	1º grade	2	0	2	0	2	0
	2º grade	4	0	6	0	3	1
	3º grade	1	0	7	0	1	0
	4º grade	4	0	11	0	3	1
	5º grade	3	0	14	0	2	1
	6º grade	1	0	15	0	0	1
	Total	15	0	15	0	11	4

Source: Application of the Conners Test for Parents (July-August 2022).

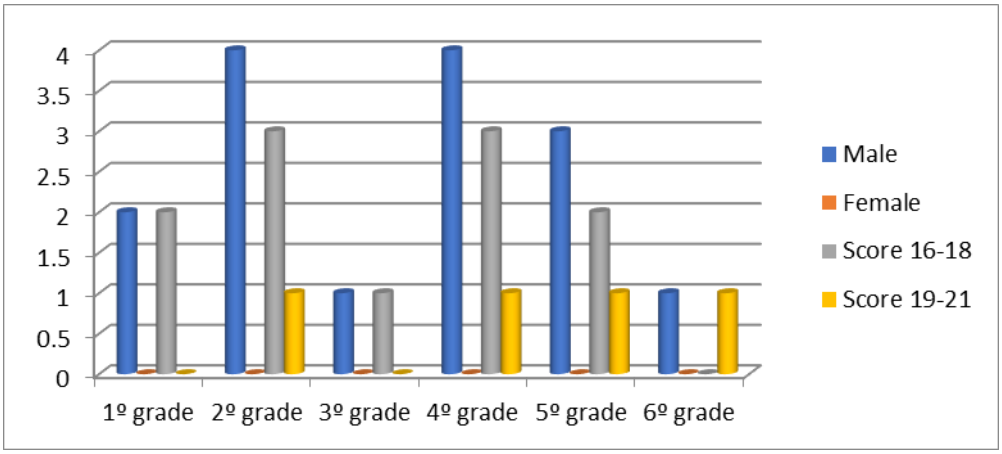

Figure 2: *Frequency Distribution and Percentages. Dimension Evaluation for Parents.*

Sample of 60 schoolchildren attending Basic Education.

Source: Application of the Conners Test for Parents (July-August 2022).

In relation to Table No. 2 shows that in the distribution of frequencies and percentages according to the evaluation of the Conners Test carried out by parents, and in accordance with the above, parents rate hyperactivity in boys higher, fact that confirms the study of Cáceres and Herrero (2011) [10], in which these scales were correlated in relation to sex, and it was found that tutors tend to score children with a higher rate of hyperactivity, in the same way Herrero, Castellar, Casas, Hierro and Jiménez (2006) [11], affirm that there is a certain predisposition of families to err in the processes of orientation of children with ADHD, and the presence of symptoms of inattention and hyperactivity together, which in turn affects greater family dysfunction. The evaluation of the Parents in some occasions can go unnoticed: important symptoms in girls by placing greater emphasis on hyperactivity problems, going unnoticed the diagnosis of ADHD and overdiagnosing these problems in boys of the male sex.

Table 3: Frequency Distribution and Percentages. Dimension Evaluation for Teachers. Sample of 60 schoolchildren attending Basic Education.

Dimension	Categories	Indicators		Frequency		Suspicion ADHD pts	
Evaluation by the Teachers	Grade	Male	Female	Male	Female	16-18	19-21
	1º grade	2	0	2	0	0	2
	2º grade	5	0	7	0	2	3
	3º grade	1	0	8	0	1	0
	4º grade	4	0	12	0	2	2
	5º grade	3	0	15	0	2	1
	6º grade	1	0	16	0	0	1
	Total	16	0	16	0	7	9

Source: Application of the Conners Test for Teachers (July-August 2022).

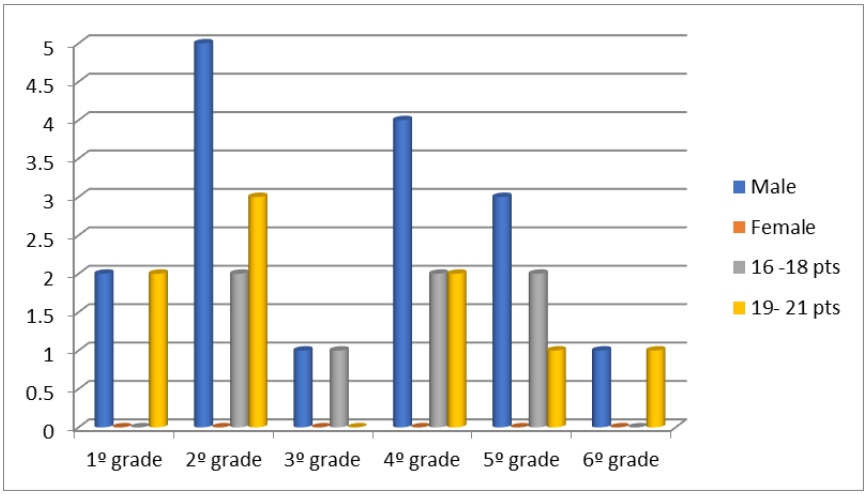

Figure 3: *Frequency Distribution and Percentages. Dimension Evaluation for Teachers. Sample of 60 schoolchildren attending Basic Education.*

Source: Application of the Conners Test for Teachers (July-August 2022).

In relation to Table No. 3, related to the Evaluation of the Conners Test for Teachers, Orjales (2001) [12] states that the level of tolerance of the informants establishes differences that can determine the level of acceptance of the behavior by the adult, which can affect the way it is reported. however, teachers tend to show hyperactivity in children more frequently, so when making the analysis as proposed by Cáceres and Herrero (2011) [10], the phenomenon is explained by the variability of behavior projected by the child according to the context in which he enters. Likewise, each observer presents different expectations, in relation to the time they share with the children and the interactional processes forged with them, thus differentiating the expectations of the school environment from those of the family.

Table 4: Distribution of Frequencies and Percentages. Dimension Diagnostic Guidance of Parents and Teachers. Sample of 60 schoolchildren attending Basic Education.

Dimension	Categories	Evaluation Parents		Porcentage		Evaluation Teachers		Percentage	
		Yes	No	Yes	No	Yes	No	Yes	No
Diagnostic Orientation	Suspicion for ADHD	15	45	25%	75%	16	44	26 %	73%

Source: Application of the Conners Test for Parents and Teachers (July-August 2022).

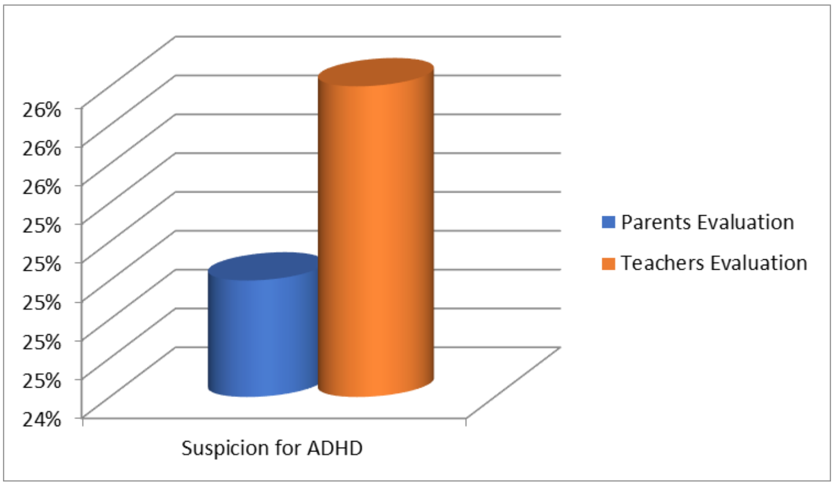

Figure 4: *Frequency Distribution and Percentages. Diagnostic Guidance Dimension for Parents and Teachers. Sample of 60 school children attending Basic Education.*

Source: Application of the Conners Test for Parents and Teachers (July-August 2022).

With respect to Table No. 4 relating the evaluation carried out by parents and teachers, no significant difference was established between the two groups, agreeing with Montiel and Peña (2001) [13], refer that the discrepancies between parents and teachers cannot be attributed to failures in the objectivity of the informants or in the scales used. thereby inviting to explain the situation to the characteristics of the interaction processes of the infant with the evaluator, which can mediatize the qualification of the questionnaires. Giraldos (2016) [14] conducted a study entitled Correlation between the results of Conners parent scales and Conners teacher scales in Manizaleño children diagnosed with ADHD, which indicates a greater tendency to report symptoms of attention deficit hyperactivity disorder by parents in relation to teachers, which can be explained as proposed by Servera (2004) [15], Because parents are less likely to compare the behavior and performance of their children with other sources of references in relation to teachers, which can bias the subjectivity with which parents rate the questionnaires.

Table 5: Distribution of the Score Awarded in Children with Suspected ADHD. Dimension Evaluation by Teachers. Sample of 60 schoolchildren attending Basic Education.

Diagnostic Orientation										
Evaluation by Teachers										
Children's Behaviors										
Excessive restlessness	Unpredictable explosions	Distraction	Bothers	Angry	Change of mood	Uneasy	Impulsive	Doesn't finish homework	Frustration	Total
0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2	2	2	2	1	2	3	3	2	2	21
1	1	3	2	1	2	3	3	2	3	21
2	2	3	3	1	1	2	2	3	2	21
1	1	3	2	1	1	3	3	2	1	18
1	1	2	3	1	1	3	3	2	2	19
1	1	3	2	1	2	2	2	2	2	18

2	2	2	3	1	2	2	2	2	2	20
1	1	2	1	1	1	3	3	2	2	17
1	1	3	2	1	1	3	2	2	2	19
2	2	2	1	1	1	3	3	3	1	17
2	2	2	2	1	1	3	2	1	2	19
2	2	3	2	1	1	3	2	2	2	20
1	2	2	2	1	2	2	2	2	1	17
1	1	3	1	2	2	2	2	2	1	17
2	2	2	2	1	1	3	3	2	2	20
01-Aug	01-Jul	02-Aug	01-Mar	Jan-14	01-Sep	02-May	02-Aug	01-Jan	¼	
02-Jun	02-Aug	03-Jul	02-Sep	02-Jan	02-Jun	03-Oct	03-Jul	02-Dec	02-Sep	
			03-Mar					03-Feb	03-Jan	

Source: Application of the Conners Test by Teachers (2022)

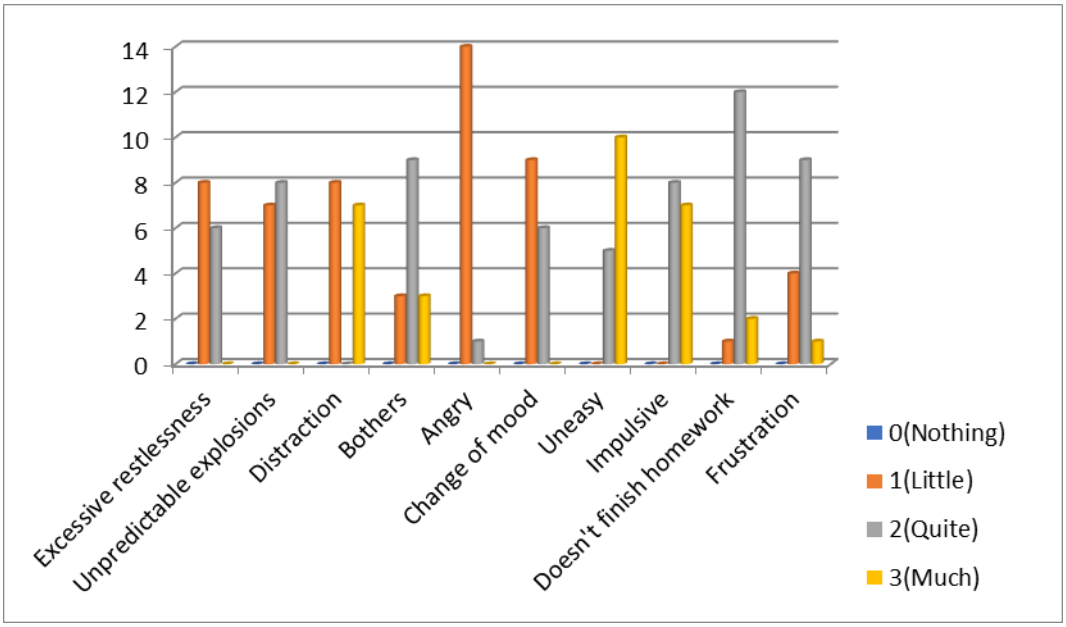

Figure 5: *Distribution of the Score Awarded in Children with Suspected ADHD. Dimension Evaluation by Teachers. Sample of 60 schoolchildren attending Basic Education.*

In relation to Table No. 5, corresponding to the Diagnostic Orientation carried out by Teachers during the application of the Conners Test, teachers describe children with this disorder as restless and distracted, they are in constant movement, it seems that they do not listen when they are spoken to, They talk too much and interrupt, lose their tools, start activities and do not finish them, have problems tolerating frustration, are impulsive, fighters, do not respect the rules and challenge limits, correlating with the results obtained, where it is observed among the most frequent behaviors, that children who get angry frequently are impulsive and easily frustrated, Inattention affects class work and academic performance, impulsive symptoms cause the breakdown of family, school and interpersonal norms and rules, which generates a new challenge for reflection, on new methodologies and strategies that ensure adaptation to the school context of these students.

Table 6: Distribution of Scores Awarded to Children with Suspected ADHD. Dimension Evaluation by Parents. Sample of 60 students attending basic education.

Diagnostic Orientation Evaluation by Parents										
Children's Behaviors										
Is Impulsive	Is crybaby	Moves more than usual	Does not sit still	Is destructive	Don't finish things	Easily distracted	Change moods	Gets frustrated	Bothers other children	Total
0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2	1	3	3	1	1	2	1	2	1	17
2	2	2	2	0	2	2	1	2	1	16
1	2	3	3	1	2	2	1	2	1	18
3	2	3	2	2	1	2	1	0	1	17
2	1	2	3	2	1	2	2	1	2	18
2	0	3	3	1	2	3	1	2	1	19
2	2	3	2	1	1	2	1	1	2	17
2	0	2	2	1	3	3	1	3	1	18
2	0	2	2	1	3	3	1	3	1	18
2	0	3	3	1	1	3	1	2	0	16
2	0	3	3	2	2	3	1	3	1	19
2	0	3	3	2	1	2	0	2	1	16
3	1	3	3	1	2	3	2	2	1	21
2	1	2	2	1	2	3	2	2	1	18
3	1	3	3	1	2	2	1	2	1	19
01-Jan 02-Nov 03-Feb	0/6 01-Apr 02-Apr	02-May 03-Oct	02-Apr 03-Sep	0/1 01-Sep 02-Apr	01-Jun 02-Jul 03-Feb	02-Aug 03-Jul	0/1 01-Nov 02-Mar	0/1 01-Feb 02-Sep 03-Mar	0/1 01-Dec	

Source: Application of the Conners Test by Parents (2022)

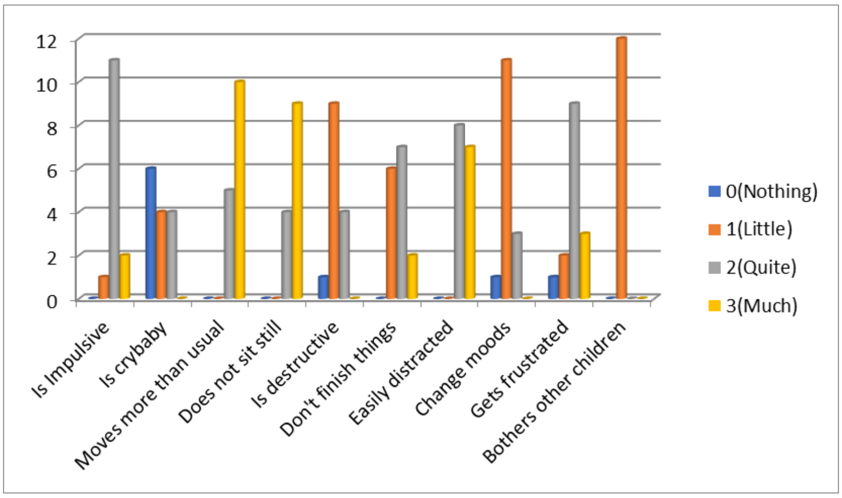

***Figure 6:** Distribution of Scores Awarded in Children with Suspected ADHD. Evaluation by Parents. Sample of 60 schoolchildren attending Basic Education.*

Source: Application of the Conners Parents Test (2022)

In Table No. 6, corresponding to Diagnostic Guidance, specifically on the behaviors observed by children during the evaluation of the Conners Test applied by parents. (Amador, Idiazábal, Sangorrín, Espadaler and Forns, 2002) [16], found that mainly parental information is very useful for diagnosis. (Seabra-Santos & Gaspar, 2012; Martoni et al., 2016) [17,18], with parents reporting a higher level of symptomatology in relation to hyperactivity and impulsivity. These findings agree with the study conducted where hyperkinetic behavior is related to the most observed behaviors.

Discussions

In relation to the sex with the highest prevalence in cases of Attention Deficit Hyperactivity Disorders, it is observed that in all grades of Basic Education the male sex is the most predominant, specifically between the 4th and 5th grade, affecting 5-7% of the school population, being more frequent among boys; its early, disabling and chronic onset.

It is observed that according to the evaluation of the Conners test carried out by the parents and in accordance with the above, parents can go unnoticed, important symptoms in girls, being imperceptible the diagnosis of ADHD, and over diagnosing these problems in children of the male sex, which is related to the results obtained.

In relation to the Evaluation of the Conners Test for Teachers, teachers tend to show more frequently hyperactivity in children, so when doing the analysis as proposed by Cáceres and Herrero (2011) [10], the phenomenon is explained by the variability of behavior projected by the child according to the context in which he enters, Each observer presents different expectations in relation to the time they share with children, and the interactional processes forged with them.

With regard to the Diagnostic Orientation carried out by the Teachers, they describe children with this disorder as restless and distracted, they are in constant movement, they do not seem to listen when they are spoken to, they talk too much and interrupt, they lose their tools, they start activities and do not finish them, they have problems tolerating frustration, they are impulsive, fighters, they don't respect the rules and defy boundaries.

The Diagnostic Orientation specifically on the behaviors observed by the children applied by the parents, are those who report a higher level of symptomatology in relation to hyperactivity and impulsivity.

Conclusion

After having completed this research work, and subsequent application of the Conners Test to screen for traits suggestive of ADHD and hyperactivity in healthy schoolchildren, at the San José Maristas Private Educational Unit July-August 2022. Maracay - Aragua, reference Due to the more predominant sex in children with attention deficit hyperactivity disorder, it is important not to overestimate the clinical manifestations that can be observed in both sexes, especially passing unnoticed behaviors in the female sex, since the earlier the diagnosis is made, the better forecasts and evolution.

Consequently, after the application of the Conners Test by parents and teachers in healthy schoolchildren, we can conclude that it is one of the most used tools in clinical practice to evaluate the symptoms and behaviors associated with ADHD, for which it is suggested its application in healthy schoolchildren at the level of the different educational institutions, for timely management by specialists in the area.

At the behavioral level, it is evident that the application of the Conners Test must be carried out jointly by parents and teachers, since each group in particular observes characteristics in the behavior of children, which are part of the clinical manifestations, and which vary from according to the environment from which they are observed, establishing a diagnostic orientation and their timely referral.

In general lines, medical personnel are urged to follow continuous and preventive medical education in health institutions, communities and schools to encourage and become aware that these children will need greater support and adult supervision to consolidate learning and optimize their performance.

Conflict of Interest

The author declare no conflict of interest.

Acknowledgement

The author would like to thank Prof. Erodita Angel, Principal of the Private Educational Unit “San Jose Maristas”

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