

# Elementary School Teachers' Knowledge Regarding Attention Deficit Hyperactivity Disorder in Ha'il City

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## ABSTRACT

**Aims:** Teachers are often the first to recognize that their students have attention-deficit/hyperactivity disorder (ADHD), since students and teachers are in contact most school days, and teachers notice how average students usually perform in the school setting. There were two aims in this study; 1) to assess teachers' knowledge regarding ADHD and 2) to investigate socio-demographic differences between teachers on their knowledge of ADHD in the city of Ha'il, Saudi Arabia. **Methods:** From January to February 2020 we conducted a cross-sectional study using an electronic questionnaire distributed randomly through visits to schools. The study population comprised of 405 teachers working in governmental elementary schools in Ha'il city. The questionnaire contained a total of 44 questions, 39 of them from the Knowledge of Attention Deficit Disorder Scale developed by Scututto et al and 5 demographic questions. Respondents' answers were used to evaluate their general knowledge about ADHD and its symptoms, diagnosis, and treatment. We also requested information and classified teachers according to their demographic characteristics. **Results:** The age ranges for teachers were between 22 and 60 years. The average percentage of knowledge regarding ADHD symptoms/diagnosis was 45.3%, whereas general knowledge and awareness of treatment measures were 32.3% and 31.2%, respectively. The average percentage score of overall knowledge regarding ADHD was 34.9%. **Conclusions:** ADHD knowledge among elementary school teachers in Ha'il city was insufficient considering the primary role of teachers in identifying this disorder.

**Keywords:** Attention Deficit Hyperactivity Disorder, ADHD, Saudi Arabia, Knowledge, School Teachers, Teacher Training

## INTRODUCTION

According to The Diagnostic and Statistical Manual of Mental Disorders – 5th edition (DSM-5) (American Psychiatric Association, 2013), the definition of Attention Deficit Hyperactivity Disorder (ADHD) is "a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, has symptoms presenting in two or more settings (e.g., at home, school, or work; with friends or relatives; in other activities), and negatively impacts social, academic or occupational functioning". ADHD is a very common disorder mainly affecting school-age children worldwide with an estimated prevalence of around 5 percent in children and around 2.5 percent in adults. (American Psychiatric Association, 2013). However, worldwide prevalence records are

subject to modifications due to potential different diagnostic criteria. The occurrence of ADHD generally varies among males and females with an approximate male : female ratio of 2:1 in childhood and 1.6:1 in adulthood (American Psychiatric Association, 2013).

DSM-5TM classifies the features of ADHD as predominantly inattentive, predominantly hyperactive-impulsive, or combined presentations (American Psychiatric Association, 2013). Children with ADHD have poorer organizational skills and less effective sequential memory (Klykylo, 2013). The disorder also has an effect on their fine and gross motor skills, resulting in more chaotic handwriting; cognitive function and efficiency is also affected, with overall impairment in the learning process (Klykylo, 2013). The nature of the disorder needs to be explained to the affected individual, the family, and the

students' teachers (Klykylo, 2013). Teachers are an important source of reports for the diagnosis of ADHD because they have daily exposure to children in a variety of clinically relevant situations (Goodman, 2012; Scιutto, Terjesen & Frank, 2000).

Many studies have been conducted worldwide about this topic (Sciutto et al., 2000 & Kos et al., 2004 & Kleynhans, 2005), three studies were done in Saudi Arabia (in Medina, Riyadh, and Jeddah) concluded that the level of teachers' knowledge regarding ADHD is insufficient (Al-Moghamsi & Aljohani, 2018; Alfageer, et al., 2018; Basudan, Akbar, El\_Ghamdi, & Ibrahim, 2019). Other studies were conducted in Riyadh and the Western region of Saudi Arabia regarding the prevalence of ADHD in elementary school students (3.4-5%, according to AlZaben et al., 2018 and Albatti et al., 2017). None of these studies, however, were conducted in the Northern region of Saudi Arabia. The goals of this study were 1) to assess teachers' knowledge regarding ADHD and 2) to investigate socio-demographic differences between teachers on their knowledge of ADHD in Ha'il, Saudi Arabia.

## METHODS

A cross-sectional study was conducted with governmental elementary school teachers. The study sample size needed was 351, estimated based on the total teacher population of 3983 using the Raosoft sample size calculator with a 95% confidence interval and 5% margin of error. We added 15% ( $n = 54$ ) to allow for non-respondents. All teachers working in governmental elementary schools in Ha'il city constituted the study population. However, teachers working as administrators or student advisors as well as teachers working in non-governmental schools were excluded from the study population.

We used a questionnaire adopted in previous studies (Al-Moghamsi & Aljohani, 2018; Alkahtani, 2013; Kos, Richdale, & Jackson, 2014) that was pre-validated and translated to Arabic. This frequently used scale is the Knowledge of Attention Deficit Disorder Scale, developed by Sciutto et al., (2000) a 39-item questionnaire that covers teachers' knowledge of ADHD in three areas: general knowledge (16 items); symptoms and diagnosis (9 items); and treatment (14 items). This questionnaire has

been used in our study and distributed randomly through elementary school visits during the period from January to February 2020. We provided the online version of the questionnaire to school principals after dividing the Ha'il region into four zones (Northern, Western, Eastern, and Southern) and then selecting two boys' and two girls' schools from each zone; we visited 16 total schools out of 209 schools found in Ha'il city. We added a demographic data questionnaire including age, gender, education level, education role, and years of teaching experience.

The knowledge scoring system was processed so that overall scores less than 50% were considered to be insufficient, whereas more than 50% overall was considered sufficient. Right answers were scored "1"; wrong or "do not know" answers scores "0". Total score and score percentages were computed for each participant. The categorical data were compared between subgroups using the chi square test. The mean scores were compared between the participants using analysis of variance (ANOVA). We used the Statistical Package for the Social Sciences (SPSS) software (version 25; IBM, Armonk, New York) to perform all the statistical analyses. Any P value less than 0.05 was considered statistically significant.

The study obtained ethical approval from the ethics committee at the College of Medicine, University of Ha'il (approval number HREC00140/CM-UOH.4/20). Informed consent was obtained from the teachers via the electronic survey and Agreement to complete the anonymized online questionnaire was accepted as willingness to participate in the study.

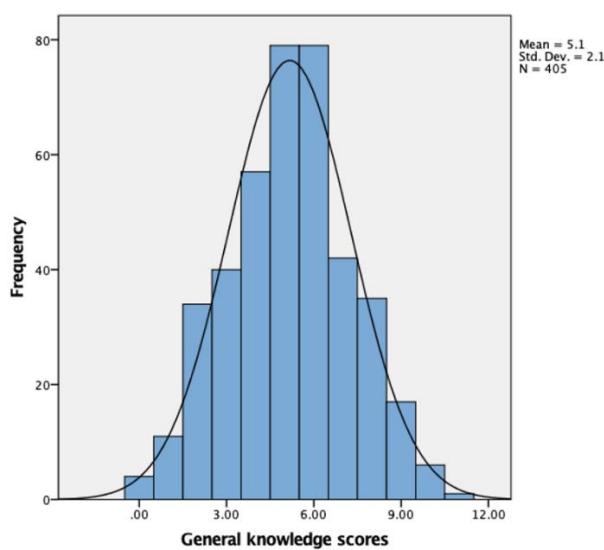
## RESULTS

The survey included 405 teachers. The age range was between 22 and 60 years, participants were classified into three groups, no mean age can be calculated due to age grouping. About two-fifths (42%) of respondents were between 31 and 40 years of age. More than half the teachers were male (53.1%), while 46.9% were female. Most teachers had a bachelor's degree (60.7%). Many were teachers of religion and science (28.9% and 26.2%, respectively), and 34.6% of the total number of teachers had more than 15 years'

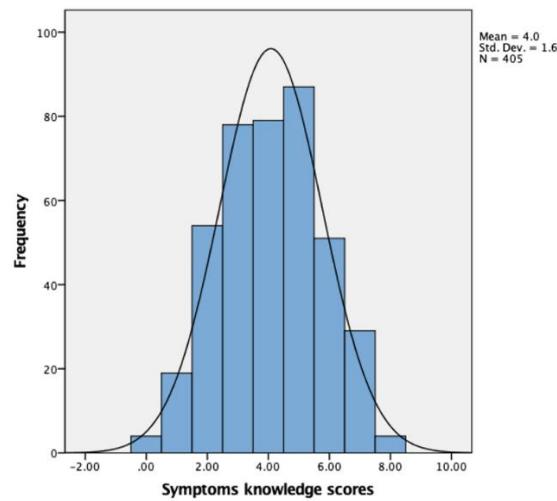
teaching experience. Refer to table 1 for more details.

**Table 1: General characteristics of the participants (n=405).**

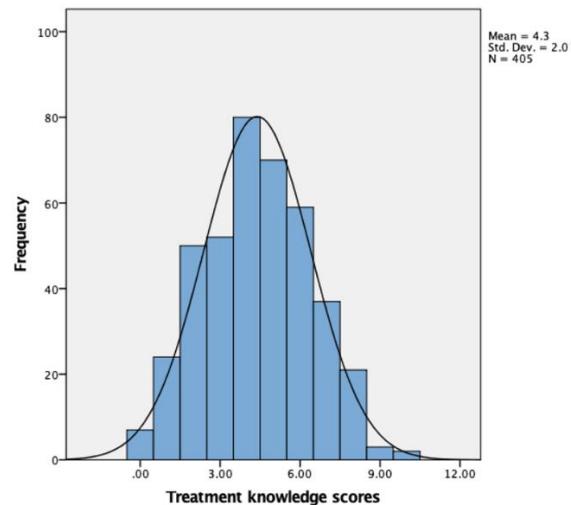
Categories	Frequency (%)
<b>Age (years)</b>	
22-30	83 (20.5)
31-40	170 (42)
>40	152 (37.5)
<b>Gender</b>	
Male	215 (53.1)
Female	190 (46.9)
<b>Highest educational level</b>	
Diploma	72 (17.8)
Bachelor	246 (60.7)
Master	71 (17.5)
PhD	16 (4)
<b>Type of job</b>	
Religion	117 (28.9)
Arabic	94 (23.2)
English	36 (8.9)
Social studies	52 (12.8)
Science	106 (26.2)
<b>Experience in teaching (years)</b>	
<5	58 (14.3)
5-10	112 (27.7)
11-15	95 (23.5)
>15	140 (34.6)



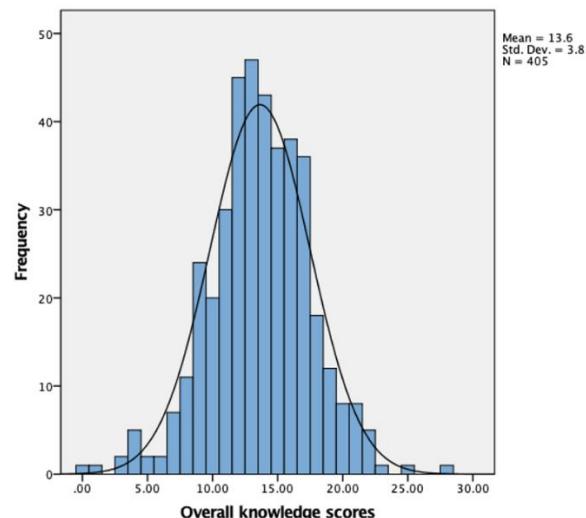
**Figure 2: The average score of knowledge regarding ADHD general information.**



**Figure 2: The average scores of knowledge regarding ADHD Symptoms and Diagnosis.**



**Figure 3: The average scores of knowledge regarding ADHD treatment.**



**Figure 4: The average overall scores of knowledge regarding ADHD.**

**Table 2: Factors associated with teachers' overall knowledge regarding ADHD**

	Mean score ( $\pm$ SD)	P value
<b>Age</b>		
22-30	13.3 ( $\pm$ 3.9)	0.241
31-40	14.0 ( $\pm$ 3.4)	
>40	13.3 ( $\pm$ 4.1)	
<b>Gender</b>		
Male	13.5 ( $\pm$ 3.7)	0.526
Female	13.7 ( $\pm$ 3.9)	
<b>Highest education level</b>		
Diploma	13.7 ( $\pm$ 4.0)	0.803
Bachelor	13.5 ( $\pm$ 3.9)	
Master	13.8 ( $\pm$ 3.5)	
PhD	12.8 ( $\pm$ 3.5)	
<b>Type of job</b>		
Religion	13.6 ( $\pm$ 3.3)	0.191
Arabic	14.0 ( $\pm$ 3.9)	
English	13.1 ( $\pm$ 3.5)	
Social studies	12.5 ( $\pm$ 4.0)	
Science	13.8 ( $\pm$ 4.2)	
<b>Experience in teaching (years)</b>		
<5	12.8 ( $\pm$ 4.9)	0.405
6-10	13.7 ( $\pm$ 3.3)	
11-15	13.8 ( $\pm$ 3.3)	
>15	13.7 ( $\pm$ 4.0)	

### General Information

With a score of 16 points, the mean was  $5.1 \pm 2.1$ . We found a significant association between teachers' general knowledge about ADHD and their age. Respondents between 31 and 40 years old had the highest mean score,  $5.5 \pm 1.9$  out of 16, compared to those older than 40, who had the lowest score,  $4.7 \pm 2.1$  out of 16 ( $P = 0.008$ ). Frequencies of scores in the general knowledge are shown in figure 1.

### Symptoms and Diagnosis

With a score of 9 points, the mean was  $4.0 \pm 1.6$ . Higher scores for knowledge about the symptoms and diagnosis of ADHD were also found to be associated with respondents' age. Those over 40 had the highest mean score,  $4.4 \pm 1.6$  out of 9, compared to those between 22 and 30, who had the lowest mean score,  $3.4 \pm 1.7$  out of 9 ( $P < 0.001$ ). Gender was another important factor when comparing teachers'

knowledge about symptoms and diagnosis of ADHD; female teachers had a mean score of  $4.2 \pm 1.7$  out of 9, compared to male teachers' score of  $3.9 \pm 1.5$  out of 9 ( $P = 0.03$ ). Level of education was also associated with higher scores; those who had a diploma had the highest mean score,  $4.3 \pm 1.6$  out of 9, while those who had a PhD had the lowest,  $3 \pm 1.5$  out of 9 ( $P < 0.001$ ). Another factor identified as important was job type. Teachers of Arabic had the highest mean score,  $4.4 \pm 1.5$  out of 9, compared to social studies teachers' lowest mean score of  $3.7 \pm 1.6$  out of 9 ( $P = 0.038$ ). The last significant factor was teaching experience. Teachers with more than 15 years of experience had the highest mean score,  $4.7 \pm 1.5$  out of 9, as opposed to those with fewer than five years of experience, who had the lowest mean score,  $3.4 \pm 1.7$  out of 9 ( $P < 0.001$ ). Frequencies of scores in the symptoms and diagnosis are shown in figure 2.

### Treatment

With a score of 14 points, the mean was  $4.3 \pm 2.0$ . We found a significant association between teachers' knowledge about treatments for ADHD and years of teaching experience. Those who had between 11-15 years of experience had the highest mean score,  $4.6 \pm 1.9$  out of 14, compared to those who had more than 15 years' experience, who had the lowest score,  $4.0 \pm 2.0$  out of 14 ( $P = 0.044$ ). Frequencies of scores in the treatment are shown in figure 3.

### Overall knowledge regarding attention deficit/hyperactivity disorder

With a total score of 39 points, the mean was  $13.6 \pm 3.8$ . The overall knowledge of teachers regarding ADHD in relation to their age and years of experience were not statistically significant, at ( $P = 0.241$ ) and ( $P = 0.405$ ), respectively. Neither was there a significant relationship to education level ( $P = 0.803$ ) nor to the type of job ( $P = 0.191$ ) as shown in Table 2. [Figure 4]

### DISCUSSION

Ha'il city teachers' average percentage of knowledge about ADHD was poor considering their vital role in reporting and managing children with ADHD. Globally, there are a number of similar studies evaluating teachers'

knowledge about ADHD. In the U.S., teachers had a 47.8% knowledge on average (Sciutto et al., 2000), and in Australia the average was 60.7% (Kos et al., 2004). In South Africa, the average was 42.6% (Kleynhans, 2005). We think the lower level of knowledge in our study is related to a lack of resources and awareness, and our numbers are borne out by the results of other studies in Saudi Arabia. In Riyadh, the average percentage of teachers' knowledge of ADHD was 17.2% (Alkhatani, 2013); in Jeddah it was 24.5% (Basudan et al., 2019); and in Medina it was 38% (Al-Moghamsi & Aljohani, 2018). The recent larger average percentages might be due to the increasing awareness of the disorder in the Saudi community. In looking at the results of all these studies, including ours, we see a need for Saudi teachers to learn more about ADHD.

The prevalence of ADHD in the Kingdom of Saudi Arabia is estimated to be 3.4-5% (AlZaben et al., 2018; Albatti et al., 2017). Teachers who encounter children with ADHD may just treat them as bullies and punish them instead of seeking appropriate interventions. Fortunately, most teachers who are able to recognize the symptoms of ADHD are more than 40 years old, which may mean children with ADHD are less prone to get a disciplinary act. Older teachers, especially those who have more than 15 years of teaching experience, have the highest mean score in recognizing ADHD symptoms, which might be related to their long experience in the field. Although those who had a PhD are expected to score somewhat the highest regarding the knowledge of symptoms and diagnosis compared to the rest of the sample, yet they had the lowest score. This cannot be explained due to insufficient data.

Lack of education about ADHD can result in long-term public harm. In our sample, the majority of respondents thought that children with ADHD "outgrow" their symptoms by the onset of puberty and function normally as adults. This misperception contributes to misunderstanding or negligence towards adults and teenagers who had ADHD as children. About a third of our respondents agreed that ADHD can be diagnosed in adulthood. This lack of knowledge does a disservice to a large number of adults as well as children.

## CONCLUSION

Knowledge about ADHD among elementary school teachers in Ha'il was identified as insufficient. Scores on knowledge about symptoms and diagnosis were somewhat higher, but teachers' grasp of general information and methods of treatment for ADHD were lacking. These findings highlight the need for action to improve teachers' knowledge and provide resources for children with ADHD.

## LIMITATIONS

There are certain limitations to the study. Because of the use of a self-reported questionnaire, the participants are subject to bias and recall. Also, the study only represents one community in one region.

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## CONFLICT OF INTEREST

The authors declared no potential conflicts of interest in regard to the research, authorship, and/or publication of this article.

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