Original Article

Access this article online

Quick Response Code:

Website: www.jehp.net

DOI: 10.4103/jehp.jehp_957_21

Knowledge about attention-deficit/hyperactivity disorder among primary schoolteachers in Sharjah, UAE

Sara Saad, Farida Aljanahi, Saravanan Coumaravelou[1], Ammar Agha, Muna Alsamiri, Sajad Allami

Abstract:

BACKGROUND: Teachers' knowledge and awareness about the signs and symptoms, behavioral problems, and treatment are imperative to handling children with attention-deficit/hyperactivity disorder (ADHD) in the school. This study aimed to assess the level of knowledge about ADHD among primary schoolteachers in Sharjah, UAE.

MATERIALS AND METHODS: In this cross-sectional study, a convenient sampling method was used to collect data from 239 teachers working in private schools and 25 teachers working at the public schools in Sharjah. A self-administered questionnaire was used to measure the sociodemographic characteristics and the Knowledge of Attention-Deficit Disorders Scale was used to measure the knowledge about ADHD. Data were analyzed using both descriptive and inferential methods.

RESULTS: Private schoolteachers have more knowledge about ADHD than public Schoolteachers (P = 0.016). Teachers obtain information about ADHD through educational workshops (32%), social media (23%), friends and relatives (12%), TV and radio (9%), scientific journals (8%), campaigns (7%), and other sources (9%) such as the Internet, lectures, personal experience, and reading. Most of the teachers (56.3%) have knowledge about the signs and symptoms of ADHD, whereas teachers' knowledge about the associated features and treatment of ADHD is 34.4% and 34.1%, respectively.

CONCLUSION: Teachers' level of knowledge about ADHD-associated features and treatment was inadequate in Sharjah. Hence, enhancing knowledge about ADHD by providing various training workshops and conducting social events, and campaigns are warranted to enhance their knowledge on ADHD.

Keywords:

Attention-deficit/hyperactivity disorder, knowledge, primary school teachers

Student, College of Medicine, University of Sharjah, Sharjah, United Arab Emirates

[1]Assistant Professor, Department of Family & Community Medicine & Behavioral Sciences, College of Medicine, University of Sharjah, Sharjah, United Arab Emirates

Address for correspondence:
Mr. Ammar Agha, College of Medicine, University of Sharjah, P O Box 27272, Sharjah, United Arab Emirates.
E-mail: ammaraw99@gmail.com

Received: 29-06-2021
Accepted: 30-08-2021
Published: 23-03-2022

Introduction

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common childhood conditions affecting approximately 2.2% of children worldwide.[1] This disorder is marked by inattention, hyperactivity, and impulsivity.[1,2] ADHD is considered a challenge for both the teachers and the children themselves due to the extensive adverse effects it can leave on a child's school, social, and personal life. A teacher is a significant person in recognizing ADHD problems and requesting referrals to clinical assessment at schools.[3] As such, the teachers' knowledge about ADHD is vital to managing the classroom environment properly and being able to develop the child's intellectual, academic, communication, and social skills as well as provide adequate guidance to the parents of children with ADHD. Literature indicated that 49% of teachers in India and 38% of teachers

How to cite this article: Saad S, Aljanahi F, Coumaravelou S, Agha A, Alsamiri M, Allami S. Knowledge about attention-deficit/hyperactivity disorder among primary schoolteachers in Sharjah, UAE. J Edu Health Promot 2022;11:99.

in Saudi Arabia had inadequate knowledge about ADHD.[3,4]

Safaan *et al*. found that teachers aged above 40 years, widowed, divorced, have a graduate degree, and have more than 15 years of experience in handling and teaching a child with ADHD had a significantly higher score on knowledge about ADHD, but there was no significant association between the teachers' knowledge and gender.[5] On the contrary, Al-Omari *et al*. found a lack of significant differences among teachers based on their age, marital status, place of work, educational level, and years of experience.[6] According to Mohr-Jensen *et al*., it is believed that having special education qualification and specific experience in handling children diagnosed with ADHD significantly predicts the advanced level of knowledge; however, this is inconsistent with the age and gender of teachers.[7] However, these studies had been conducted in other countries. Therefore, there is a need to study the association between demographic variables and teachers' knowledge about ADHD in the UAE.

The educational system is undergoing constant development to help prepare students to keep pace with and meet the needs of the future. We aim in our study to examine the different approaches private and public schools might be taking in educating teachers about ADHD. Teachers' sources and amount of knowledge are an essential aspect of determining their competency in managing the classroom environment and students as well. Investigating the teachers' sources of knowledge is of interest in our study because they often rely on a range of resources which contributes to their ability to integrate them in their practice and in the early recognition of children with ADHD, respectively. For example, Alshehri *et al*. stated that the teachers significantly obtain information from the online resources (67%);[8] interestingly, Frigerio, *et al*. reported that most teachers mainly obtained their information from a specialist (47.6%).[9]

Past literature on ADHD shows variations in the level of teachers' knowledge related to signs and symptoms, associated features, and treatments.[7,10-12] Some teachers showed adequate knowledge of symptoms but inadequate knowledge in the identification of associated features and treatment of ADHD. On the other hand, Mohr-Jensen *et al*. found that teachers have adequate knowledge about pharmacotherapy to know that it is useful for ADHD,[7] but more confusion was found in the topics of diet management and other psychological therapies.[11,13-15] Past studies Akram *et al*. and Bekle have well-documented that in addition to medication, psychosocial and educational interventions are also necessary to handle ADHD.[13,16] However, no study is reported in the UAE about teachers' knowledge on ADHD. Other studies conducted in middle eastern countries also found that teachers were aware of the general characteristics of ADHD, but they were less skilled in the identification of the causative factors and appropriate treatment.[5,17] Therefore, there is a need to study teachers' knowledge about ADHD among schoolteachers in the UAE. Hence, the purpose of this study is to identify differences in teachers' knowledge about ADHD based on their age, gender, years of experience, educational level, marital status, and previous experience in dealing with children with ADHD, in addition, determining the differences in knowledge between private and public school teachers, assessing the sources of knowledge, and evaluating their awareness of the associated features, signs, and symptoms, and treatment of ADHD.

Materials and Methods

Study design and setting

In this cross-sectional study, 264 primary schoolteachers from the private and public sectors participated via a self-administered questionnaire.

Study participants and sampling procedure

This study had collected data from 14 private schools (N = 239) and two public schools (N = 25) in Sharjah. Due to the busy schedules of the teachers and the difficulty in obtaining permission from the school administration to collect data from their schoolteachers, this study was only able to approach two public schools. Teachers who teach students between grades 1 and 6 that are from accessible schools and who can speak English or Arabic are eligible to be included in the study. The demographic characteristics of participants is mentioned in Table 1.

Ethical consideration

After the study had obtained an ethical and research approval (REC-20-01-29-02-S) from the University of Sharjah, we sent a request to the Ministry of Education in Sharjah to allow us to visit the primary schools in the emirate of Sharjah, and for the private schools, we sent E-mails directly to the schools' principals to allow us to include their teachers in our study. After getting approval, we scheduled visits to schools in Sharjah so we could personally collect the data from teachers. Written consent was received from all participants before they completed the questionnaire. We ensured that all the information collected from the participants would be kept confidential. A research assistant assisted the participants in completing the questionnaire.

Data collection tool and technique

As mentioned, data collected were via a self-administered questionnaire.

Table 1: Sociodemographic makeup of the sample

Sociodemographics	*n* (%)
Gender	
Male	56 (21.2)
Female	206 (78.0)
Age	
18-25	16 (6.1)
26-35	105 (39.8)
36-50	123 (46.4)
>50	18 (6.8)
Marital status	
Single	40 (15.2)
Married	208 (78.8)
Separated	10 (3.8)
Widowed	5 (1.9)
Educational level	
Diploma	16 (6.1)
Bachelor	172 (65.2)
Postgraduate	70 (26.5)
Years of experience	
<3	54 (20.5)
4-6	68 (25.8)
7-10	55 (20.8)
≥11	73 (27.7)
Previous experience teaching children with ADHD	
Yes	151 (57.2)
No	107 (40.5)
Number of children taught with ADHD	
<5	92 (34.8)
6-10	44 (16.7)
≥11	15 (5.7)
Not applicable	107 (40.5)
School type	
Private	239 (90.5)
Public	25 (9.5)

ADHD=Attention-deficit/hyperactivity disorder

Sociodemographic scale

This scale consists of 17 items. It measures gender, age, nationality, marital status, educational level, occupational experience, and previous experience with ADHD students. In addition, this study measured where the participants received information (social media, friends, educational workshops, etc.) about ADHD. This question was developed based on the previous study conducted by Alshehri *et al*., Manal Basudan *et al*., and Alfageer *et al*.[8,18,19]

Knowledge of Attention-Deficit Disorders Scale

This instrument was developed by Sciutto *et al*., in English and by Sciutto *et al*., in Arabic to assess the level of knowledge that teachers have regarding ADHD.[20,21] It is a 36-item question scale with the possible answers being true/false/don't know. These questions are divided into three subgroups that measure different aspects of knowledge related to ADHD. They are (1) symptoms/diagnosis of ADHD (9 items), (2) general information on the nature, causes, and impact of ADHD (15 items), and (3) treatment of ADHD (12 items). Each item within the Knowledge of Attention-Deficit Disorders Scale (KADDS) is marked as correct or wrong. Some of the items were scored negatively. For example, if item one was answered as true, then the response is correct, but if item five was answered, similarly, then it would be wrong as the correct answer for item five is false. Adequate knowledge in an item indicates that they have answered it correctly, while inadequate knowledge indicates that participants have either answered incorrectly or opted for the "I don't know" option. Since there is no cutoff score, the total percentage of the subscales determines the knowledge levels. The Cronbach's alpha reliability of the scale is 0.86.[22]

Statistical analysis

Descriptive statistics were used to find the frequency, percentage, median, and range of participants that participated in this study. Since the study data were not normally distributed, the Mann–Whitney test was used for categorical variables with two groups (gender and school type). The Kruskal–Wallis test was used for categorical variables with more than two groups (age, marital status, educational level, years of experience, and the number of children taught with ADHD). All the variables are independent except for the KADDS scale that is treated as the dependent variable. Following the example of Lingeswaran A., all data were coded, entered, and analyzed using the IBM SPSS Statistics for Windows, Version 23.0 by IBM Corp in Armonk, New York, US that was released in 2015.[23,24]

Results

Demographic information

Table 1 shows the demographic characteristics of the participants.

Differences in gender and previous experience teaching children with attention-deficit/hyperactivity disorder

There were no statistically significant differences in the mean rank of knowledge about ADHD between male (mean rank = 132.17) and female (mean rank = 131.32) teachers ($P = 0.940$). On the other hand, participants who had experience teaching children with ADHD had a significantly higher level of knowledge (mean rank = 144.16; $P = 0.000$) [Table 2]. The number of children with ADHD that they taught caused a significant difference in these knowledge levels, where the more children taught, the higher their score ($H = 13.096$; $P = 0.001$) [Table 3]. In addition, a significant difference between private (mean rank = 136.16) and public (mean rank = 97.54; $P = 0.016$) schoolteachers' knowledge about ADHD was found.

Table 2: Gender, school type, and previous experience differences on knowledge about attention-deficit/hyperactivity disorder

Factor	*n*	Mean rank	Sum of ranks	U-statistic	*P*
Gender					
Male	56	132.17	7401.5	5730.5	0.940
Female	206	131.32	27,051.5		
Total	262				
Experience teaching children with ADHD					
Yes	151	144.16	21,768.5	5864.5	0.000
No	107	108.81	11,642.5		
Total	258				
School type					
Private	239	136.16	32,541.5	2113.5	0.016
Public	25	97.54	2438.5		
Total	264				

$P \leq 0.05$ was considered statistically significant. ADHD=Attention-deficit/hyperactivity disorder

Table 3: Differences that age, marital status, educational level, years of experience, and the number of children with attention-deficit/hyperactivity disorder dealt with made on the knowledge about attention-deficit/hyperactivity disorder

Factor	*n*	Mean rank	H-statistic	df	*P*
Age					
18-25	16	90.19	7.585	3	0.055
26-35	105	131.16			
36-50	123	140.06			
>50	18	111.75			
Total	262				
Marital status					
Single	40	129.36	0.222	3	0.974
Married	208	131.94			
Separated	10	138.45			
Widowed	5	142.80			
Total	263				
Educational level					
Diploma	16	134.34	0.085	2	0.959
Bachelor	172	128.84			
Postgraduate	70	130.01			
Total	258				
Years of experience					
<3	54	118.38	3.799	3	0.284
4-6	68	117.15			
7-10	55	125.60			
≥11	73	138.47			
Total	250				
Number of children taught with ADHD					
<5	92	68.49	13.096	2	0.001
6-10	44	79.51			
≥11	15	111.77			
Total	151				

$P \leq 0.05$ was considered statistically significant. ADHD=Attention-deficit/hyperactivity disorder

The difference in knowledge about attention-deficit/hyperactivity disorder based on age, marital status, educational Level, and years of experience in teaching children with attention-deficit/hyperactivity disorder

This study could not find significant differences in knowledge based on the age, marital status, educational level, and years of experience in teaching children with ADHD [Table 3].

Main sources of knowledge

Figure 1 shows that participants mainly got their information about ADHD from educational workshops (32%, n = 131), social media (23%, n = 94), friends and relatives (12%, n = 49), TV and radio (9%, n = 37), scientific journals (8%, n = 33), campaigns (7%, n = 31), and other sources (9%, n = 39) such as the Internet, lectures, personal experience, and reading.

Knowledge about attention-deficit/hyperactivity disorder

The KADDS is divided into three subscales with a total score of 36. We found that participants' overall scores had a mean of 14.32 (standard deviation [SD] = 5.242), corresponding to 39.8% of teachers answering correctly [Table 4].

The first subscale with a total score of 15 focuses on associated features and measures general knowledge about ADHD. It had a mean of 5.16 (SD = 2.365), corresponding to 34.4% of teachers answering correctly. Over 70% of teachers were able to distinguish ADHD children from normal children in a classroom setting and play areas. However, <15% of teachers were able to tell that in very young children, the problem behaviors of ADHD children (e.g., hyperactivity, inattention) are not distinctly different from the age-appropriate behaviors of non-ADHD children. In addition, these teachers were

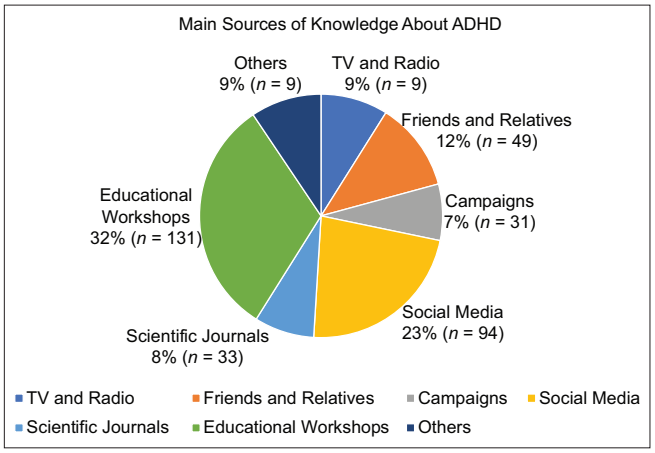

Figure 1: The percentage distribution of sources of knowledge about attention-deficit/hyperactivity disorder

not able to differentiate between child problems in novel and familiar situations [Table 5].

The second subscale consists of 9 items, and it focuses on symptoms and diagnosis. This subscale had a mean of 5.07 (SD = 2.031), corresponding to 56.3% of teachers answering correctly. Over 70% of teachers were able to identify that ADHD children frequently fidget and wriggle in their seats and are easily distracted. In addition, these participants could tell that to diagnose ADHD, children should exhibit symptoms in two or more settings like both at school and at home [Table 6].

The last subscale with a total score of 12 focuses on "Treatment" and it had a mean of 4.09 (SD = 2.104), corresponding to 34.1% of teachers answering correctly.

Table 4: Teachers' average percentage response to knowledge items overall and in the separate subscales

Descriptive statistics of KADDS				
Item	***n***	**Mean**	**SD**	**Percentage answering correctly**
Associated features	264	5.16	2.365	34.4
Symptoms/diagnosis	264	5.07	2.031	56.3
Treatment	264	4.09	2.104	34.1
Overall KADDS	264	14.32	5.242	39.8

KADDS=Knowledge of Attention-Deficit Disorders Scale, SD=Standard deviation

Over 70% of teachers were able to answer correctly that parental training and medication would work effectively in managing ADHD. However, <15% of teachers were aware that psychological/behavioral interventions focused on more than just the child's problem with inattention, and dietary intervention was not effective in reducing symptoms [Table 7].

Among the participants, 43.6% (n = 115) did not agree with the misconception that ADHD was equal among both genders. Thirty-six percent (n = 96) of teachers agreed that ADHD was common among first-degree biological relatives [Table 5].

Discussion

This study aimed to measure the ADHD knowledge differences among teachers in the UAE. The results of this study are in accordance with previous studies that report no significant differences between the knowledge levels of ADHD among male and female teachers.[24,25] On the other hand, Park *et al*. found that female teachers exhibited more knowledge in Korea.[26] The difference in gender could be attributed to a more unequal influence of mental health education in Korea compared to the UAE.

One of the observations in this study was that the level of knowledge of ADHD among teachers was least among

Table 5: Teachers' percentage response (total number of teachers) to attention-deficit/hyperactivity disorder associated features

KADDS "ADHD associated features"	Correct answer	Percentage answered		
		True	False	Don't know
Children with ADHD are more distinguishable from normal children in a classroom setting than in a free play situation	True	83.3	8.7	6.1
Symptoms of ADHD are often seen in non-ADHD children who come from inadequate and chaotic home environments	True	54.5	17.4	25.4
It is possible for an adult to be diagnosed with ADHD	True	40.2	16.7	37.9
The majority of ADHD children evidence some degree of poor school performance in the elementary school years	True	47.7	33.7	15.5
If an ADHD child is able to demonstrate sustained attention to video games or TV for over an hour, that child is also able to sustain attention for at least an hour of class or homework	False	34.8	42.0	20.5
Most ADHD children "outgrow" their symptoms by the onset of puberty and subsequently function normally in adulthood	False	34.8	18.9	41.7
In school-age children, the prevalence of ADHD in males and females is equivalent	False	21.2	43.6	28.4
Symptoms of depression are found more frequently in ADHD children than in non-ADHD children	True	36.0	25.4	34.5
There are specific physical features which can be identified by medical doctors (e.g. pediatrician) in making a definitive diagnosis of ADHD	False	48.5	19.3	28.4
ADHD is more common in the 1st degree biological relatives (i.e., mother, father) of children with ADHD than in the general population	True	36.4	23.5	37.5
A diagnosis of ADHD by itself makes a child eligible for placement in special education	False	59.8	21.2	15.9
In very young children (less than 4 year old), the problem behaviors of ADHD children (e.g., hyperactivity, inattention) are distinctly different from age-appropriate behaviors of non-ADHD children	False	64.8	13.3	19.7
ADHD children are typically more compliant with their fathers than with their mothers	True	28.8	29.9	39
Most estimates suggest that ADHD occurs in approximately 15% of school-age children	False	37.5	15.9	44.3
ADHD children generally experience more problems in novel situations than in familiar situations	False	54.5	14.8	27.3

ADHD=Attention-deficit/hyperactivity disorder, KADDS=Knowledge of Attention-Deficit Disorders Scale

Table 6: Teachers' percentage response (total number of teachers) to symptoms/diagnosis

KADDS "Symptoms/diagnosis"	Correct answer	Percentage answered		
		True	False	Don't know
ADHD children often fidget or squirm in their seats	True	78.8	8.7	9.5
ADHD children often have difficulties organizing tasks and activities	True	69.7	17.8	9.8
ADHD children are frequently distracted by extraneous stimuli	True	74.6	9.1	12.5
Current wisdom about ADHD suggests two clusters of symptoms: One of inattention and another consisting of hyperactivity/impulsivity	True	65.2	7.6	23.9
In order to be diagnosed as ADHD, a child must exhibit relevant symptoms in two or more settings (e.g., home, school)	True	73.5	9.1	14.8
One symptom of ADHD children is that they have been physically cruel to other people	False	37.1	34.8	24.6
It is common for ADHD children to have an inflated sense of self-esteem or grandiosity	False	40.5	26.1	30.7
ADHD children often have a history of stealing or destroying other people's things	False	24.6	39.8	32.6
In order to be diagnosed with ADHD, the child's symptoms must have been present before age 7	True	44.3	21.2	31.8

ADHD=Attention-deficit/hyperactivity disorder, KADDS=Knowledge of Attention-Deficit Disorders Scale

Table 7: Teachers' percentage response (total number of teachers) to treatment

KADDS "Treatment"	Correct answer	Percentage answered		
		True	False	Don't know
Parent and teacher training in managing an ADHD child are generally effective when combined with medication treatment	True	82.2	8.7	6.8
Individual psychotherapy is usually sufficient for the treatment of most ADHD children	False	43.2	35.6	19.3
Treatments for ADHD which focus primarily on punishment have been found to be the most effective in reducing the symptoms of ADHD	False	16.3	59.8	21.2
In severe cases of ADHD, medication is often used before other behavior modification techniques are attempted	True	33.0	27.7	36.0
When treatment of an ADHD child is terminated, it is rare for the child's symptoms to return	False	15.9	33.0	47.0
Side effects of stimulant drugs used for treatment of ADHD may include mild insomnia and appetite reduction	True	36.7	11.4	49.2
Antidepressant drugs have been effective in reducing symptoms for many ADHD children	True	25.0	16.3	56.1
Electroconvulsive therapy (i.e., shock treatment) has been found to be an effective treatment for severe cases of ADHD	False	13.3	28.4	56.1
Current research suggests that ADHD is largely the result of ineffective parenting skills	False	34.1	33.3	28.8
Behavioral/Psychological interventions for children with ADHD focus primarily on the child's problems with inattention	False	51.9	11.0	34.5
Stimulant drugs are the most common type of drug used to treat children with ADHD	True	18.2	23.1	55.7
Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD	False	59.5	13.3	25.8

ADHD=Attention-deficit/hyperactivity disorder, KADDS=Knowledge of Attention-Deficit Disorders Scale

the younger age group; it increased with age but started to fall again once the age became over 50. This result is compatible with a research conducted in Korea stating that young teachers are more motivated to learn about ADHD.[26] However, this study's result is inconsistent with other middle eastern countries reporting that age was not the major factor affecting the level of knowledge of ADHD.[4,24] Teachers in the UAE may concentrate more on the educational aspects of children.

The results are compatible with another study that states that there is no significant correlation between the educational level and the knowledge level of ADHD among teachers.[4] This could be due to the general lack of ADHD awareness in the gulf region. On the other hand, Aly *et al*. identified that teachers with a higher educational degree tended to have higher levels of knowledge when compared to undergraduate degree holders.[24] This may be due to a lack of interest, or a lack of information given about ADHD during educational programs for teachers.

When it came to experience in teaching children with ADHD, the results of this study were accordant with other middle eastern studies that stated that teachers who have had experience teaching children with ADHD have a higher level of knowledge of ADHD than teachers who have not had any experience, it also shows that the more children with ADHD they taught, the higher their scores were.[4,25]

When comparing the results from private and public schools, we observed that the teachers from private schools tended to have higher overall levels of knowledge of ADHD. The result is partially consistent with Kern *et al*., stating that private schools had a slightly

better understanding of ADHD being a neurological condition; although, when it came to the perceptions about the cause, interventions, and incidence rates of ADHD, there were no significant differences between public and private school teachers.[27] Moreover, in the UAE, private schoolteachers are more likely to encounter a larger number of students with ADHD, giving them more opportunities to learn about it.

Our study findings suggest that the participants' main source of knowledge was through attending educational workshops (32%) followed by social media (23%). This could be explained by the attentive efforts of the Ministry of Education in the UAE to constantly develop the teachers' qualifications for them to manage the classroom environment properly and be able to teach students with different intellectual abilities. However, a study conducted in Saudi Arabia stated that the main source of knowledge about ADHD was the Internet followed by social media.[18] Interestingly, it is seen that the influence of social media is positive in the gulf region considering it to be the second source of obtaining information. Furthermore, another study conducted in India suggests that primary schoolteachers got their information mainly through television followed by the Internet.[28] This could be because the study was carried out in a small district rather than a larger area.

In this study, 39.8% of teachers correctly answered the overall questions about signs and symptoms, associated factors, and the treatment of ADHD. Hence, teachers' knowledge of ADHD is higher than results in KSA (17.2%)[11] but less than findings in the USA (73%).[29]

When analyzing the knowledge subscales, this study found that 34.4% of participants have adequate general knowledge about ADHD. This finding is higher than 16.8%,[11] the result of research conducted in KSA, but less than the 72.2% result of a study conducted in the USA.[29] Second, 56.3% of participants have adequate knowledge about the symptoms and diagnosis of ADHD. This percentage is more than the KSA study result of 18.1%[11] but less than the USA study result of 79.6%.[29] Finally, 34.1% of participants had adequate knowledge about the treatments of ADHD. This result was higher than the KSA finding of 16.6%[11] but less than the USA result of 76.4%.[29]

The discrepancies between this study and the others observed were consistent throughout all subscales, as the UAE is more intermediate in its overall ADHD awareness. As the lowest points scored were in the associated features and treatments of ADHD subscales, more awareness efforts in these areas are needed. The overall level of knowledge ought to be raised among teachers in the UAE to be better prepared to deal with students with ADHD.[30-31]

Limitations and recommendations

This study used a self-report scale and the convenient sampling method to analyze the data which may threaten the validity of the response. This study collected data from 264 teachers and the results may be different if a greater number of teachers participated in the study. This study faced difficulties in receiving approval from schools and had to end data collection early due to the COVID-19 pandemic. Most of the teachers participating in this study were from private schools leading to selection bias and a possible discrepancy in results between school types. This limits us to using a nonparametric test when comparing public versus private schoolteachers' knowledge about ADHD. As the study population is not normally distributed, nonparametric tests had to be used.

Based on this study findings, it is recommended that the Ministry of Education conducts an infrequent workshop to enhance the awareness and knowledge about ADHD among teachers. Second, conducting a similar study in all the emirates will give a more comprehensive idea about teachers' knowledge about ADHD. Finally, as social media has the potential to reach a large portion of the population, the platform can play a vital role in spreading awareness about ADHD. Implementing these methods will result in the improvement of the overall understanding of ADHD.

Conclusion

Teachers' level of knowledge about ADHD in the emirate of Sharjah is inadequate. The highest levels of knowledge were observed in teachers who have had experience teaching children with ADHD and private schoolteachers. Although knowledge did increase with age, it dropped again past the age of 50. Conducting workshops and incorporating the special education course in the teachers' educational program would enhance the teacher's knowledge and motivation to handle children with ADHD.

Acknowledgment

The authors would like to thank all participants in the study. All participants signed a written consent before filling the questionnaire, they had autonomy, and the whole data collection process was confidential.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. American Psychiatric Association (APA). Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Washington, D.C.: American Psychiatric Publishing; 2013.
2. Fayyad J, Sampson NA, Hwang I, Adamowski T, Aguilar-Gaxiola S, Al-Hamzawi A, *et al.* The descriptive epidemiology of DSM-IV adult ADHD in the world health organization world mental health surveys. Atten Defic Hyperact Disord 2017;9:47-65.
3. Shroff HP, Hardikar-Sawant S, Prabhudesai AD. Knowledge and misperceptions about attention deficit hyperactivity disorder (ADHD) among school teachers in Mumbai, India. Int J Disability Dev Educ 2017;64:514-25.
4. Al-Moghamsi EY, Aljohani A. Elementary school teachers' knowledge of attention deficit/hyperactivity disorder. J Fam Med Prim Care 2018;7:907-15.
5. Safaan NA, El-Nagar SA, Saleh AG. Teachers' knowledge about attention deficit hyperactivity disorder among primary school children. Am J Nurs Res 2017;5:42-52.
6. Al-Omari H, Al-Motlaq MA, Al-Modallal H. Knowledge of and attitude towards attention-deficit hyperactivity disorder among primary school teachers in Jordan. Child Care Pract 2015;21:128-39.
7. Mohr-Jensen C, Steen-Jensen T, Bang-Schnack M, Thingvad H. What Do Primary and Secondary School Teachers Know About ADHD in Children? Findings From a Systematic Review and a Representative, Nationwide Sample of Danish Teachers. J Atten Disord. 2019 Feb; 23 (3):206-219. doi: 10.1177/1087054715599206. Epub 2015 Aug 22. PMID: 26297913.
8. Alshehri AM, Shehata SF, Almosa KM, Awadalla NJ. Schoolteachers' knowledge of attention-deficit/hyperactivity disorder – Current status and effectiveness of knowledge improvement program: A randomized controlled trial. Int J Environ Res Public Health 2020;17:5605.
9. Frigerio A, Montali L, Marzocchi GM. Italian teachers' knowledge and perception of attention deficit hyperactivity disorder (ADHD). Int J Sch Educ Psychol 2014;2:126-36.
10. Aguiar AP, Kieling RR, Costa AC, Chardosim N, Dorneles BV, Almeida MR, *et al*. Increasing teachers' knowledge about ADHD and learning disorders: An investigation on the role of a psychoeducational intervention. J Atten Disorders 2014;18:691-8.
11. Alkahtani K. Teachers' knowledge and misconceptions of attention deficit/hyperactivity disorder. Psychology 2013;4:963-9.
12. Macey KD. Attention-deficit/hyperactivity disorder: Teacher knowledge and referral for assessment. In: Doctoral Dissertation. College Station, Texas, United States: Texas A&M University; 2006.
13. Bekle B. Knowledge and attitudes about attention-deficit hyperactivity disorder (ADHD): A comparison between practicing teachers and undergraduate education students. J Atten Disorders 2004;7:151-61.
14. Kos JM, Richdale AL, Jackson MS. Knowledge about attention-deficit/hyperactivity disorder: A comparison of in-service and preservice teachers. Psychol Sch 2004;41:517-26.
15. Ohan JL, Cormier N, Hepp SL, Visser TA, Strain MC. Does knowledge about attention-deficit/hyperactivity disorder impact teachers' reported behaviors and perceptions? Sch Psychol Q 2008;23:436-49.
16. Akram G, Thomson AC, McLarty B, McLarty M. ADHD and the role of medication: Knowledge and perceptions of qualified and student teachers. Eur J Spec Needs Educ 2009;24:423-36.
17. Abed M, Pearson S, Clarke P, Chambers M. Saudi Arabian teachers' knowledge and beliefs about ADHD. J Int Assoc Spec Educ 2014;15:67-74.
18. Alfageer HH, Aldawodi MD, Al Queflie SA, Masud N, Al Harthy NA, Alogayyel N, *et al*. Knowledge and attitude of male primary school teachers about attention deficit and hyperactivity disorder in Riyadh, Saudi Arabia. J Nat Sc Biol Med 2018;9:257-62.
19. Basudan M, Akbar N, El-Ghamdi W, Ibrahim A. Knowledge and Attitude of Female Teachers Toward ADHD at Elementary Schools, Jeddah, KSA, 2017. International Annals of Medicine. 2019;3 (1). https://doi.org/10.24087/IAM.2019.3.1.693
20. Sciutto MJ, Terjesen MD, Bender Frank AS. Teachers' knowledge and misperceptions of attention-deficit/hyperactivity disorder. Psychol Sch 2000;37:115-22.
21. Sciutto MJ, Terjesen MD, Kučerová A, Michalová Z, Schmiedeler S, Antonopoulou K, *et al*. Cross-national comparisons of teachers' knowledge and misconceptions of ADHD. Int Perspect Psychol 2016;5:34-50.
22. Soroa M, Gorostiaga A, Balluerk N. Review of tools used for assessing teachers' level of knowledge with regards attention deficit hyperactivity disorder (ADHD). In: Attention Deficit Hyperactivity Disorder in Children and Adolescents. IntechOpen Limited: 5 Princes Gate Court, London, SW7 2QJ, United Kingdom; 2013.
23. IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp; 2015.
24. Aly SE, Mohammed FM, Ahmed ZA. Teachers' perception and attitudes toward attention deficit hyperactivity disorder in primary schools at Assiut City. Al Azhar Assiut Med J 2015;13:165-73.
25. Youssef MK, Hutchinson G, Youssef FF. Knowledge of and attitudes toward ADHD among teachers: Insights from a Caribbean nation. SAGE Open 2015;5 (1). [doi: 10.1177/2158244014566761].
26. Park S, Lee Y, Lee ES, Kim CE. Public recognition of attention-deficit hyperactivity disorder in Korea: Correct identification, causes, treatments, and social distance. Asian J Psychiatry 2018;38:3-8.
27. Kern A, Amod Z, Seabi J, Vorster A. South African foundation phase teachers' perceptions of ADHD at private and public schools. Int J Environ Res Public Health 2015;12:3042-59.
28. Kaur G, Nitakumari K. A descriptive Study to assess the knowledge regarding ADHD among primary school teachers in selected schools of district Mohali with a view to develop informational booklet. Asian J Nurs Educ Res 2018;8:399-402.
29. Kindred A. An investigation of the knowledge of educators and parents about attention deficit hyperactivity disorder. In: Doctoral Dissertation. Graduate School, Minot State University: Minot, North Dakota; 2019.
30. Hosseinnia M, Mazaheri MA, Heidari Z. Knowledge, attitude, and behavior of elementary teachers regarding attention deficit hyperactivity disorder. J Educ Health Promot 2020;9:120.
31. Lingeswaran A. Assessing knowledge of primary school teachers on specific learning disabilities in two schools in India. J Educ Health Promot 2013;2:30.