

Assessment of Attention Deficit Hyperactivity Disorder among Primary School Children From Teachers' Perspective: A Cross- Sectional Study in Lebanon

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24 Assessment of Attention Deficit Hyperactivity Disorder among Primary School Children From Teachers' Perspective: A Cross-Sectional Study in Lebanon

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26 ABSTRACT

Around 10% of Lebanese students exhibit learning disabilities at school, such as Attention Deficit Hyperactivity Disorder (ADHD). Teachers' assessments of ADHD symptoms support the early diagnosis of ADHD. This research aimed to evaluate ADHD prevalence and psychological symptoms among a convenience sample of students between 5 and 12 years, from their teachers' perspective, and to assess factors associated with ADHD risk. A cross-sectional study was performed, involving a convenient sample of 130 students (average age: 8.7 years) attending grades 1 through 5 at a private school in Lebanon. The NICHQ Vanderbilt Assessment Scale, filled out by two teachers per student, was employed to evaluate ADHD symptoms. Additionally, a short survey was given to parents/caregivers to collect sociodemographic data. Analyses were performed at a significance level of 0.05 using SPSS version 29. Teachers' answers were largely consistent ($p > 0.05$). French (36.2%) and Arabic (30.8%) were the main subjects taught by participating teachers. The prevalence of inattentive-type ADHD among students was 12%, while predominantly hyperactive and combined types were noted in 8.5% of students. Within the inattentive type, those aged 8-11 years (13.6%; $p = 0.034$), males (15.8%; $p = 0.046$), and first-grade students (21.4%; $p = 0.038$) were significantly at higher risk. Higher risk for all ADHD types was also significantly associated with having divorced or separated parents, lower economic status, and parental unemployment. Moreover, being an only child was significantly linked to a greater risk of conduct disorder (18.8%; $p = 0.045$). Teachers reported a considerable number of children with poor performance, namely in written expression, reading, and mathematics. Behavioral challenges in the classroom were also noted, including difficulty following directions (8%; $p = 0.707$), disruptive behavior (8-9.3%; $p = 0.320$), and troubles completing assignments (7-8%; $p = 0.740$). These findings highlight a high prevalence of ADHD among school-aged children in Lebanese schools. Teachers play a crucial role in the early identification of inattentive and hyperactive symptoms, which is essential for preventing academic and behavioral difficulties at school.

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Keywords: Attention Deficit Hyperactivity Disorder, Teachers, Prevalence, Schoolchildren, Psychological symptoms, Academic performance)

INTRODUCTION

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Attention Deficit Hyperactivity Disorder (ADHD) is recognized in the Diagnostic and Statistical Manual 5th edition as a neurodevelopmental disorder marked by impaired attention, disorganization, and hyperactivity-impulsivity (Vlachou et al., 2022). ADHD is more common among school-age children with a reported cut-off age of onset of 12 years and can often persist into adolescence and adulthood (Ghossoub et al., 2017). The global ADHD prevalence ranges between 7.6% (6.1–9.4%) to 11.3% (5.3–22.2%) (Salari et al., 2023), depending on the diagnostic criteria and assessment tools. ADHD symptoms may vary among sexes, as boys show externalized symptoms (running and impulsivity) while girls show internalized symptoms (inattentiveness and low self-esteem) (Salari et al., 2023). In the United States, the 2016-2019 National Survey of Children's Health reported around 6 million children (9.8 %) with ADHD, with a higher prevalence among those aged 6-11 (10%) and 12-17 years (13.2%). Boys, non-Hispanics, and those living in rural areas were found to be at higher risk

(CHADD, 2023). Several studies investigated ADHD prevalence in the Arab countries (1.3 to 16%) (Alhraiwil et al., 2015), with the highest in the United Arab Emirates (14.85%), Qatar (9.4%), and Saudi Arabia (9.2%) and the lowest in Egypt 7.48%, and Oman (5.1% among girls and 7.8% among boys) (Al-Saedi et al., 2023). A recent study among Qatari students revealed that boys aged between 6 and 9 years had the highest prevalence of ADHD (Zorlu et al., 2020). In Lebanon, 10% of students complain of specific learning disabilities (SLD), with an ADHD prevalence of 3.2% among school-aged children and 10.2 % among adolescents (Ghossoub et al., 2017). Moreover, the Psychopathology in Children and Adolescents in Lebanon Study found positive symptoms for at least one psychiatric disorder among a third of the sample (Around half below seven years), associated with worse academic performance and having a chronic physical illness (Maalouf et al., 2022).

Compared to others, children with attention deficits reported an inability to finish tasks, difficulty following instructions, and losing essential objects to perform activities, while hyperactive children could not wait their turn or remain seated and interrupt others' activities or discussions (McConaughy et al., 2011). These symptoms correlate with the child's age or developmental level and may disrupt personal, social, and academic performance (Koutsoklenis & Honkasilta, 2023). Previous research found slower visual message processing and attention allocation among inattentive individuals, leading to academic disruptions (La Marca & Connor, 2016). ADHD has also been linked to a range of co-occurring conditions, including oppositional defiant disorder, conduct disorder, anxiety disorders, and bipolar disorder (Daley & Birchwood, 2010). Short and long-term impacts were also reported, including school refusal and grade retention, drug use, sexual engagement, and teenage pregnancy (Caye et al., 2019), with higher prevalence among children residing in joint families and those from lower-middle-class families (Sharma et al., 2020).

Because early signs of hyperactivity can be subtle and harder to recognize in younger children, ADHD often becomes noticeable during elementary school years (Sharma et al., 2020). Hence, teachers play a critical role in monitoring and identifying behavioral patterns in the classroom (Alshehri et al., 2020), mentoring, motivating students, and applying differentiated instructions (Faizan et al., 2021). Insufficient knowledge about ADHD among primary school teachers was noted (Alshehri et al., 2020; Munshi, 2014), leading to delayed diagnosis, classroom mistreatment, worse prognosis, the spread of misconceptions, and gender bias (Alshehri et al., 2020). In Lebanon, other challenges are present such as the weak infrastructure of the education system (Ghanem et al., 2024; Mhanna et al., 2024), the economic crisis leading to strikes and demotivation among teachers, and education recovery and catch-up following the pandemic. Given that no study investigated ADHD among Lebanese children from the point of view of teachers, particularly after the crises, this pilot study aims to assess ADHD prevalence and psychological symptoms among a convenience sample of students between five and eleven from the teachers' perspective and to evaluate the characteristics of students at higher risk.

METHODS OF RESEARCH

Study Design and Sample

Over a four-month period (February to May 2023), an observational cross-sectional study was carried out through on-site visits to a private school in Beirut. The study adopted a purposive sampling technique to select participants based on specific inclusion criteria relevant to the research objectives. Specifically, schoolteachers and caregivers of students in grades 1 to 5 (aged 6 to 11 years) were invited to participate. This approach ensured the collection of targeted information from individuals most knowledgeable about the children's behavior and environment. Data were gathered using structured questionnaires administered to teachers after receiving informed consent from parents or caregivers. The final sample consisted of 130 students, with corresponding input from two teachers per student, totaling 12 teachers.

Data collection

The study objectives were orally explained to two subject teachers per student, who were then invited to participate in the data collection process. To assess the children's behavioral and academic functioning, teachers completed the NICHQ Vanderbilt Assessment Scale–Teacher Informant, a standardized instrument designed to screen for ADHD and associated psychosocial symptoms such as oppositional defiant disorder, anxiety, and depression. Indicators for ADHD were based on the frequency of inattentive and hyperactive-impulsive behaviors, while psychosocial symptoms were evaluated using items related to mood, conduct, and peer relations. Teachers also used the scale to evaluate academic performance across core subjects (e.g., reading, mathematics, writing), rated on a five-point Likert scale reflecting students' classroom functioning. In parallel, caregivers were asked to complete a structured questionnaire sent home by the school to collect sociodemographic data about their children, including age, sex, parental education, and household characteristics. The data collection process used self-administered questionnaires, and the overall response rate was 100%.

Study tool

The questionnaire administered to parents included seven items covering their age, educational background, marital status, employment, household size, financial situation, and their relationship to the child. These variables were used to explore potential sociodemographic factors associated with an increased risk of ADHD.

To evaluate ADHD symptoms, the study employed the NICHQ Vanderbilt Assessment Scale, a validated tool consisting of 43 multiple-choice items. For accessibility, the scale was translated into Arabic for teachers. The first section focused on ADHD and related psychosocial indicators through 35 items, rated on a four-point scale: Never (0), occasionally (1), often (2), or very often (3). The second section assessed academic abilities (3 items) and classroom behavior (5 items) using a scale from Excellent (1) to Problematic (5). Moreover, teachers provided information on the subject they taught and whether the student was currently on medication. The scale's validity and reliability have been established in previous research, showing strong psychometric properties. In the present study, the Arabic version underwent a content validity check by a panel of experts in child psychology and education to ensure cultural and linguistic appropriateness. To assess internal consistency, Cronbach's alpha was calculated for each subscale. The ADHD inattentive and hyperactive/impulsive subscales yielded alpha coefficients of 0.891 and 0.875, respectively, indicating high internal reliability. The psychosocial symptom subscales (oppositional-defiant/conduct disorder and

anxiety/depression) showed acceptable reliability, with alpha values of 0.820 and 0.784, respectively. To meet the criteria for the predominantly inattentive subtype, a student must score 2 or 3 on at least six out of the first nine items, along with a rating of 4 or 5 on at least one of the performance-related questions (items 36-43). For the predominantly hyperactive/impulsive subtype, the requirement is a score of 2 or 3 on six or more of the questions 10 through 18, together with a performance question rated 4 or 5. A diagnosis of the combined ADHD subtype requires that both sets of criteria, for inattentive and hyperactive/impulsive symptoms, are met. To meet oppositional-defiant/conduct disorder criteria, students must score 2 or 3 on 3 out of 10 questions (questions 19-28) and 4 or 5 on one performance question. For anxiety/depression, a score of 2 or 3 on 3 out of 7 questions (questions 29-35) and 4 or 5 on one performance question.

Statistical analysis

Data analysis was conducted using Statistical Package for Social Sciences (SPSS Inc) software version 29. Age was summarized using means and Standard deviations (SD), while categorical variables describing the characteristics of students and their caregivers were expressed as frequencies and percentages. The paired sample T-test was employed to evaluate ADHD and psychosocial symptom scores and to identify any performance impairments. Chi-square and Fisher's exact tests were used to relate general characteristics of students with ADHD types (inattentive, hyperactive, combined), conduct disorder, and anxiety/ depression. A significance threshold of $p \leq 0.05$ was applied throughout the analysis.

Ethical Consideration

The Institutional Review Board (IRB) of the Lebanese University reviewed and approved the study protocol, survey, and consent form. To ensure confidentiality, all data were anonymized, with students identified only by codes assigned by the school. Written informed consent was obtained from each teacher and parents, who were assured that the collected information would be used solely for research purposes.

RESULTS AND DISCUSSION

General characteristics of the study sample

Table 1 presents the baseline characteristics of the participants, highlighting a predominance of female students and a balanced distribution across school grades. The parents were mostly mothers, married, and had relatively high educational levels, with the majority perceiving their economic status as average or above. The family size varied, with most families having two or more children. Teacher respondents came from diverse subject backgrounds, with French and Arabic teachers representing the largest groups. These characteristics suggest a reasonably representative sample of Lebanese school-aged children and their families, providing a solid foundation for analyzing ADHD and psychological symptoms in this population.

Table 1 Overview of the baseline characteristics of the students

General characteristics		Total (N=130)
		Frequency
Age of the student (years)	Mean (SD)	8.7 (1.5)
Sex	Boys	51 (39.5%)
	Girls	78 (60.5%)
Grade	Grade 1	28 (21.5%)
	Grade 2	19 (14.6%)
	Grade 3	28 (21.5%)
	Grade 4	29 (22.3%)
	Grade 5	26 (20.0%)
Age of the parents (years)	Mean (SD)	39.7 (6.2)
	≤35 years	33 (27.5%)
	>35 years	87 (72.5%)
Relationship with the student	Mother	100 (82.6%)
	Father	21 (17.4%)
Marital status of the parents	Married	108 (90.0%)
	Divorced/Separated	12 (10.0%)
Highest educational attainment	Elementary school or less	16 (13.3%)
	High school	50 (41.7%)
	University or more	54 (45.0%)
Perceived economic status	Less than average	28 (23.5%)
	Average or more	91 (75.5%)
Employment status	Both parents work	38 (31.4%)
	One parent works	74 (61.2%)
	Both parents do not work	9 (7.4%)
Household size	One child	16 (13.2%)
	Two children	56 (46.3%)
	Three children or more	49 (40.5%)
Teacher's teaching subject	French	47 (36.2%)
	Arabic	40 (30.8%)
	English	28 (21.5%)
	Math	15 (11.5%)

Results are presented as frequencies and percentages for categorical variables, and as means with standard deviations (SD) for continuous variables.

Evaluation of ADHD and Psychological Symptoms Among Lebanese Children

Symptom assessment screening

Table 2 compares the assessment of high-risk ADHD symptoms between the two teachers, revealing generally consistent evaluations across most inattentive and hyperactive symptom criteria. Notably, the first teacher identified significantly more students exhibiting inattentive behaviors related to careless mistakes and task disengagement than the second teacher. Nevertheless, no statistically significant differences were found between teachers in the classification of hyperactive symptoms, indicating agreement in identifying children at risk in this domain. These results suggest overall reliability in teacher assessments with some variability in specific inattentive behaviors.

Table 2 The ADHD symptom assessment (per teacher)

Inattentive ADHD Symptoms	Teacher 1 (N=130)	Teacher 2 (N=130)	p-value
Children at high risk (Often/very Often answers)	Frequency	Frequency	
18 Fails to give attention to details/makes careless mistakes in schoolwork	43 (33.1%)	24 (18.6%)	0.002
18 Has difficulty sustaining attention to tasks or activities	30 (23.1%)	28 (21.7%)	0.685
18 Does not seem to listen when spoken to directly	24 (18.5%)	23 (17.8%)	0.998
18 Does not follow instructions and fails to finish schoolwork	20 (15.4%)	21 (16.3%)	0.809
18 Has difficulty organizing tasks and activities	27 (20.8%)	22 (17.1%)	0.355
18 Avoids or dislikes engaging in tasks with sustained mental effort	26 (20.0%)	16 (12.4%)	0.049
18 Loses things necessary for tasks or activities	21 (16.2%)	15 (11.6%)	0.158
18 Is easily distracted by extraneous stimuli	22 (16.9%)	20 (15.5%)	0.656
18 Is forgetful in daily activities	21 (16.3%)	16 (12.5%)	0.227
Hyperactive ADHD (Often/very Often answers)	Frequency	Frequency	p-value
18 Fidgets with hands or feet or squirms in seat	19 (14.7%)	17 (13.2%)	0.469
25 Leaves seat in the classroom when remaining seated is expected	23 (17.7%)	18 (13.8%)	0.253
18 Runs about or climbs excessively when remaining seated is expected	18 (13.8%)	13 (10.1%)	0.198
18 Has difficulty playing or engaging in leisure activities quietly	11 (8.5%)	15 (11.6%)	0.319
18 Is "on the go" or often acts as if "driven by a motor"	15 (11.5%)	11 (8.5%)	0.319
18 Talks excessively	21 (16.2%)	27 (20.9%)	0.275
20 Interrupts out answers before questions have been completed	18 (13.8%)	21 (16.4%)	0.551
18 Has difficulty waiting in line	18 (13.8%)	15 (11.6%)	0.493
18 Interrupts or intrudes on others	12 (9.2%)	11 (8.5%)	0.717

Results are presented as frequencies with corresponding percentages. Statistically significant differences were identified using paired sample t-tests, with p-values less than 0.05 considered significant and highlighted in bold. ADHD: Attention Deficit Hyperactivity Disorder

Table 3 Psychological symptom assessment (per teacher)

Conduct disorder symptoms	Teacher 1 (N=130)	Teacher 2 (N=130)	p-value
Children at high risk (Often/very Often answers)	Frequency	Frequency	
Loses temper	12 (9.2%)	7 (5.4%)	0.319
Actively defies or refuses to comply with adult's requests or rules	14 (10.9%)	8 (6.3%)	0.109
Is angry or resentful	9 (7.0%)	7 (5.5%)	0.566
Is spiteful and vindictive	6 (4.7%)	7 (5.5%)	0.783
Bullies, threatens or intimidates others	4 (3.1%)	7 (5.5%)	0.319
Initiates physical fights	2 (1.6%)	7 (5.5%)	0.096
Lies to obtain goods for favors or to avoid obligations	6 (4.7%)	6 (4.7%)	1.000
Is physically cruel to people	10 (7.8%)	9 (7.1%)	0.809
Has stolen items of nontrivial value	6 (4.7%)	6 (4.7%)	1.000
Deliberately destroys others' property	3 (2.3%)	8 (6.3%)	0.096
Anxiety/Depression symptoms (Often/very Often answers)	Frequency	Frequency	p-value
Is fearful, anxious, or worried	6 (4.7%)	11 (8.7%)	0.166
Is self-conscious or easily embarrassed	8 (6.2%)	15 (11.8%)	0.127
Is afraid to try new things for fear of making mistakes	9 (7.0%)	16 (12.6%)	0.127
Feels worthless or inferior	7 (5.5%)	15 (11.6%)	0.408
Blames self for problems; feels guilty	6 (4.7%)	10 (7.9%)	0.319
Feels lonely, unwanted, or unloved; complains that "no one loves him or her"	6 (4.7%)	10 (7.9%)	0.319
Is sad, unhappy, or depressed	27 (20.8%)	12 (9.4%)	0.820

Results are presented through Frequency (Percentages). Paired sample T-test (p-values<0.05 represent statistically significant differences).

Assessment of students' performance

Table 4 compares the teachers' assessments of impairment in academic and classroom behavioral performance. Both teachers generally agreed on students' reading and mathematics abilities, showing no significant differences. However, teacher two identified a notably higher proportion of children at high risk for difficulties in written expression. Regarding classroom behavior, both teachers reported similar levels of impairment in following directions, class disruption, and assignment completion, with no statistically significant differences. These findings indicate overall consistency in teacher evaluations of performance impairments, with some divergence in the perception of written expression difficulties.

Table 4 Impairment in performance assessment (per teacher)

Academic Performance	Teacher 1 (N=130)	Teacher 2 (N=130)	p-value
Children at high risk (Often/very Often answers)	Frequency	Frequency	
Reading	14 (11.1%)	20 (15.5%)	0.166
Mathematics	12 (9.7%)	11 (13.8%)	0.924
Written expression	11 (8.8%)	23 (18.0%)	0.007
Classroom Behavioural Performance (Often/very Often answers)	Frequency	Frequency	p-value
Relationship with peers	6 (4.8%)	5 (3.9%)	0.657
Following directions	11 (8.8%)	10 (7.8%)	0.707
Disrupting class	10 (8.0%)	10 (9.3%)	0.320
Assignment completion	10 (8.0%)	9 (7.0%)	0.740
Organizational skills	13 (10.4%)	10 (7.8%)	0.103

Results are presented through Frequency (Percentages). Paired sample T-test (p-values<0.05 are in bold and represent statistically significant differences).

Student's ADHD classification and characteristics of every type

Figure 1 represents the teacher's assessment of ADHD among primary schoolchildren. More students were predominantly inattentive (11.5%) than predominantly hyperactive and combined (both 8.5%). Fewer children had conduct disorder (6.9%) and anxiety/ depression (4.6%).

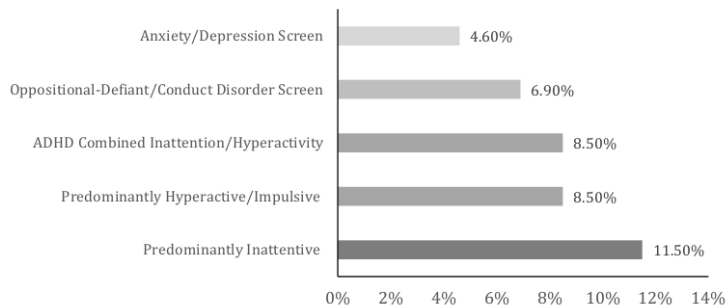


Figure 1 Teacher assessment of ADHD among primary schoolchildren

Assessment of Potential Risk Factors Associated with ADHD and Psychological Symptoms

Table 5 highlights key demographic and familial factors associated with greater likelihood of ADHD and related behavioral disorders. Older students (aged 8–11) and boys were more likely to be at high risk for the inattentive subtype. Notably, first-grade students showed the highest risk for ADHD symptoms compared to other grades. Children of divorced or separated parents were significantly more vulnerable across all ADHD and conduct disorder categories, underscoring the impact of family structure. Economic status and parental employment also played important roles, with lower perceived economic status and both parents being unemployed linked to increased risk, particularly for inattentive and combined ADHD. Additionally, children from single-child families exhibited a greater likelihood of conduct disorder symptoms. These findings point to the influence of sociodemographic and family-related factors on ADHD risk in Lebanese schoolchildren.

Table 5 Characteristics of students at a higher risk of ADHD problems

General Characteristics	Predominantly Inattentive	Hyperactive / Impulsive	ADHD Combined	Conduct disorder	Anxiety / Depression
	Frequency	Frequency	Frequency	Frequency	Frequency
Age of the student					
6-8	3 (5.5%)	3 (5.5%)	3 (5.5%)	2 (3.6%)	--
8-11	9 (13.6%)	6 (9.1%)	6 (9.1%)	5 (7.6%)	3 (4.5%)
p-value	0.034	0.345	0.345	0.355	0.109
Age of the parents					
≤35	4 (12.1%)	3 (9.1%)	3 (9.1%)	2 (6.1%)	--
>35	8 (9.2%)	6 (6.9%)	6 (6.9%)	5 (5.7%)	3 (3.4%)
p-value	0.633	0.471	0.471	0.948	0.280
Sex					
Male	9 (15.8%)	6 (10.5%)	6 (10.5%)	6 (10.5%)	4 (7.0%)
Female	5 (6.9%)	4 (5.6%)	4 (5.6%)	3 (4.2%)	2 (2.8%)
p-value	0.046	0.236	0.236	0.145	0.237
Grade					
First grade	6 (21.4%)	5 (17.9%)	5 (17.9%)	3 (10.7%)	3 (10.7%)
Second grade	1 (5.3%)	1 (5.3%)	1 (5.3%)	2 (10.5%)	--
Third grade	2 (7.1%)	2 (7.1%)	2 (7.1%)	2 (7.1%)	2 (7.1%)
Fourth grade	3 (10.3%)	3 (10.3%)	3 (10.3%)	2 (6.9%)	1 (3.4%)
Fifth grade	3 (11.5%)	--	--	--	--
p-value	0.038	0.196	0.196	0.567	0.283
Parental marital status					
Married	9 (8.3%)	6 (5.6%)	6 (5.6%)	4 (3.7%)	2 (1.9%)
Divorced/Widowed	3 (25.0%)	3 (25.0%)	3 (25.0%)	3 (25.0%)	1 (8.3%)
p-value	0.050	0.046	0.046	0.003	0.172
Perceived economic situation					
Less than average	5 (17.9%)	5 (17.9%)	5 (17.9%)	2 (7.1%)	1 (3.6%)
Average or more	7 (7.7%)	4 (4.4%)	4 (4.4%)	5 (5.5%)	2 (2.2%)
p-value	0.150	0.018	0.018	0.667	0.556
Employment status					
Both parents work	1 (2.6%)	1 (2.6%)	1 (2.6%)	--	--
One parent works	9 (12.2%)	7 (9.5%)	7 (9.5%)	7 (9.5%)	3 (4.1%)
Both parents do not work	2 (22.2%)	1 (11.1%)	1 (11.1%)	--	--
p-value	0.041	0.389	0.389	0.028	0.376
Household size					
One child	3 (18.8%)	3 (18.8%)	3 (18.8%)	3 (18.8%)	1 (6.3%)
Two children	5 (8.9%)	4 (7.1%)	4 (7.1%)	3 (5.4%)	1 (1.8%)
Three children or more	4 (8.2%)	2 (4.1%)	2 (4.1%)	1 (2.0%)	1 (2.0%)
p-value	0.443	0.151	0.151	0.045	0.579

Results are presented through Frequency (Percentages). Chi-square and Fisher exact tests (p-values<0.05 are in bold and represent statistically significant differences). **ADHD**: Attention deficit hyperactivity disorder.

In this study, ADHD risk and psychological symptoms in school-aged children (6-11 years) were assessed based on two teachers' perspectives. Teachers' answers were considered since they spend significant time working with a diverse range of students in an educational setting, allowing them to observe behavior patterns in a structured environment (Walker & Graham, 2021). Despite being within the global prevalence range (6.1-22.2%) (Salari et al., 2023) and within the range in Arab countries (1.3 to 16%) (Alhraiwi et al., 2015), the

prevalence of inattentive ADHD was considerably high. This prevalence was lower than in the United Arab Emirates and Tunisia (Salari et al., 2023) but higher than in Qatar, Saudi Arabia, Egypt, and Oman (Al-Saedi et al., 2023). There are several inconsistencies in ADHD world-prevalence across literature, which may be attributed to variable diagnostic criteria and assessment tools. In previous research conducted in Lebanon (Richa et al., 2014), the overall prevalence of ADHD, including all subtypes, was estimated at 3.2% among children aged 6-10 years, with the combined subtype being the most common, in contrast to this study, where the majority belonged to the inattentive type. Nonetheless, other studies attributed a higher inattentive than hyperactive-impulsive subtype in children 7 to 9 years of age to a drop in hyperactivity symptoms with time (Farah et al., 2009). A previous cross-sectional study conducted in Beirut in 2017 found 10.2% of adolescents with ADHD, comparable to our findings, with the majority having the combined subtype (Ghossoub et al., 2017). In the present study, students with inattentive symptoms commonly overlooked details, made frequent careless errors in schoolwork, showed limited engagement in tasks requiring sustained mental effort, and struggled with organizing tasks and activities. These findings were also reported in a study on Australian school children, where they had lower engagement, increased experience of peer victimization, and higher depressive symptoms (Farah et al., 2009), which can potentially lead to lower academic performance (Manana et al., 2023). This highlighted the negative impact of ADHD symptoms on the emotional engagement of students with their schools (Rushton et al., 2020). Targeted intervention to modify peer victimization and engagement can build students' resilience and improve academic outcomes (Marsh et al., 2023), namely in a low-income country like Lebanon.

Boys had a significantly higher risk of inattentive disorder than girls. Research has indicated that boys are approximately three times more likely to be diagnosed with ADHD compared to girls (Salari et al., 2023; Setyanisa et al., 2022). This pattern aligns with findings from several studies conducted in different regions such as Mumbai, Coimbatore, Odisha, Turkey, Brazil, Trabzon, Saudi Arabia, and Lebanon (Ghossoub et al., 2017). While another study found a higher prevalence among girls with no statistical significance (Joshi & Angolkar, 2021). This can be correlated with social and cultural factors and the exhibition of externalizing behaviors among boys, which are more noticeable and may lead to earlier diagnosis and sometimes underdiagnosis of girls. Adverse effects on academic performance were found mainly in early grades (Lawrence et al., 2021), also highlighted in this study. This result suggests that early diagnosis and appropriate intervention can help children with ADHD succeed academically, socially, and personally. Many confounding factors were commonly detected in students with a higher risk for ADHD. Having divorced or separated parents was a risk factor for ADHD, in agreement with the findings of another study which found a significant group difference in the parental relationship status (Ghossoub et al., 2017). Divorce can introduce various environmental stressors into a child's life, such as changes in living arrangements, family dynamics, financial stress, or parental conflict. These stressors can exacerbate or mimic ADHD symptoms, highlighting the need to provide a supportive environment to this group. A lower economic situation was also associated with a higher risk of ADHD, in agreement with previous research (Dede & White, 2023), while others reported no relation (Ghossoub et al., 2017). This may be attributed to Lebanon's limited access to healthcare since it is majorly out-of-pocket (Hatem & Goossens, 2022), environmental factors, parental stress, and low-quality extracurricular activities. In our study, single-child families were at higher risk, unlike a previous study that found residing in joint families as a risk factor (Sharma et al., 2020). This can be associated with the presence of siblings in a child's environment and experiences, potentially influencing their behavior and development.

Inattention and hyperactivity can lead to poor academic performance. Repeating grades and using special education among ADHD children (Ghossoub et al., 2017) were evident in early elementary school (Lettieri & Lewis, 2022). Children diagnosed with ADHD often do not reach expected academic performance levels, even after adjusting for comorbid learning disabilities and other potential confounding factors (Steiner et al., 2014). They were approximately lagging behind their peers by approximately eight months in reading and demonstrated insufficient progress toward meeting national academic benchmarks, with over 25% of these children falling within the lowest two performance bands for their grade level (Zendarski et al., 2022). Prior research based on classroom observations has also indicated that children with ADHD may begin to fall behind in reading as early as the first grade (Zorlu et al., 2020). This is similar to the outcomes of this study and another using the Vanderbilt tool (AlZaben et al., 2018), where both teachers reported poor reading and mathematics skills, demonstrating significant correlations between academic skills (reading, mathematics, writing) and the children's conduct. It has also shown significant relation regarding classroom behavior, following rules, completion of assigned tasks, organizational efficiency, and disturbing the classes at school in inattention and hyperactivity/impulsivity subtypes, in compliance with the study's findings (excessive talking, not waiting in line or remaining in a seat, and refusing adults rules).

Although the Vanderbilt assessment tool can't be solely used to diagnose ADHD, it is considered a supportive source of information about a child's basic behavior and school performance, especially in the early stages. Its value exists in planning and evaluating targeted management, both behavioral and medical. This study has limitations. The results should be interpreted while considering that response-based rating measures were adopted rather than clinical interviews, which could have induced response bias. Recall bias might have been instigated since the same teacher had to answer many surveys for several students. This bias was reduced by adopting two teachers per student and having no time restriction for responding. Additionally, only one school was included in the sample, which may limit the extrapolation of findings to other settings. Other factors could be associated with ADHD and potentially studied through data collection from parents, such as family history, in-utero exposure to maternal cigarette/waterpipe smoking, and alcohol consumption (Hoang et al., 2021). Nevertheless, the present study can provide additional data regarding ADHD risk in schools and possible predicting factors. A longitudinal study is recommended for better external validity and representativeness of schoolchildren in Lebanon and other similar settings.

CONCLUSIONS

This study highlights that ADHD symptoms, particularly the inattentive subtype, are common among Lebanese schoolchildren and are influenced by demographic and family factors. These findings emphasize the critical role of early identification of ADHD symptoms by teachers and parents, who observe children in different contexts, and the importance of strengthening collaboration between healthcare providers and schools to improve diagnosis, teacher training, and intervention strategies. However, the study is limited by its cross-sectional design, reliance on teacher-reported assessments, and potential cultural biases in the translated scale. Future research should incorporate longitudinal designs, multi-informant evaluations, and explore culturally tailored interventions. Governments should promote awareness programs and policies supporting early ADHD screening and school-based mental health services. Parents need education on recognizing symptoms and accessing care, while teachers would benefit from ongoing training to better support affected students.

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