

# Awareness of Attention Deficit Hyperactivity Disorder Among Special Education Students in Riyadh and Qassim Regions of Saudi Arabia – Cross Sectional Study

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## ABSTRACT

**Background:** ADHD is a chronic genetic neurodevelopmental disorder. Which is represented by either inattention or hyperactivity symptoms or both. Subsequently, the peak of symptoms appears during childhood and decreases with growing older. Plenty of researches showed various factors could contribute to increasing symptoms' severity. ADHD is considered as one of the most common neurodevelopmental disorders. Yet, Saudi society's awareness of it appears to be relatively lacking. Apart from that, researches showed that teachers and parents misconception about the disorder affects children's improvement as a result of decreased support and not providing a healthy environment for children's case.

**Objectives:** The general objective is to measure awareness levels of ADHD among college students who majored in special education. Besides, other specific objectives such as assessing their knowledge about dealing with an ADHD child, assessing their thoughts about having an ADHD course and its importance in their career, and evaluating ADHD involvement within special education curriculums.

**Methods:** Data were collected through a demographic questionnaire along with the Knowledge of Attention Deficit Disorders Scale (KADDS). Then, processed by the SPSS Statistics program.

**Results:** The 88 participants recorded low levels of awareness (39.74%). Especially in the aspects of general features and treatment of the disorder. With a significant difference in the knowledge level regarding those who took university courses about ADHD 86.4% and those who did not. 87.5% of special education students in our sample showed interest in adding a separate course about ADHD. Finally, 89.8% of special education students found their knowledge about ADHD critical in their future careers.

**Keywords:** ADHD, Teachers, Special Education, Awareness

**Key messages:** Effect of the and teachers understanding and education about the disorder on children's improvement

## INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a genetic disorder runs in family, it's described as a chronic neurological disorder. One of the main problems when it comes to ADHD is that the signs and symptoms of it could happen in some other disorders, so the awareness and knowledge of the disease has a major role in diagnosis, treatment and react with an ADHD case<sup>1</sup>. Symptoms usually appear as difficult to sustain attention during tasks, frequent loss of things, over activity, inability to keep on the same position, at excessive or incompatible levels with age or developmental stage<sup>2</sup>. According to the American

psychiatric association's diagnostic scheme, DSM-V, ADHD is classified into three main types depending on presenting symptoms; attention deficit disorder, hyperactivity-impulsivity disorder, and combined attention deficit hyperactivity disorder. With a tendency to affect males more than females in a 2:1 ratio in children. However, females are more often to be presented with inattentive symptoms<sup>2</sup>. Apart from that, one of the major problems to be faced in diagnosing ADHD during childhood is the overlapping of the disorder with other developmental disorders<sup>3,4</sup>. thus, it needs a careful differential diagnosis. Subsequently, the symptoms of ADHD are shown to be

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gradually decreased while growing older<sup>5</sup>.

Regarding the awareness levels of the ADHD in Saudi Arabia, in research done on Saudi Population in Medina Region, the result revealed that 25.1% of the sample have had an experience with an affected child, 14.7% have their knowledge about the disorder from medical websites, 7.6% read about it from social media means. Lastly, 11% did not know anything about the nature of the disorder<sup>6</sup>. While in another research done on healthcare physicians in Asser Region, about 13.2% took courses on the disorder, 63.2% had learned about ADHD by reading; with internet being the main source. Lastly, 32.1% had low knowledge levels and 17.6% had identified diagnosis of ADHD patients in the past year<sup>7</sup>. Additionally, in research done on 376 female teachers of the elementary school in Jeddah at 2017, the results were, more than half of the sample (54.3%) determined they have heard about the disorder, but unexpectedly the questionnaire detected a lower percentage (24.5%) of having sufficient knowledge about it<sup>8</sup>. Another study done on 141 male teachers of primary schools in Riyadh showed that 72% of the sample had either an excellent (13%) or appropriate (59%) awareness of ADHD. 50% of them identified various sources to obtain information about ADHD. Moreover, teachers who have a teaching experience of an ADHD child had better knowledge about it<sup>9</sup>. Also, another research was applied to 95 elementary school Teachers in Hail about the effect of educational Programs about ADHD on them. Results showed that it effectively improved teachers' knowledge, attitude, and their technique of management, in the light of this teachers need an educational program describing ADHD<sup>10</sup>. In brief, most of the previous studies indicate low levels of awareness. Hence the belief we need more ADHD awareness among Saudi society.

Despite the commonness of ADHD, the awareness towards it is still lacking. And that might be in light of the misconceptions, ambiguity of the disorder, insufficient education and other different factors.

Taking that into consideration, this study seeks to assess the awareness of ADHD among the Special Education Students in Riyadh and Qassim Regions by measuring their initial knowledge.

## THE RATIONALE FOR THE STUDY

Since there are a few types of research done in Saudi Arabia especially in Qassim and Riyadh regions about the prevalence, incidence, and awareness of ADHD, thus we have conducted this research topic to estimate their knowledge about the disorder as they have a fundamental part in the teaching process of ADHD children and having sufficient knowledge about it will positively influence the quality of children's school life.

## AIMS

This study aims to measure and assess special education students' knowledge about ADHD. Also, to evaluate the involvement of ADHD in special education curriculums. Subsequently, estimating students' thoughts about the importance of their awareness of ADHD in their future careers. Finally, identifying whether they are eager to have a course about ADHD as a subject.

## Research Question/Hypothesis

How much do special education students in Riyadh and Qassim Regions know about ADHD?

Null hypothesis: Special education students don't have any knowledge about ADHD.

Alternative hypothesis: In light of their major, special education students should have adequate knowledge about ADHD.

## METHODS

**Study Settings and Design:** We conducted a descriptive cross-sectional study following STORBE guidelines to measure the levels of awareness of ADHD among special education students.

**Study Population and Sampling:** The study population involves senior students of female and male special education students at Riyadh and Qassim, Saudi Arabia.

**Sample Size and Selection of Sample:** The number of participants in our sample reached 88 participants based on inconvenient sampling. By distributing our online questionnaire and informed consent to the senior students of female and male special education students in two major universities at Riyadh and Qassim (Qassim and king Saud universities). Unfortunately, the response rates were low.

**Methods for Data Collection:** We acquired our data through an online questionnaire consisting of two parts. 1-sociodemographic variables and experience/previous encounters with ADHD child or information. 2- Knowledge of Attention Deficit Disorders Scale (KADDS) (Sciutto, Terjesen & Bender, 2000).

## Research Instrument (Questionnaire) and its Validation

Instruments include a self-administered demographic questionnaire accompanied by (KADDS) which consists of a total of 39 questions could be furtherly sub grouped into three subscales according to the assessed knowledge: general knowledge about ADHD (15 questions), symptoms/diagnosis (9 questions), and treatment (12 questions). And a three answer format (True, False, Don't Know)<sup>11</sup>. The questionnaire was obtained along with its manual from the originator (ph. Mark J. Sciutto) and the validated translated version from (Dr. keetam alkahtani).

## List of Variables

Gender (male or female), Region (Riyadh or Qassim), Marital status (single or married), specific major (autism, hearing impairment, learning disabilities, intellectual disabilities, gifted/talented), Studying about ADHD at university (yes or no), taking a course about the ADHD (yes or no), A previous experience with ADHD patient (yes or no), all of these variables were collected through the demographic questionnaire.

## Data Analysis

Data were collected from the questionnaire. Then processed (edited, coded, classified and tabulated) to be amenable to analysis by the SPSS Statistics program. The type of variables that went under analysis are all categorical (Major, Gender, Marital Status, Region, studying about ADHD, Collage and Previous experiences) and a numerical score giving to the total of correct answers where a single correct answer is coded as (1). And since it is our hypothesis that the students who had ADHD in their curriculums know more about it; we used an independent t-test with a P-value of 5% (0.5) to test the significance of variation of scores between the ones who studied about it and the ones who did not.

## RESULTS

The number of participants in our sample was 88, 80 of them were female and 8 of them were male, (44.3%) were from Riyadh and (55.7%) were from Qassim region, according to marital status, (87.5%) were single and 10.2% were married and 2.3% had another status (Figure 1).

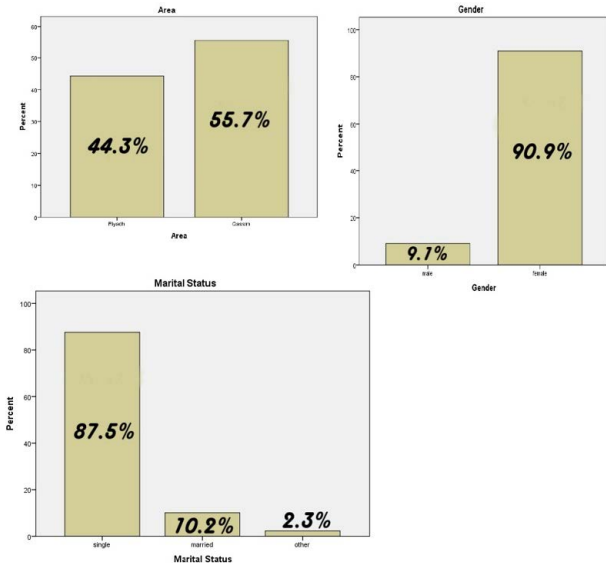


Figure 1: Represents participants age, region, marital status

Regarding their major, most of them (37.5%) have majored in autism, (30.7%) in intellectual disabilities and lastly, hearing impairments and learning disabilities with a percentage of (15.9%) for each major (Figure 2).

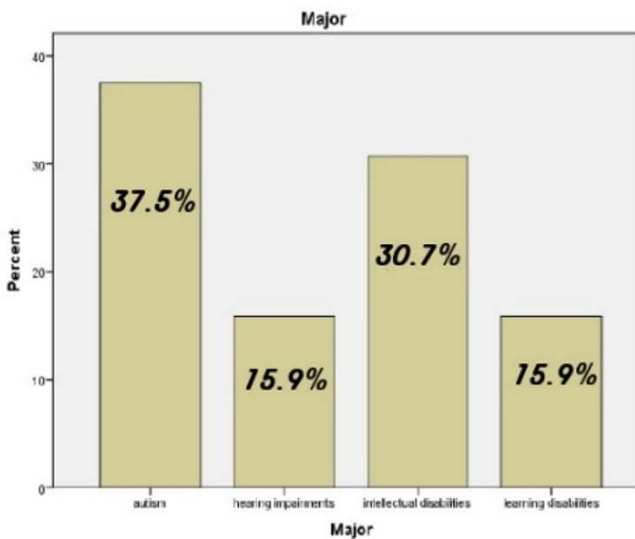


Figure 2: Represents participant's sub-majors in special education

Although most of the sample (86.4%) had an idea about ADHD by studying about it (Figure 3), a very small percentage (20.5%) took a course about ADHD (Figure 4) and the most of them (87.5%) were found interested in taking it as a subject (Figure 5) and (89.8%) admitted about its importance in their careers (Figure 6).

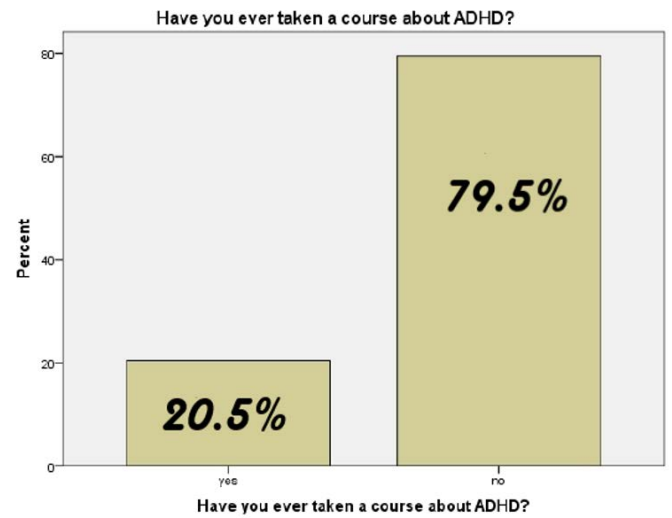


Figure 3: Represents participant's knowledge about ADHD obtained from collage

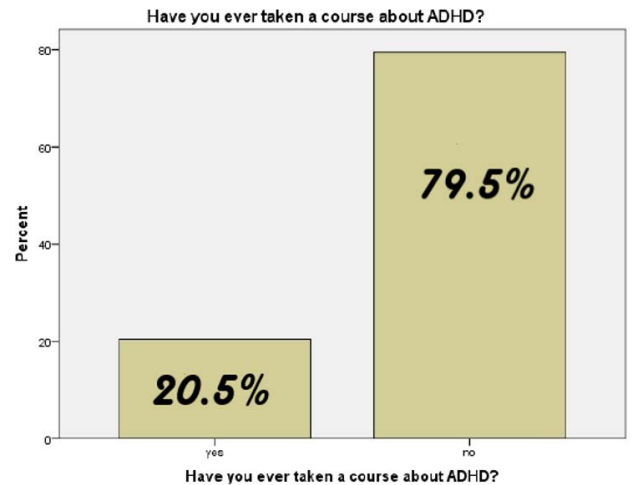


Figure 4: Represents participants who have taken a course about ADHD

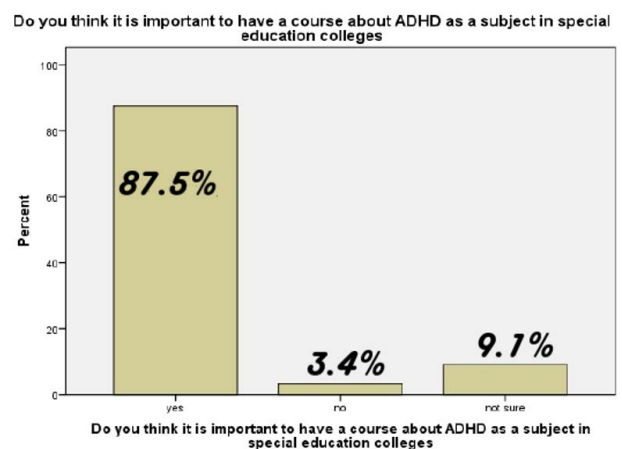
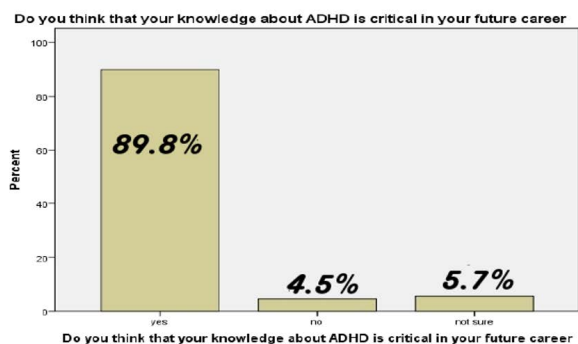


Figure 5: Represents participants interest in taking a course about ADHD



**Figure 6:** Represents participant’s opinion about the importance of the subject in their future career

The percentage of the mean 15.50 knowledge of the students (i.e., correct answers) was (39.74%) (Table 5). 85 out of 88 students had agreed that ADHD children are often distracted by extrinsic stimuli and had the highest score (Table 5 Q3). Almost three-quarters of the students thought that Parent and teacher training is generally effective in conjunction with medical treatment in managing an ADHD child (Table 5 Q10). And in another question, one-third of them did not agree with the sentence "Current research suggesting that ADHD is largely resulting from ineffective parenting skills" their answers were correct (Table 5 Q2). The p-value of independent t-test = 0.021 was conducted for the difference between the means of overall correct answers of students who had studied about ADHD and students who did not (Table 5).

**General Features Subscale (Table 3)**

The majority of the Special Education Students don’t know some general facts about ADHD with (32.4%) as a percentage of mean scores (Table 5). For instance, 82 (93.2%) thought a diagnosis of ADHD alone is enough to be placed in special education (Q24). Also as shown in the table (Q1), The second misunderstood fact that 80 (90.9%) participants have mistaken in that most estimates indicate that the disorder occurs in about 15% of school-age children. In addition, 68 (77.3%) of the respondents thought that majority of ADHD children grow out of their symptoms in puberty and subsequently function normally as adults (Q19). More than half of all respondents (58,9%) don't know that ADHD is more common in first-degree biological relatives like fathers or mothers of children with ADHD than the general population (Q6).

On the other hand, 70 (79.5%) of the Special Education students knew that the majority of ADHD students demonstrate poor academic performance in the elementary years (Q32). In a classroom setting (Q31), 66 (75%) of the students were aware that children with ADHD are easier to distinguish from normal children. In the (Q29), 47 (53.4%) participants were aware that the prevalence of ADHD among boys and girls is not equal. In addition, only 37 (42%) were aware that ADHD symptoms are often observed in non-ADHD children who come from chaotic and inadequate environments (Q33). The p-value of independent t-test = 0.109 was conducted for the difference between the means of correct answers about general features of students who had studied about ADHD and students who did not (Table 5).

**Symptoms and Diagnosis Subscale (Table 5)**

Nearly all Special Education Students (96.6%) knew that ADHD children frequently become distracted by extraneous stimuli (Q3). Second highest score was 95.5% of respondents who agreed that ADHD

children frequently fidget or squirm in their seats(Q9). The majority of participants (71 of 88) were unaware that stealing or breaking other people's things is not an ADHD symptom (Q14). According to 83.0% of respondents, ADHD can only be diagnosed when symptoms appear in two or more settings (Q21). The p-value of independent t-test= .043 was conducted for the difference between the means of correct answers about symptoms/diagnosis of students who had studied about ADHD and students who did not (Table 5).

**Treatment Subscale (Table 5)**

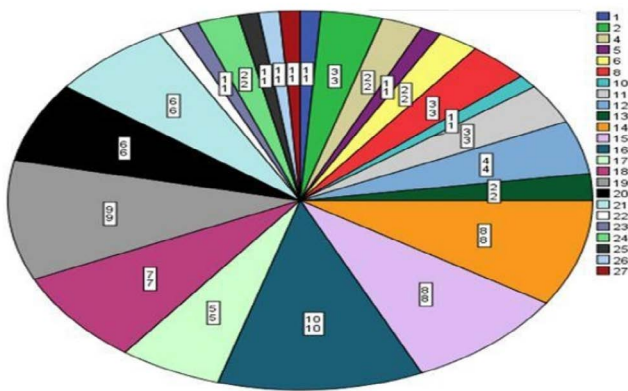
In the Treatment Table (Q23), majority of participants (95.5%) wrongly believe that reducing consumption of sugar or food additives is effective in reducing the symptoms of ADHD, whereas (86.4%) mistakenly believe that behavioral/psychological intervention for children with ADHD focuses primarily on their attentional problems. 69 (78.4%) believe electroconvulsive therapy as a shock treatment is effective for treating severe cases of ADHD, which is incorrect (Q35). In addition, only 22 (25%) of them knew that stimulant drugs are commonly prescribed for children who have ADHD (Q25). 60 (68.2%) respondents stated they understood ADHD isn't the result of ineffective parenting (Q2). The survey also revealed that 57 participants (64.8%) were unaware that individual psychotherapy is often insufficient for treating ADHD in children (Q18). On the other hand, about half of them (51.1%) knew that medications are often used before other behavior modification methods in severe cases of ADHD. Looking at the results of (Q10), 76.1% of the students were aware that parent and teacher training in conjunction with medication treatment is generally effective for managing ADHD children. The p-value of independent t-test= .015 was conducted for the difference between the means of correct answers about treatment of students who had studied about ADHD and students who did not (Table 2).

**DISCUSSION**

Looking at the results generally; it was concluded that the mean of students' total knowledge was 15.50 with maximum right answers of 27 out of 39 questions (Table 1) and that was achieved by only (1.1%) of the sample (Figure 7) the percentage of overall correct answers is (39.74%) indicating low levels of knowledge despite the association of their specialty with ADHD. The highest level of knowledge was in symptoms and diagnosis subscale followed by treatment and finally general features subscales with percentages of correct answers (59.56%, 40.5%, 32.4%) respectively giving us an idea about their little knowledge regarding ADHD's general features also telling that their major pieces of information were about ADHD's symptoms (Table 1).

**Table 1:** Scores comparison

	N	Total questions	Minimum	Maximum	Mean of knowledge	Percentage
Total	88	39	1	27	15.50	39.74%
General features	88	15	0	10	4.86	32.4%
Treatment	88	12	0	11	4.86	40.5%
Symptoms and Diagnosis	88	9	1	9	5.36	59.56%
Valid N (list wise)	88					



**Figure 7:** Represents the percentages of correct answers in the questionnaire

**Table 2:** Independent t-test

		t-test for Equality of Means		
		t	Sig. (2-tailed)	Mean Difference
Total	Equal variances assumed	2.344	.021	3.956
	Equal variances not assumed	2.686	.016	3.956
General features	Equal variances assumed	1.620	.109	1.193
	Equal variances not assumed	1.868	.080	1.193
Symptoms And Diagnosis	Equal variances assumed	2.050	.043	1.000
	Equal variances not assumed	2.279	.037	1.000
Treatment	Equal variances assumed	2.478	.015	1.772
	Equal variances not assumed	2.627	.019	1.772

In light of the role of their studies about ADHD in their universities on estimated levels of knowledge, (87,5%) of students think it is important to have a course about ADHD as a subject in special education colleges while only a small percentage (9.1%) were not sure about it (Figure 5). the results of independent t-test showed that there is a great difference between the means of the students who studied about it and the ones who did not in the total results and also in both of symptoms/diagnosis and treatment subscales with p-values of (0.021, 0.043, 0.015) respectively (Table 2); leading us to reject the null hypothesis and confirm the effect of their education on their knowledge levels. On the other hand, the general features subscale did not show the same results with a p-value of (0.109) (Table 2) telling that there's insignificant difference between the two groups regarding their knowledge about ADHD's general features.

**Table 3:** General features subscale

	Correct answer	correct incorrect	
		correct	incorrect
1. Most estimates suggest that ADHD occurs in approximately 15% of school-age children.	False	8 9.1%	80 90.9%

6. ADHD is more common in the 1st degree biological relatives (i.e. Mother, father) of children with ADHD than in the general population.	True	30 34.2%	58 65.9%
17. Symptoms of depression are found more frequently in ADHD children than in non-ADHD children.	True	27 30.7%	61 69.3%
19. Most ADHD children "outgrow" their symptoms by the onset of puberty and subsequently function normally in adulthood.	False	20 22.7%	68 77.3%
24. A diagnosis of ADHD by itself makes a child eligible for placement in special education.	False	6 6.8%	82 93.2%
29. In school age children, the prevalence of ADHD in males and females is equivalent.	False	47 53.4%	41 46.6%
31. Children with ADHD are more distinguishable from normal children in a classroom setting than in a free play situation.	True	22 25.0%	66 75.0%
32. The majority of ADHD children evidence some degree of poor school performance in the elementary school years.	True	70 79.5%	18 20.5%
33. Symptoms of ADHD are often seen in non-ADHD children who come from inadequate and chaotic home environments.	True	37 42.0%	51 58.0%

In comparing the overall percentage of knowledge (39.74%) with other research results, multiple studies were at a comparable range. For illustration, in a study conducted on Pre-Service Special Education Teachers in Makkah, their total awareness percentage was (64.2%)<sup>12</sup>. Another study showed a knowledge level of (58.9%) in a sample of kindergarten and primary school female teachers in Makkah, Al-Rusaifah discreet<sup>13</sup>. Additionally, a small level of knowledge with a percentage of (17.2%) resulted in a study conducted on Riyadh teachers<sup>14</sup>. Also, it was noticed from these studies along with ours that the amount of knowledge is usually higher in special education specialists than in other specialties.

About (80.7%) of the sample related stealing and damaging other people's belongings to ADHD (Table 4 Q14) and (78.4%) of them agreed that one of the symptoms is to be physically cruel to others (Table 4 Q7) and they were both false statements hence the belief that they view it as an aggression more than an increased activity. Also, purely (23.9%) of students answered correctly by disagreeing that it is common for ADHD children having inflated self-esteem or thoughts of grandiosity (Table 4 Q11) and only (30.7%) thought accurately that depression symptoms are more common among ADHD children (Table 3 Q17) indicating low percentages of knowledge about the psychological aspects of ADHD.

**Table 4:** Symptoms and diagnosis subscale

	Correct answer	correct incorrect	
		correct	incorrect
3. ADHD children are frequently distracted by extraneous stimuli.	True	85 96.9%	3 3.4%
5. In order to be diagnosed with ADHD, the child's symptoms must have been present before age 7.	True	33 37.5%	55 62.5%

7. One symptom of ADHD children is that they have been physically cruel to other people.	False	19 21.6%	69 78.4%
9. ADHD children often fidget or squirm in their seats.	True	84 95.5%	4 4.5%
11. It is common for ADHD children to have an inflated sense of self-esteem or grandiosity.	False	21 23.9%	67 76.1%
14. ADHD children often have a history of stealing or destroying other people's things.	False	17 19.3%	71 80.7%
16. Current wisdom about ADHD suggests two clusters of symptoms: One of inattention and another consisting of hyperactivity/impulsivity.	True	70 79.5%	18 20.5%
21. In order to be diagnosed as ADHD, a child must exhibit relevant symptoms in two or more settings (e.g., home, school).	True	73 83%	15 17%
26. ADHD children often have difficulties organizing tasks and activities.	True	70 79.5%	18 20.5%

**Table 5:** Treatment subscale

	Correct answer	correct	incorrect
2. Current research suggests that ADHD is largely the result of ineffective parenting skills.	False	60 68.2%	28 31.8%
10. Parent and teacher training in managing an ADHD child is generally effective when combined with medication treatment.	True	67 76.1%	21 23.9%
18. Individual psychotherapy is usually sufficient for the treatment of most ADHD children.	False	31 35.2%	57 64.8%
20. In severe cases of ADHD, medication is often used before other behaviour modification techniques are attempted.	True	45 51.1%	43 48.9%
23. Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD.	False	4 4.5%	84 95.5%
25. Stimulant drugs are the most common type of drug used to treat children with ADHD.	True	22 25.0%	66 75.0%
34. Behavioral/Psychological interventions for children with ADHD focus primarily on the child's problems with inattention.	False	12 13.6%	76 86.4%
35. Electroconvulsive Therapy (i.e. Shock treatment) has been found to be an effective treatment for severe cases of ADHD.	False	19 21.6%	69 78.4%
36. Treatments for ADHD which focus primarily on punishment have been found to be the most effective in reducing the symptoms of ADHD.	False	46 52.3%	42 47.7%

In props of general features (Table 3), most answers were incorrect with a mean of 4.86 correct answers out of 15 questions (32.4%) (Table 1) which means that a higher quantity of students had less understanding about the characteristics of the disorder. The highest percentage of incorrect answers was about estimating that ADHD appears in about 15% of school-age children (90,9%); leading us to believe that most of the students have less information about estimating ADHD occurrence levels (Q1). Also, most of the answers about the relativity of ADHD with biological factors were incorrect (65,9%), hence the belief that most of the students have less information about ADHD's risk factors and causes (Q6). And when they answered the prevalence according to gender question, most of the answers were correct (53,4%) indicating that the students have good pieces of information about ADHD distribution between girls and boys (Q29). Finally, only (22.7%) were aware that "most children with ADHD grow out of their symptoms by the puberty" was a false statement revealing low levels of understanding regarding ADHD's manifestations on life-long terms (Q19).

Focusing on symptoms and diagnosis subscale (Table 4), it had the highest records of correct answers (59.56%) (Table 1) which was similarly recorded in other studies<sup>13-15</sup>. High percentages of the students answered correctly about the presence of symptoms such as distraction (96.6%) (Q3), fidgeting (95.5%) (Q9) and difficulties in organizing activities (79.5%) (Q26). Additionally, majority of the surveyed, (79.5%) understood that the symptoms are clustered into inattention and hyperactivity (Q16); indicating a good understanding of the main symptoms of ADHD. Lastly, (83%) agreed that the symptoms should appear in two or more settings to be diagnosed with ADHD (Q21), other diagnosing criteria were answered correctly by (37.5%) which states that a child's symptoms must appear before the age of 7 (Q5). Thus, they have adequate knowledge in the diagnosis matters.

In concerns of treatment questions (Table 5), the mean of the correct answers was 4.86 out of 12 questions (40.5%) (Table 1); indicating lower awareness regarding the treatment of ADHD children which was also noticed in other studies in KSA<sup>13-15</sup>. Only (25.0%) knew that stimulant drugs are the commonest used type of drugs in the treatment (Q25); evidencing that students have less information about types of medications in the treatment of an ADHD child. Also, when asked about their thoughts in the importance of their ADHD information in their future careers, (89.8%) (figure 6) answered that they view it as a critical knowledge which goes in line with (76,1%) of correct answers about the effectiveness of training of parents and teachers in managing an ADHD child (Q10). And in the matter of psychotherapy treatment, they had less knowledge about it as only (35.2%) knew that it is not sufficient alone in treating ADHD (Q18), and (13.6%) knew that it does not (with behavioral intervention) focus primarily on the inattention symptoms (Q34). Another low level of correct answers (21.6%) was recorded from the ones who disagreed that Electroconvulsive Therapy such as shock treatment has the best effect in reducing symptoms (Q35). More percentages of correct answers were about using the medication before trying to modify behaviors in severe cases (Q20) and about the ineffectiveness of treatment that focuses primarily on punishment (Q36) with percentages of (51.1%) and (52,3%) respectively. Finally, a huge knowledge gap was recorded with only (4.4%) of correct answers while the rest of the sample (95,5%) related reducing sugar to the reduction of symptoms (Q23) suggesting a knowledge gap in diet effect on an ADHD child.

## CONCLUSIONS

**With consideration that we have faced some limitations while collecting samples which resulted in an unbalanced ratio regarding female and male sections, and due to the inability to do a systemic**

sampling we had to collect the data by distributing an online questionnaire, however, the data that we were able to collect recorded a low knowledge levels about (ADHD) (percentage of total knowledge 39.74) amongst special education undergraduates. Also, it should be mentioned that there was a difference in the knowledge level regarding those who took university courses about ADHD 86.4% and those who did not, it also should be mentioned that 87.5% were interested in taking a course regarding ADHD. Most special education students in our sample showed interest in adding a separate course about ADHD. Finally, 89.8% of special education students found their knowledge about ADHD critical in their future careers.

As so from our perspective we think implementing a curriculum that cares about this disorder for the University systems could help raise society's awareness.

Also, we recommend conducting similar studies on a wider and international level to have an idea about the level of awareness. Based on the results actions should be taken towards raising society's awareness about ADHD and how to deal with a patient suffering from ADHD like doing community campaigns and such. Additionally, raise special education practitioner knowledge about ADHD which will be reflected on better care and practice in addition to aiding in increasing society awareness.

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**Authorship Contribution:** All authors share equal effort contribution towards (1) substantial contributions to conception and design, acquisition, analysis and interpretation of data; (2) drafting the article and revising it critically for important intellectual content; and (3) final approval of the manuscript version to be published.

**Acknowledgement:** First and foremost, we thank Allah for granting us countless blessings, knowledge, and the opportunity to the work on this research. Secondly, we offer our sincerest gratitude to our extraordinary supervisors, for being a great inspiration and for giving us continuous support, motivation and gaudiness. Finally, we would like to thank Ph.D. Mark J. Scitutto and Dr. Keetam alkahtani, for frequent help and for questionnaire section.

**Ethical Consideration:** All procedures followed to the guide lines of ethics from the Declaration of Helsinki, an informed consent form was given. Which, demonstrated the goals of the study to the participants. Besides, informing them that they have the freedom to drop out from the study without any obligations towards the research team. The confidentiality and anonymity of the participants is respected and assured. As the participant assigned with code numbers for the purpose of analysis only.

**Ethical Approval was Obtained on:** 12, May 2019

**IRB Board Name:** subcommittee of Health Research Ethics, Deanship of Scientific Research, Qassim University.

**Approval Number:** 01/08/2018

**Availability of Data:** The data of participants is completely confidential and only available on request from the corresponding author due to privacy restrictions and the results will be published as numerical datum without any private information of the participants; raw data will be kept with the principal investigator for 5 years.

**Potential Conflict of Interest:** None

**Competing Interest:** None

**Funding:** This study did not receive any means of funding by any source.

**Acceptance Date:** 05 November 2022

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