

RESEARCH ARTICLE

Impact of attention deficit hyperactivity disorder and gender differences on academic and social difficulties among adolescents in Qatari Schools

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<http://dx.doi.org/10.5339/qmj.2021.11>

Submitted: 26 June 2020

Accepted: 20 September 2020

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Cite this article as: Kamal M, Al-Shibli S, Shahbal S, Yadav SK. Impact of attention deficit hyperactivity disorder and gender differences on academic and social difficulties among adolescents in Qatari Schools, Qatar Medical Journal 2021:11 <http://dx.doi.org/10.5339/qmj.2021.11>

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دار جامعة حمد بن خليفة للنشر
HAMAD BIN KHALIFA UNIVERSITY PRESS

ABSTRACT

Background: To evaluate the social and academic impact of adolescents with Attention Deficit Hyperactivity Disorder (ADHD) and gender differences compared with their non-ADHD peers.

Methods: A cross-sectional descriptive study using a standardized rating scale of teacher observations was conducted in the schools of Qatar from 7th to 12th grades. Teachers completed Swanson, Nolan, and Pelham (SNAP-IV) rating scale questionnaires for the ADHD core symptoms together with nine questions to evaluate the academic and social difficulties in all participants.

Results: A total of 1775 students (mean age: 15±1.5 years; boys/girls: 717/1058) were included in this study. Based on the SNAP-IV rating scale, 150 students were showing core symptoms of ADHD and classified as having ADHD (8.5%; boys/girls; 93/57) and 1625 students as non-ADHD peers (91.5%; boys/girls; 624/1001). Prevalence of ADHD among adolescent students is 8.5%, and it varied significantly between genders with 13% of boys and 5.4% of girls affected by this disorder. Adolescents with ADHD had more academic and social difficulties than their non-ADHD peers, the boys more so than the girls. Boys with inattentive subtype of ADHD had more academic difficulties than girls, while girls had more social difficulties than boys.

Conclusion: The results of this study revealed that ADHD among adolescents is substantially associated with academic and social difficulties in the school environment. Gender differences among students with ADHD should be considered in the school and clinical environment.

Keywords: ADHD, adolescents, academic performance, social difficulties, inattentive subtype

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized by impaired levels of inattention, hyperactivity, and poor impulse control.^{1,2} ADHD is known to vary significantly between the different age groups with higher prevalence in boys than girls.^{3,4} Historically characterized as a childhood disorder, it was presumed that ADHD symptoms might be reduced in adolescence⁵; however, we now know that ADHD symptoms do not go away with age and is seen as a lifetime neurodevelopmental disorder.⁶

The effect on society is enormous and multifaceted as it affects not only the child but also the siblings and parents and significantly disturbs family routine life functioning. Based on the severity of the disorder, it may affect the child's performance at school; and if undiagnosed or untreated, it may persist into adulthood, affecting personal, professional, and social life.⁷ The etiology of ADHD is mostly unknown, and it is considered as a multifactorial and heterogeneous disorder with strong genetic effect secondary to neurodevelopmental issues; however, brain injuries, consanguineous marriages, and environmental exposures are predisposing factors for ADHD.^{8,9}

The neurobiological changes of adolescents at puberty are well documented and includes neural restructuring, higher level of interpersonal skills, and neuropsychological development.¹⁰⁻¹² These adverse developmental changes have significant impact on daily functioning including academic performance, social skills, impairments in the higher executive functions, disruptive behavior, peer conflict, reward response, slow decision making, risk-taking behavior, and self-management system.¹³⁻¹⁶ Overall, research illustrates that adolescents with ADHD experience more academic difficulties than their non-ADHD peers,^{15,17} more absenteeism, low assignment completions, more school dropouts,¹⁸ and increased risk-taking behaviors.¹⁹ In a study by Lori and Kamal (2014), students aged 13 years and above exhibited fewer ADHD symptoms than those aged between 6-12 years old, with boys exhibiting more ADHD symptoms than girls.²⁰ The effect of ADHD symptoms in boys and girls are different, with some studies reporting the differences in symptomatology and coexisting problems between the genders, with the exception of less disruptive behavior in girls, while others suggested that girls may suffer more anxiety, depression, and peer rejections than the boys.^{21,22}

While adolescents may exhibit fewer ADHD symptoms than younger children, adolescence is an important time for social connection and academic growth, so ADHD symptoms at this time could have a large effect. Limited studies are available to characterize ADHD in adolescents, and only a few of them looked at the impact of genders on academic and social difficulties.²³⁻²⁶ The current study hopes to add information to the limited amount of literature on adolescents with ADHD including gender differences.

MATERIAL AND METHODS

A cross-sectional descriptive study in the public and private schools in Qatar was performed between November 2011 and November 2012 after obtaining ethical approval from Hamad Medical Corporation Ethics Committee (Ref no: RP 10226/10) and the Supreme Education Council Research Office. Each school was contacted through their head office for approval to conduct the research. Students were not identified by their name and only a generic student identity code was placed on each form. A total of 1775 students from grade 7th to 12th were enrolled in the study. The academic teachers completed a standardized SNAP-IV rating scale questionnaires for the ADHD symptoms together with nine questions to evaluate the academic and social difficulties in all students.

Participating Schools

Stratified randomization was applied to select the participating schools from the available list of schools in Qatar. We selected 12 schools – including public and private – covering the city of Doha and its outskirts. The schools were stratified geographically (through district) and gender (boys/girls). Schools were invited to participate through written invitation followed by a phone call to the school administration for confirmation/follow-up. If one of the selected schools declined to participate, the next school on the list was contacted. It is worth noting that only one school declined to participate for logistic reasons. The sample was limited to all students in the selected school present on the day of the survey. Surveys were distributed halfway into the academic year after teachers had one term to get to know their students to ensure accuracy of teacher ratings. Each school participated in a workshop which explained the research study and procedures prior to their involvement in this study.

Instrument

The SNAP-IV rating scale for ADHD symptoms²⁷ was used in the current study due to its use in many studies of ADHD including treatment studies.^{28–30} The SNAP-IV rating scale was also chosen for its ease of completion and for its normed reliability and validity with all populations.³¹ The SNAP-IV rating scale is a revision of the original SNAP questionnaire²⁷ and updated to the SNAP-IV, parallel to revised DSM-V (2013)³² criteria for the diagnosis of ADHD. SNAP-IV questions 1–9 relate to inattention and questions 10–18 relate to hyperactivity/impulsivity and are based on a 0–3 rating scale comparable to other standardized ratings scales for ADHD with 0=Not at all; 1=Just a little; 2=Quite a bit; 3=Very much. All the questions of inattention and hyperactivity/impulsivity are averaged, and there is a total score for combined ADHD. Teacher scores are given separate cutoff points derived from scores above the 95th percentile based on the expected rate of ADHD in the population at the time the cutoffs were calculated. On the SNAP-IV, the teacher cutoff point for inattention is 2.56, for hyperactivity/impulsivity 1.78 and total combined ADHD score at 2.0. The cutoff used in the current study is based on our previously published study.²⁰ An investigation of the SNAP-IV for screening and diagnostic purposes by Bussing³¹ found acceptable internal consistency and item selection. In addition to the SNAP-IV questionnaire, we added nine questions to explore the academic and social difficulties in participating children in the classrooms. These nine questions were formulated based on the experience of the researchers dealing with ADHD and clinically validated by another group of experienced pediatricians and psychologists before using them in this study.

A questionnaire was devised by the lead author and a consultant educational psychologist, who are experts in the field, to detect adolescents who are facing academic and social difficulties within a classroom setting. There are six questions which include: 1. Rating the students' academics with regard to reading, writing, and math; 2. Assessing difficulties in making and maintaining friends; 3. Do difficulties making friends distress the student; 4. Do difficulties with academics burden the classroom teachers; 5. Do the academic difficulties interfere with the student's life in peer relationships and classroom learning; 6. Does the child's difficulties impact emotions, concentration, and behavior. The questionnaire was validated and piloted before applying in this study.

Statistical Analysis

A percent distribution is used to illustrate the data; percentiles for each question are compared with the percentile for non-ADHD peers and those with ADHD. Quantitative data mean between the ADHD and non-ADHD peers' groups were compared using unpaired t-test. Chi-square test was used to examine an association between two or more qualitative variables and outcome measures. A two-sided p value < 0.05 was considered as significant. All the statistical analysis was done using SPSS Version 22.

RESULTS

A total of 1775 students (mean age; 15 ± 1.5 years; M/F; 717/1058) were included in the current study. Based on the SNAP-IV rating scale, 150 students were classified as having ADHD (8.5%; M/F; 93/57) and 1625 as non-ADHD students (91.5%; M/F; 624/1001). ADHD among adolescent students is 8.5%, and it varied significantly between genders with 13% of boys and 5.4% of girls suffering from this disorder (Table 1).

Academic Difficulties

Adolescents with ADHD have more academic difficulties than their non-ADHD peers ($p=0.001$). More than 60% of boys with ADHD had academic difficulties in all three areas (reading, writing, and math) compared with their non-ADHD peers ($p=0.001$), whereas more than 49% of girls with ADHD experienced academic difficulties compared with their non-ADHD peers ($p=0.001$) (Table 2). Math was the most significant academic area for 62% of the boys and 56% of the girls with ADHD compared with their non-ADHD peers with 16% and 18% respectively ($p=0.001$) (Table 2). Sixty percent of boys and 46% of girls with ADHD experienced difficulty in reading and writing compared with their non-ADHD peers (12% in reading and writing in both genders and 6% boys in reading and 11% in writing) ($p=0.001$) (Table 2).

All adolescents with subtypes of ADHD have more academic difficulties than their non-ADHD peers. Boys with inattentive subtype of ADHD have more academic difficulties than boys with other subtypes of ADHD as well as their non-ADHD peers. Seventy-two percent of boys with inattentive subtype of ADHD experienced difficulties in reading and writing, and 83% experienced difficulties in math. This contrasts with the 60% of girls with inattentive subtype of ADHD who experienced

Table 1. Sample characteristics of ADHD and Non-ADHD controls

Characteristics		ADHD (n=91 predominant and 59 co- occurrence):150	non-ADHD (n=1625)	
Age (Mean ± SD) years		15 ± 1.6	15 ± 1.4	0.29
Gender (M/F)		93 (62%)/57 (38%)	624 (38.4 %)/1001 (61.6%)	0.001
Overall prevalence of ADHD: n, (%)		150/(1625 + 150) (8.5)		
Gender based prevalence		Boys: 93/717: 13%		
		Girls: 57/1058: 5.4%		
ADHD (150)	Subtype-Inattentive	38/150 (20%)		
	Subtype-Hyperactive	70/150 (46%)		
	Subtype-Combined	42/150 (28%)		
Academic performance, n (%)*	Reading	81/146 (55.5%)	154/1573 (9.8%)	<0.0001
	Writing	79/146 (54.1%)	176/1560 (11%)	<0.0001
	Math	90/142 (63.4%)	241/1410 (17%)	<0.0001
Behavioral adaptation, n, (%)*	Making & maintaining Friends distress	54/130 (41.5%)	65/1361 (4.8%)	<0.0001
	Burden teacher or class	79/128 (62%)	110/1428 (7.7%)	<0.0001
	Peer relationships	52/121 (43%)	64/484 (13.2%)	<0.0001
	Classroom learning	64/121 (53%)	42/473 (8.8%)	<0.0001
	Classroom learning	92/114 (81%)	141/451 (31.3%)	<0.0001
	Emotions and behavior	94/119 (79%)	133/477 (27.9%)	<0.0001

*percentage was calculated by dividing the fraction with a denominator (total number) and multiplying with 100.
ADHD – Attention Deficit Hyperactive Disorder

difficulties in reading and writing and the 70% who experienced difficulties in math (Table 2). Girls with hyperactive/impulsive subtype of ADHD have fewer academic difficulties than girls with other subtypes, however, have more difficulties than their non-ADHD peers, with only 35% girls experiencing difficulty with reading and writing, while 42% have difficulties in math compared with their non-ADHD peers ($p=0.001$) (Table 2). In the combined subtype of ADHD, 70% boys and 45% girls experienced more difficulties in reading; however, 63% boys and 45% girls experienced more difficulty in writing, while 76% boys and 55% girls experienced more difficulty in math than their non-ADHD peers ($p < 0.001$) (Table 2).

Social Difficulties

Adolescents with ADHD, both boys and girls, have more social difficulties than their non-ADHD peers ($p=0.001$). Girls with hyperactive/impulsive subtype of ADHD were reported to have less difficulties than all other subtypes of ADHD; however, they faced difficulty in emotions and getting along with others compared with boys with ADHD ($p=0.87$) and compared with their non-ADHD peers ($p < 0.001$).

More often girls with inattentive subtype of ADHD experienced more social difficulties than boys with inattentive subtype of ADHD including difficulty making friends, creating burden on the teachers and in the classroom, interfering with classroom learning, and difficulty getting along with others compared with their non-ADHD peers ($p < 0.001$).

Girls with combined subtype of ADHD also experienced more difficulties than boys with combined subtype of ADHD in two domains including classroom learning ($p=0.31$) and getting along with others ($p=0.33$) and compared with their non-ADHD peers ($p < 0.001$). Boys with inattentive and combined subtypes of ADHD had more difficulties than non-ADHD boys ($p=0.001$) and had more difficulties in peer relationship ($p=0.6$ and $p=0.67$, respectively) and difficulty in making and maintaining friends ($p=0.41$ and $p=0.19$, respectively) than girls with inattentive and combined subtype of ADHD.

DISCUSSION

While we have already published our initial study results,²⁰ our focus in this paper was students with ADHD compared with their non-ADHD peers, gender

Table 2. Academic difficulties among Girls and Boys in ADHD subtypes and non-ADHD

Total subjects (n = 1775)	Girls (n = 1058)		Boys (n = 717)		P values
	ADHD (n = 57), (a)	Non-ADHD (1001), (b)	ADHD (n = 93), (c)	Non-ADHD (n = 624), (d)	
Reading	26/57 (46)	116/968 (12)	56/93 (60)	38/605 (6.3)	a-b < 0.0001; c-d < 0.0001; a-c 0.09; b-d < 0.0001
Writing	26/57 (46)	113/968 (11.7)	56/93 (60)	63/592 (11)	a-b < 0.0001; c-d < 0.0001; a-c 0.09; b-d < 0.67
Math	32/57 (56)	160/909 (17.6)	58/93 (62)	81/502 (16)	a-b < 0.0001; c-d < 0.0001; a-c 0.45; b-d 0.46
Academic Difficulties	ADHD-I (n = 20)	Non-ADHD (n = 1001)	ADHD-I (n = 18)	Non-ADHD (n = 624)	
Reading	12/20 (60)	116/968 (12)	13/18 (72)	38/605 (6.3)	a-b < 0.0001; c-d < 0.0001; a-c 0.44; b-d 0.0002
Writing	12/20 (60)	113/968 (11.7)	13/18 (72)	63/592 (11)	a-b < 0.0001; c-d < 0.0001; a-c 0.44; b-d 0.69
Math	15/20 (70)	160/909 (17.6)	15/18 (83)	81/502 (16)	a-b < 0.0001; c-d < 0.0001; a-c 0.35; b-d 0.44
Academic Difficulties	ADHD-H (n = 26)	Non-ADHD (n = 1001)	ADHD-H (n = 44)	Non-ADHD (n = 624)	
Reading	9/26 (35)	116/968 (12)	22/41 (54)	38/605 (6.3)	a-b < 0.0001; c-d < 0.0009; a-c 0.13; b-d 0.0002
Writing	9/26 (35)	113/968 (11.7)	21/41 (51)	63/592 (11)	a-b < 0.0004; c-d < 0.0001; a-c 0.20; b-d 0.67
Math	11/26 (42)	160/909 (17.6)	21/38 (55)	81/502 (16)	a-b < 0.0004; c-d < 0.0001; a-c 0.20; b-d 0.67
Academic Difficulties	ADHD-C (n = 11)	Non-ADHD (n = 1001)	ADHD-C (n = 31)	Non-ADHD (n = 624)	
Reading	5/11 (45)	116/968 (12)	21/30 (70)	38/605 (6.3)	a-b < 0.0001; c-d < 0.0001; a-c 0.14; b-d 0.0001
Writing	5/11 (45)	113/968 (11.7)	19/30 (63)	63/592 (11)	a-b < 0.0008; c-d < 0.0001; a-c 0.31; b-d 0.67
Math	6/11 (55)	160/909 (17.6)	22/29 (76)	81/502 (16)	a-b < 0.0008; c-d < 0.0001; a-c 0.21; b-d 0.44

Table 3. Behavioral adaptation among Girls and Boys ADHD and Non-ADHD

Total Subjects (1775)	Study of Girls (n=1058)		Study of Boys (n=717)	
Making & maintaining: n, (%)	12/39 (31)	35/795 (4.4)	42/91 (46)	30/566 (5)
Friends distress: n, (%)	23/39 (59)	66/839 (8)	56/88 (64)	44/589 (8)
Burden teacher or class: n, (%)	15/35 (43)	32/280 (11)	37/86 (43)	32/204 (16)
Peer relationships: n, (%)	15/35 (43)	21/274 (8)	49/86 (57)	21/199 (11)
Classroom learning: n, (%)	29/34 (63)	67/258 (26)	63/80 (79)	70/193 (36)
Emotions and behavior: n, (%)	27/30 (90)	72/274 (26)	67/86 (78)	61/203 (30)
Behavioral Adaptation				
	I-ADHD (n = 20), (a)	Non-ADHD (n = 1001), (b)	I-ADHD (n = 18), (c)	Non-ADHD (n = 624), (d)
Making & maintaining: n, (%)	8/17 (47)	35/795 (4)	11/18 (61)	30/566 (5)
Friends distress: n, (%)	15/18 (83)	66/839 (7.9)	12/17 (70)	44/589 (7.4)
Burden teacher or class: n, (%)	11/17 (65)	32/280 (11.4)	8/18 (44)	32/204 (16)
Peer relationships: n, (%)	9/17 (53)	21/274 (7.7)	11/18 (61)	21/199 (11)
Classroom learning: n, (%)	17/17 (100)	67/258 (26)	11/16 (69)	70/193 (36)
Emotions and behavior: n, (%)	12/12 (100)	72/274 (26)	12/18 (66.6)	61/203 (30)
Behavioral Adaptation				
	H-ADHD (n = 26)	Non-ADHD (n = 1001)	H-ADHD (n = 44)	Non-ADHD (n = 624)
Making & maintaining: n, (%)	3/17 (17.6)	35/795 (4)	15/42 (36)	30/566 (5)
Friends distress: n, (%)	6/17 (35)	66/839 (7.9)	23/41 (56)	44/589 (7.4)
Burden teacher or class: n, (%)	2/14 (14)	32/280 (11.4)	14/37 (38)	32/204 (16)
Peer relationships: n, (%)	4/14 (28.6)	21/274 (7.7)	19/37 (51)	21/199 (11)

a-b < 0.0001; c-d < 0.001; a-c < 0.11; b-d < 0.6
 a-b < 0.0001; c-d < 0.0001; a-c < 0.59; b-d < 1
 a-b < 0.0001; c-d < 0.0001; a-c < 1; b-d < 0.1
 a-b < 0.0001; c-d < 0.0001; a-c < 0.16; b-d < 0.26
 a-b < 0.0001; c-d < 0.0001; a-c < 0.07; b-d < 0.02
 a-b < 0.0001; c-d < 0.0001; a-c < 0.15; b-d < 0.33
 a-b < 0.0001; c-d < 0.0001; a-c < 0.41; b-d < 0.37
 a-b < 0.0001; c-d < 0.0001; a-c < 0.37; b-d < 0.72
 a-b < 0.0001; c-d < 0.0001; a-c < 0.21; b-d < 0.14
 a-b < 0.0001; c-d < 0.0001; a-c < 0.6; b-d < 0.21
 a-b < 0.0001; c-d < 0.0009; a-c < 0.01; b-d < 0.02
 a-b < 0.0001; c-d < 0.001; a-c < 0.027; b-d < 0.35
 a-b < 0.006; c-d < 0.0001; a-c < 0.17; b-d < 0.37
 a-b < 0.0001; c-d < 0.0001; a-c < 0.15; b-d < 0.72
 a-b < 0.76; c-d < 0.002; a-c < 0.10; b-d < 0.14
 a-b < 0.007; c-d < 0.0001; a-c < 0.16; b-d < 0.21

Table 3 – continued

Classroom learning: n, (%)	8/13 (62)	67/258 (26)	29/35 (82)	70/193 (36)	a-b < 0.005; c-d < 0.0001; a-c < 0.2; b-d < 0.02
Emotions and behavior: n, (%)	11/14 (79)	72/274 (26)	30/37 (81)	61/203 (30)	a-b < 0.0001; c-d < 0.0001; a-c < 0.87; b-d < 0.33
Behavioral Adaptation					
	C-ADHD (n = 11)	Non-ADHD (n = 1001)	C-ADHD (n = 31)	Non-ADHD (n = 624)	
Making & maintaining: n, (%)	1/5 (20)	35/795 (4)	16/31 (52)	30/566 (5)	
Friends distress: n, (%)	2/4 (50)	66/839 (7.9)	21/30 (70)	44/589 (7.4)	a-b < 0.07; c-d < 0.0001; a-c < 0.19; b-d < 0.37
Burden teacher or class: n, (%)	2/4 (50)	32/280 (11.4)	15/31 (48)	32/204 (16)	a-b < 0.002; c-d < 0.0001; a-c < 0.4; b-d < 0.88
Peer relationships: n, (%)	2/4 (50)	21/274 (7.7)	19/31 (61)	21/199 (11)	a-b < 0.01; c-d < 0.0001; a-c < 0.94; b-d < 0.14
Classroom learning: n, (%)	4/4 (100)	67/258 (26)	23/29 (79)	70/193 (36)	a-b < 0.002; c-d < 0.0001; a-c < 0.67; b-d < 0.21
Emotions and behavior: n, (%)	4/4 (100)	72/274 (26)	25/31 (80)	61/203 (30)	a-b < 0.001; c-d < 0.0001; a-c < 0.31; b-d < 0.02
					a-b < 0.001; c-d < 0.0001; a-c < 0.33; b-d < 0.33

differences, and the adolescent age group. The current study revealed the prevalence of ADHD among adolescent students is 8.5%, and it varies significantly between genders with 13% of boys and 5.4% of girls having this disorder. Adolescents with ADHD have more academic and social difficulties than their non-ADHD peers, the boys more so than the girls. Boys with inattentive subtype of ADHD have more academic difficulties, while girls with inattentive subtype of ADHD have more social difficulties.

It has long been noted in the research by teachers and in the clinical setup that primary or elementary students with ADHD experience more difficulties academically than their non-ADHD peers.^{33,34} The current study observed similar findings that adolescents with ADHD have more academic and social difficulties than their non-ADHD peers.

Girls with ADHD exhibit less challenging behavior than boys with ADHD. This could be due to boys demonstrating more externalizing behaviors and girls demonstrating more internalizing behaviors.^{35,36} Adolescent girls with hyperactive/impulsive ADHD subtype did not cause a problem for the teachers or the class, making one wonder if girls with hyperactive/impulsive subtype of ADHD presented differently than boys with hyperactive/impulsive subtype of ADHD. Girls with inattentive subtype of ADHD appeared to be affected academically and socially more than the boys. They also experienced more social distress than the boys due to these difficulties. Other studies support our results regarding gender differences.^{37,38}

Despite the important implications that this topic has for health and academic services, there are very few studies in the region that have explored this topic extensively.³⁹ It is the medical professionals, parents, teachers, and schools who struggle daily to make the best decisions for their students. The results of this study revealed that ADHD is associated with academic and social problems in adolescents compared with their non-ADHD peers in a school environment in Qatar. Those who were identified by classroom teachers with ADHD experienced at least double the amount of difficulty with reading, writing, and math. In addition, these students displayed more difficulty with peer relationships, emotions, and concentration. In summary, these behaviors upset or distress the student more than the average student in a class and put a burden on the teacher and the class in general. It points to the fact that these students with ADHD are experiencing social

difficulties at a time when they need to have friends and the support of others to help them through school and life with a neurobiological disorder. Adolescents with ADHD symptoms are also experiencing difficulties with learning at an age when learning should be fun and seamlessly part of their existence instead of a struggle in their development. The authors feel that many students in Qatar are underdiagnosed with ADHD and are labeled as "lazy" for being inattentive or "daydreaming" and "ill-disciplined" for being hyperactive and impulsive. Hence, this study could pave the way to early identification and timely intervention to improve their academic and social lives at the early stages of ADHD.

Furthermore, this study hopes to illustrate the need for increased services for students with ADHD in the middle and high school age range especially in the Middle East, where literature for this age group is deficient. It is important for teachers in middle to high school to understand that ADHD continues to be a concern for adolescents and that it is most likely the cause of their underperformance academically, behaviorally, and socially. Furthermore, without this recognition, there will continue to be inadequate resourcing of schools and health systems to handle the challenge of adolescents in middle and high schools to ensure their positive growth and development as young adults. The main aim of this study is to evaluate the social and academic impact of adolescents with ADHD and gender differences compared with their non-ADHD peers.

Limitations

In the current study, we used the surveys based on the classroom teacher's observations and these surveys rely on the assurance that classroom teachers can identify the descriptors on the checklist. Some teachers may not be able to recognize the differences among their students. A standardized social skills checklist may have provided more accurate results, and extensive observation of students by an independent researcher would have provided cross reference for social behavior; however, this was not possible given the time constraints for conducting the study and the extensive duration required per student for completing the lengthy standardized lists. This would not be possible during the school hours. Cognitive abilities and social communication skills were not assessed as part of this study. Another limitation of this study is the relatively small sample size of the ADHD group that could be responsible for

trivial differences in the gender within ADHD subtypes on academic difficulties and social skills.

CONCLUSION

The data from the present study has demonstrated that ADHD is a common challenge both academically and socially for students and their teachers in Qatar and may have a different impact on genders with more effects on boys than girls. The prevalence of ADHD significantly varies between genders. Boys have faced more academic and social difficulties than girls with ADHD. There were significant differences between adolescents with ADHD who struggle more than their non-ADHD peers in a school environment. In general, adolescents with inattentive subtype of ADHD face more academic and social difficulties than adolescents with hyperactive/impulsive subtype of ADHD. Prompt identification and support within the school environment is important.

Author contributions

MK: Study design, conduct of the study, collection, and interpretation of data, manuscript writing, and revision

SA: Study design and manuscript writing and revision.

SS: Collection and interpretation of data, manuscript writing, and revision

SY: Statistical analysis, interpretation of data, manuscript writing, and revision

All authors have read and approved the final manuscript.

Competing interests

The authors declare that they have no conflict of interest.

Funding

None.

Acknowledgements

The authors would like to acknowledge the support of Dr Prem Chandra, Academic Scientist at HMC, for his technical support in data analysis and Dr Lori Bradshaw for her contribution to the study design.

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