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RESEARCH ARTICLE

ASSOCIATION BETWEEN ACADEMIC PERFORMANCE AND SUSPECTED ADHD IN CHILDREN FROM AN ELEMENTARY SCHOOL WITHIN THE AGEB OF FMU 61

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Abstract

Objective.To analyze the association between academic performance and suspected ADHD in children from a primary school belonging to the AGEB of the Family Medicine Unit (UMF) 61.

Material and methods. Cross-sectional, observational, and analytical study; it was carried out with teachers and parents of 258 children aged 6 to 11 years in a primary school in Córdoba, Veracruz. Data from report cards were collected, and a Conners questionnaire was applied to parents and teachers.

Results. An analysis was conducted that allowed comparing the performance of students with and without suspected ADHD using the chi-square statistic = 3.014 and a p = 0.222, observing that there is no association between suspected ADHD and low academic performance.

Conclusions. No evidence of an association between suspected ADHD and low academic performance was found in the studied population. Studies with larger samples and clinical diagnostic methods are required to confirm these findings.

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Introduction:-

Attention-Deficit/Hyperactivity Disorder (ADHD) is one of the most common neurobehavioral and neurodevelopmental disorders worldwide, affecting adults but primarily children[1]. Globally, ADHD affects 2% to 7% of children[2], with the most common age of onset being between 7 and 12 years[3]. Prevalence varies by geographic region, with reported rates of 9.4% in the United States, 7% in Western countries, and a range of 1.6% to 17.9% in India.[4]

In Latin America, the prevalence ranges from 3% to 7%, affecting approximately 36 million people [5]. In Mexico, reported prevalence rates are between 3% and 5%, representing 1.5 million children under the age of 14 [6]. It is more common in males than in females, as boys tend to exhibit more disruptive or externalizing symptoms, whereas girls show a higher prevalence of internalizing disorders, such as anxiety [7,8,9].

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A clear association has been demonstrated between ADHD symptoms and poor academic performance [10]; affected individuals are more likely to receive low grades, repeat a school year, or drop out of school. One study found that children with ADHD were one year behind in reading and mathematics compared to third-grade peers without the disorder [11,12.] Similarly, adolescents with ADHD lagged 2.5 years behind in reading and 3 years behind in mathematics compared to their classmates without the condition [13,14].

Therefore, this study aims to analyze the association between academic performance and suspected ADHD in children from an elementary school located within the AGEB (Basic Geo-statistical Area) of Family Medicine Unit (UMF) 61.

Methods:-

Study design:-

The study employs a cross-sectional, observational, and analytical design.

Participants:-

This study was conducted in the city of Córdoba, Veracruz, between June 1 and August 31, 2025.The study population comprises parents and teachers of children aged 6 to 11 attending the Francisco González Mena morning primary school and the Delfino Valenzuela afternoon primary school in Córdoba, Veracruz—schools located within the Basic Geostatistical Area (AGEB) of Family Medicine Unit No. 61.No sample size calculation was performed, as the entire student population of both schools—196 students at the Francisco González Mena morning primary school and 142 students at the Delfino Valenzuela afternoon primary school—was included in order to screen for suspected ADHD.Of a total of 338 children, 21 were excluded because they were outside the study's age range: one child was 5 years old, one was 14 years old, and 19 were 12 years old. Additionally, two children with a confirmed diagnosis of ADHD were excluded, and 57 children whose parents did not agree to their participation in the study were also excluded.Variables considered in this research included age, sex, grade level, and academic performance, with the aim of determining the prevalence of suspected ADHD, identifying the average age at which suspicion of the disorder arises, and classifying the grade level where it is most prevalent.

Inclusion criteria:-

Parents and teachers of children aged 6 to 11 attending primary schools within the UMF 61 AGEB (specifically the Francisco González Mena morning primary school and the Delfino Valenzuela afternoon primary school) who are in grades 1 through 6 and present on the days questionnaires were administered; and children who have a report card for the 2024–2025 academic period.

Exclusion criteria:-

Surveys regarding children with a diagnosis of ADHD, children receiving medication that alters anxiety and/or hyperactivity profiles, and children with neurological function impairments; surveys completed by teachers of children with a diagnosis of ADHD, children receiving medication that alters anxiety and/or hyperactivity profiles, and children with neurological function impairments.

Procedure:-

This study was conducted at the Francisco González Mena Morning Primary School and the Professor Delfino Valenzuela Afternoon Primary School, with prior authorization from the principal of both schools. A Conners scale questionnaire was administered to all teachers and students' parents, subject to prior consent. Completion of each questionnaire took an average of approximately 15 minutes.

All study participants were administered the Conners' behavior questionnaire—one version for parents and another for teachers. This questionnaire consisted of 10 questions regarding the child's behavior, with response options of "not at all," "a little," "pretty much," or "very much," as appropriate. The International Mexican Neurology Association establishes that a score exceeding 17 points indicates suspected ADHD in boys, while a score exceeding 12 points indicates suspected ADHD in girls.

Agreement between the scores obtained from the Conners scales administered to parents and teachers was assessed using Cohen’s kappa coefficient. For this analysis, the scores obtained from both informants were dichotomized (presence or absence of suspected ADHD), considering the cutoff points established according to the sex of the schoolchildren. Subsequently, a 2 × 2 contingency table was constructed to compare the classifications provided by both evaluators for the same participants. Cohen’s kappa coefficient was used to estimate the degree of agreement

between the assessments, adjusting for the proportion of agreement attributable to chance. A statistical significance level of 0.05 was considered.

Academic performance was assessed using report cards from the 2024–2025 academic year, with the following average score classifications: 6 or lower (low performance), 7 to 8 (average performance), and 9 or higher (good performance).

Once collected, the data were entered into a database. A cross-sectional, observational, analytical study was conducted on the population of children aged 6 to 11 years to analyze the association between academic performance—based on report cards issued by the SEP (Secretariat of Public Education)—and Conners' scale results for those identified as having suspected ADHD.

Statistical analysis:-
A descriptive analysis of the data (measures of dispersion and central tendency) was performed to compare the variables and characteristics of the Conners Scale (parent and teacher versions) between the two groups. The chi-square test was used to evaluate the association between academic performance and test results; a p-value < 0.05 was considered significant. All analyses were conducted using SPSS software (version 22), and data were plotted using GraphPad Prism 10 statistical software.

Ethical considerations:-
This research is based on good clinical practice and adheres to the recommendations of the Pan American Health Organization and the Declaration of Helsinki, as well as the General Health Law and regulations governing research. In accordance with these principles, this study requires informed consent from the minors' parents and the teachers; patient data confidentiality will be guaranteed, and no personal data will be used.
This study was approved by the Local Health Research Committee 3101, H. General Regional Hospital, under institutional registration number R-2025-3101-034. COFEPRIS Registration No. 17 CI 30 118 018; CONBIOÉTICA Registration No. CONBIOÉTICA 30 CEI 005 2018082.

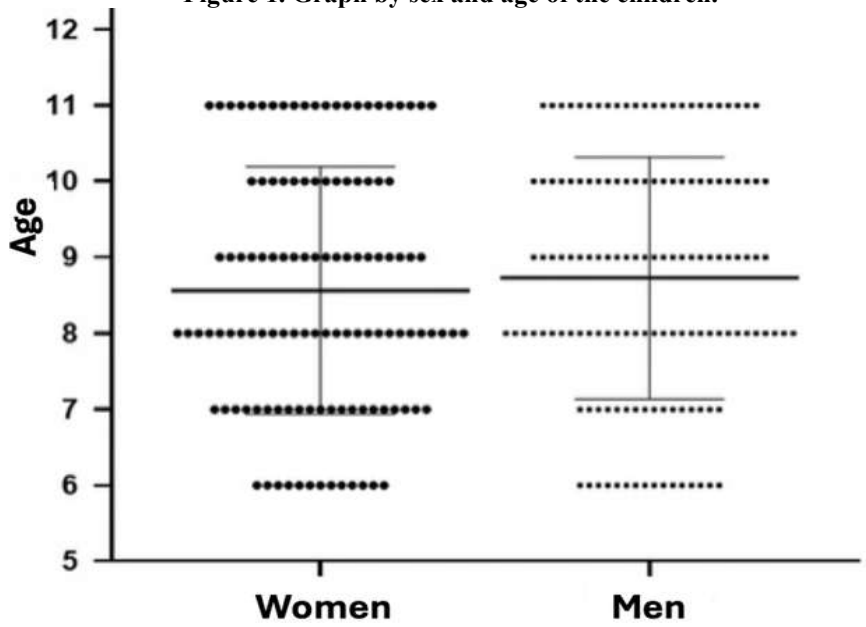
Results:-

Of the total school population of 338 children, 21 were excluded because they were outside the study's age range: one child was 5 years old; one was 14 years old, and 19 were 12 years old. Additionally, two children with a previous diagnosis of ADHD were excluded, and 57 were excluded because they did not agree to participate in the study. Therefore, a total of 258 children were included in the study.

Surveys were administered to 16 teachers—9 from the morning shift and 7 from the afternoon shift—and to 258 parents who agreed to participate in the study protocol. Conners surveys were completed for teachers and parents associated with the Francisco González Mena Morning Elementary School and the Professor Delfino Valenzuela Afternoon Elementary School; the sample included parents and teachers of children aged 6 (11.2%), 7 (14.3%), 8 (23.3%), 9 (17.8%), 10 (15.5%), and 11 (17.8%) years. The mean age was 8.66 years, the median was 9, the mode was 8, and the standard deviation (SD) was ±1.605.

Of the 258 children included in the study, 140 (54.3%) were male and 118 (45.7%) were female. For females, the mean age was 8.72 years, the median was 9 years, the mode was 8 years, and the SD was ±1.69. For males, the mean age was 8.77 years, the median was 9 years, the mode was 8 years, and the SD was ±1.58 years.**(Figure 1).**

Figure 1. Graph by sex and age of the children.



n: 258, $\bar{x}$: 8.72 years old, Median: 9 years old, Mode: 8 years old, SD ±: 1.69.
The sample included 41 parents and 3 teachers of first-grade students, 43 parents and 2 teachers of second-grade students, 68 parents and 3 teachers of third-grade students, 43 parents and 2 teachers of fourth-grade students, 33 parents and 2 teachers of fifth-grade students, and 53 parents and 4 teachers of sixth-grade students. The mean was 3.34, the median was 3, the mode was 3, and the SD was ± 1.583.

Based on the results of the Conners survey administered to parents and teachers, 27 children (10.5%) were identified as suspected of having ADHD, while 231 children (89.5%) showed no suspicion of ADHD. **(Table 1).**

Table 1. Prevalence of children with suspected ADHD

SuspectedADHD	Frequency	Percentage
Yes	27	10.5
No	231	89.5
Total	258	100

N=258
Agreement between suspected ADHD identified using the Conners scale administered to parents and teachers was assessed in the 258 schoolchildren. Cohen's kappa coefficient was -0.045, with an observed agreement of 89.9%. This result indicates virtually no agreement between the two informants, slightly below the level expected by chance.

Academic performance was assessed using the grade point average from the 2024–2025 academic year, obtained from school enrollment and accreditation records (IAE). The findings showed that "average" performance was the most prevalent (74%), followed by "low" performance (18.2%) and, finally, "good" performance (7.8%).**(Table 2).**

Table 2. Academic performance classification.

Academic performance	Frequency	Percentage
Low	47	18.2
Good	20	7.8
Average	191	74
Total	258	100

N=258, Predominated average academic performance 191 (74%).
Of the 27 cases with suspected ADHD, males predominated with 16 cases (59.25%), compared to 11 females (40.74%). Suspected ADHD was most frequently observed at ages 7 and 8 (6 cases each), followed by ages 6 and 9 (5 cases each), age 10 (4 cases), and finally age 11 (1 case). The mean age of presentation was 8 years (SD ± 1.468). The grade level with the highest prevalence of suspected ADHD was third grade (9 cases, 3.33%), followed by first grade (8 cases, 2.96%), fourth grade (5 cases, 1.85%), second grade (3 cases, 1.11%), and fifth and sixth grades (1 case each, 0.37%). The mean grade level was 2.67 (SD ± 1.387).

An analysis comparing the performance of students with and without suspected ADHD was conducted using the chi-square statistic; the result was 3.014 with a p-value of 0.222. No association was observed between suspected ADHD and low academic performance; however, a higher proportion of suspected ADHD cases was observed in the low-performance group compared to the group without suspected ADHD (29.6% vs. 16.9%).**(Table 3).**

Table 3. Academic performance variable with suspected ADHD.

Academic performance	Suspected ADHD				x2	p
	Yes	%	No	%		
Low	8	3.1	39	15.11	3.014	0.222
Average	1	0.38	19	7.36		
Good	18	6.97	173	67.05		

N=258, n= 27, the chi-square analysis did not demonstrate any association.

Discussion:-

The results of this study revealed a 10.5% prevalence of suspected ADHD; this figure is higher than the reported by Vázquez (2022), who conducted a descriptive prevalence study of pediatric ADHD across health centers in a specific health sector in Zaragoza as of May 8, 2020. That study reviewed cases of patients diagnosed by that date across the 13 health centers comprising the sector, analyzing a total of 1,012 patients with ADHD, the population was 68.5% male and 31.5% female, with a mean age at diagnosis of 7.46 ± 2.512 years, and reported an ADHD prevalence of 3.4%.[15]

In the present study, males accounted for the majority of cases (59.25%). This aligns with findings from other research—such as a study analyzing the grades and grade point averages of 344,152 Norwegian children born between 1997 and 2002—which used linear regression models to estimate the association between ADHD diagnosis and academic performance (specifically the ADHD-related deficit). That study calculated both bivariate and adjusted associations between ADHD and grade averages, incorporating covariates such as sex, parental education, birth year, parity, and birth month; it found that the prevalence was more than twice as high among boys (5.54%) as among girls (2.42%).[16]

The average age at which ADHD was suspected was 8 years, with the highest concentration of students being in the third grade of primary school; this pattern aligns with other studies noting that academic demands—such as reading—increase during the third grade. It was observed that when attempting to interpret a text, children with ADHD struggled to recode the text's core information; furthermore, research indicates that in the early years of primary school, symptoms of inattention directly impact word reading—meaning children with ADHD have less exposure to printed language than their peers, which disrupts the development of word recognition skills.[17]

Based on the results of this analysis, indicate that suspected ADHD is not associated with low academic performance. However, these findings do not allow us to reject the null hypothesis of no association. In comparison with the existing literature, previous studies have demonstrated that the presence of hyperactivity-related symptoms is a determining factor that negatively affects academic performance.[18]

ADHD is a condition that begins in childhood; therefore, early detection is crucial to ensure timely treatment, thereby reducing educational lag and improving the child's quality of life. It is recommended that the future research could focus on how these assessments might influence school-based strategies for children with suspected ADHD.
Although schoolchildren with suspected ADHD showed a higher frequency of low academic performance, the observed differences did not reach statistical significance; however, the observed effect size (PR: 1.75 and OR: 2.07) suggests a possible association of moderate magnitude. Further studies with larger samples are recommended to confirm or rule out the observed association.

Conflict of interest statement:-
The authors declare no conflict of interest.

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