

## Original Article

# Attention-deficit Hyperactivity Disorder: Knowledge and Perception of Dental Care Providers at Ajman

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ABSTRACT

**Aim:** This study aimed to improve our understanding regarding attention-deficit hyperactivity disorder (ADHD) awareness among dental care providers of Ajman University (AU), and also to identify factors that are highly associated with an increased awareness toward ADHD. **Materials and Methods:** This is a cross-sectional survey study designed and carried out among convenience sample of dental care providers. The survey was carried out by using a self-administrated questionnaire. The questionnaire was composed into demographic, socioeconomic, and ADHD information. **Results:** The study shows low level of awareness toward ADHD. Moreover, participants who provided treatment for a patient with ADHD were found to show higher degree of awareness toward ADHD. **Discussion:** The existing results will be used in developing a well-planned program and clear polices to increase the level of awareness regarding ADHD.

**KEYWORDS:** Attention deficit, dental care, hyperactivity disorder, knowledge

## INTRODUCTION

Attention-deficit hyperactivity disorder (ADHD) is one of the most complex, lifelong neuropsychiatric disorders, which is a development of neurobiological condition that will affect the children behaviors.<sup>[1]</sup> The presence of hyperactivity, impulsivity, and inattention are the symptoms of ADHD. These symptoms must exhibit after six months and before the age of seven years. In most cases, the disorder persists into the adolescence and it may continue to the adulthood.<sup>[2]</sup> There is about 9% of the children who have ADHD around the world, 29.7% in the UAE,<sup>[3]</sup> 3.2% in Lebanon,<sup>[4]</sup> and 2.7% in Saudi Arabia.<sup>[5]</sup> Some studies show that the main etiology is unclear, but it could be a combination of various risk factors (biological, environmental, psychosocial, and genetic factors).<sup>[6]</sup> Neuroimaging studies have related the ADHD with the abnormal functioning of the prefrontal-strial regions, and with the hypofunctioning

of the cortico-striatal-thalamo-cortical circuits.<sup>[7]</sup> According to the *Diagnostic and Statistical Manual of Mental Disorder*, fourth edition (DSM-IV), ADHD has been divided into three subtypes: predominantly inattentive, predominantly impulsive/hyperactive, and combined subtype.<sup>[8]</sup> There is no laboratory test for diagnosing ADHD, but there are some clinical criteria found in the DSM-IV used in diagnosing ADHD. For combined subtypes, it must be present more than six of nine DSM-IV inattention criteria for inattention and hyperactivity. At least six of the nine DSM-IV inattention criteria must be present in predominantly inattentive, whereas for the predominantly hyperactive/impulsive more than six of the nine DSM-IV of

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hyperactivity/impulsivity must be present. So, at the end diagnosing of ADHD depends on multiple observation in two setting (such as school and home).<sup>[9]</sup> There is no cure for ADHD, but there is management and treatment that can reduce symptoms that include medications, psychosocial treatment (behavioral therapy), or combination, which seems that it is the most effective one. Long- and short-acting psychostimulant is the most commonly medication prescribed for patients with ADHD, and those who cannot respond to the stimulant or have side effects, it can use the adjunctive or alternative treatment.<sup>[10]</sup> Sugar-free diet, chamomile, multivitamins therapy, and ginseng are the alternative treatment.<sup>[11]</sup> Behavioral therapy is used for managing ADHD, which involve the teachers and parents to participate in changing social and physical environment, which will alter the behavior.<sup>[12]</sup>

Some patients with ADHD had higher decayed, missing or filled teeth (DMFT) scores than others.<sup>[13]</sup> They had also xerostomia, which is an adverse effect of methylphenidate, but other study did not show any adverse effect of methylphenidate on salivary flow rate.<sup>[14]</sup> Some studies showed that the unstimulated saliva production in patients with ADHD is same as controls, whereas other study found that all children with ADHD have low unstimulated salivary flow rate.<sup>[15]</sup> Children with ADHD have trouble in learning and carrying out many of the motor skills,<sup>[16]</sup> which affects their everyday activities such as toothbrushing.

Patients with ADHD cannot stay focused in dental treatment, so because of that dental management is one of the most challenging aspects in treating them. Pediatrician and oral health-care provider are always the best that can control ADHD during treatment.<sup>[17]</sup> The most effective behavioral technique is “tell-show-do” because it controls the behavior of patients with ADHD.

The aim of this study was to assess the level of knowledge of dental care provider toward ADHD.

## MATERIALS AND METHODS

### Study design

This study was a cross-sectional, questionnaire-based survey, conducted between March and May 2018, and carried out among convenience sample of dental care providers from AU.

### Data collection

Self-administered questionnaire was used as a tool to collect the data from the participants, where the questionnaire was modified from the study carried out in Saudi Arabia by Abeer *et al.*<sup>[18]</sup> to evaluate the

knowledge and perception of dental care providers toward ADHD. The questionnaire consisted of two sections: demographic, and ADHD information.

### Statistical methods

The data were analyzed using Statistical Package for the Social Sciences software (Statistical Package for the Social Sciences (SPSS), IBM Corporation, version 23). Qualitative variables were summarized using frequencies and percentages. Graphical representations were provided for all relevant variables. The chi-squared and Fischer's exact tests were used to compare differences in proportions of qualitative variables. Awareness score was created to measure the awareness of the participants toward the ADHD. The score was defined as the number of questions for which the answers were correct. This score ranged from 0 to 3. In this study, we consider a participant to be aware toward ADHD if he answers correctly at least two of the three awareness questions. A value of  $P < 0.05$  was chosen as the criteria to make decisions regarding statistical significance.

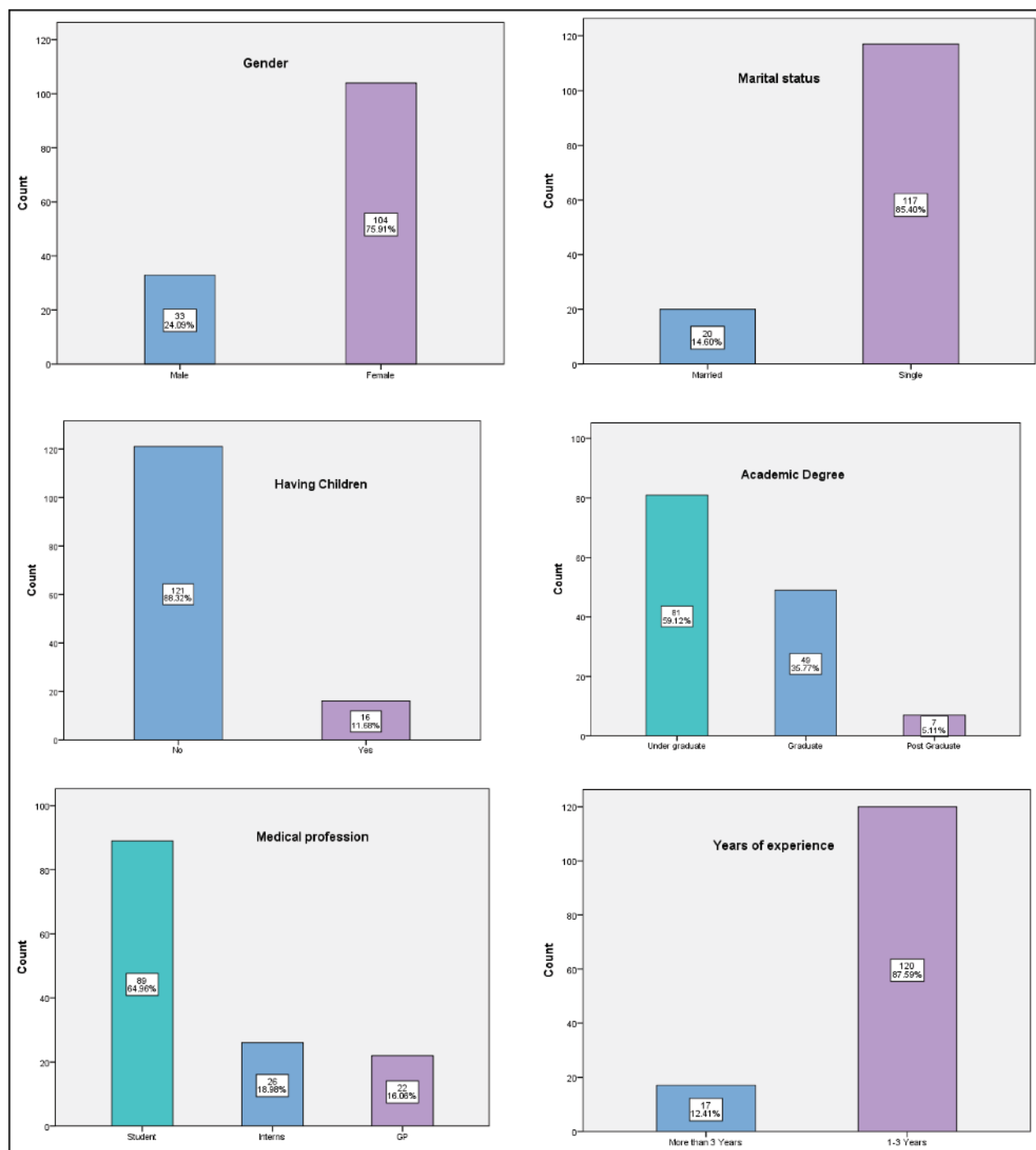
## RESULTS

### Descriptive statistics

*Demographic and socioeconomic characteristics:* A total of 137 subjects participated in the study and completed

**Table 1: Frequency table for demographic and socioeconomic characteristics**

Demographic and socioeconomic variables	Frequency (%)
Gender	
Male	33 (24.1)
Female	104 (75.9)
Marital status	
Single	117 (85.4)
Married	20 (14.6)
Having children	
Yes	16 (11.7)
No	121 (88.3)
Academic degree	
Undergraduate student	81 (59.1)
Bachelor's degree	49 (35.8)
Postgraduate	7 (5.1)
Medical profession	
Student	89 (89)
Interns	26 (19.0)
General practitioner	22 (16.1)
Years of experience	
1–3 years	120 (87.6)
More than 3 years	17 (12.4)
Have you ever provided treatment for a patient with ADHD	
Yes	23 (16.8)
No	114 (83.2)



**Figure 1:** Graphs for demographic and socioeconomic characteristics

the whole questionnaire. Among these participants, 24.1% ( $n = 33$ ) were male and 75.9% were female. The majority of the study participants were single 85.4% and the remaining 14.6% (20) were married. The vast majority (88.3% [121]) of the participants were not having children. Regarding the academic degree, 59.1% were undergraduate student, 35.8% had Bachelor's degree, and 5.1% were post-graduate. The majority (87.6% [120]) of the participants had 1–3 years of

experience. Over 80% of participants did not provide treatment for patients with ADHD. For more details, see Table 1 and Figure 1.

*Safety knowledge and awareness regarding the ADHD:* This study investigated the awareness regarding ADHD by looking at both individual questions in the questionnaire and also by using the derived awareness score as defined in the “Materials and Methods”

**Table 2: Frequency table for knowledge and awareness items**

Knowledge and awareness items	Frequency (%)
Did you receive the proper education to effectively treat individuals with ADHD	
Yes	35 (25.5)
No	102 (74.5)
Did you receive the proper training for treating patient with ADHD	
Yes	20 (14.6)
No	117 (85.4)
Would you like to provide dental care to individuals with ADHD as a part of your dental practice	
Yes	120 (87.6)
No	17 (12.4)

section. The section shows descriptive statistics for individual items for awareness regarding ADHD items.

In general, a relatively low proportion of participants showed awareness regarding ADHD. When the participants asked if they provide dental care to individuals with ADHD as a part of their dental practice, the vast majority (87.6%) of the participants responded positively; however, they completely missed two questions. Table 2 shows the percentage of correct answers to each of the individual awareness questions.

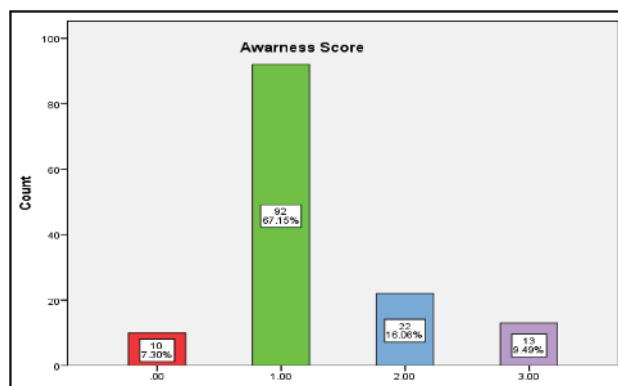
**Statistical inference**

*Awareness by demographic and socioeconomic factors:* Participants have a relatively low level of awareness regarding ADHD. More specifically, only 25.5% of the participants were aware regarding ADHD. The distribution of the scores (total number of correct answers) is given in Figure 2.

Table 3 shows the distribution of the awareness toward ADHD by demographic and socioeconomic status. The table also provides the *P*-values for the estimates. There was an effect shown of providing treatment for a patient with ADHD on the ADHD awareness score (*P* = 0.031). Those who provided treatment for a patient with ADHD were more likely to be aware toward ADHD compared to those who did not provide treatment. On the other hand, no significant association was reported in awareness score with regard to gender, marital status, having children, academic degree, medical profession, and years of experience. For more details, comparing the two scores according to demographic and socioeconomic factors, see Table 3.

**DISCUSSION**

Globally, ADHD represents a major health concern as most people with ADHD do not present significant and recognizable symptoms. It is thought that two-thirds



**Figure 2:** Histogram of attention-deficit hyperactivity disorder awareness score (Note: The values in the x-axis should be read as the number of correct answers among the three questions asked)

**Table 3: Attention-deficit hyperactivity disorder awareness score by demographic and socioeconomic variables**

Demographic and socioeconomic variables	Proportional of awareness	
	Estimate	<i>P</i> value
Gender		
Male	21.2%	0.512
Female	26.9%	
Marital status		
Single	26.5%	0.538
Married	20.0%	
Having children		
Yes	31.3%	0.578
No	24.8%	
Academic degree		
Undergraduate	22.2%	0.325
Bachelor's degree	32.7%	
Postgraduate	14.3%	
Medical profession		
Student	23.6%	0.498
Interns	34.6%	
GP	22.7%	
Years of experience		
1–3 years	25.8%	0.839
More than 3 years	23.5%	
Providing treatment for a patient with ADHD		
Yes	43.5%	0.031
No	21.9%	

Significant value, A value of *P* < 0.05.

GP = General practitioners

of children who have ADHD and do not receive medical intervention continue to be symptomatic into their adolescence and beyond.<sup>[19]</sup> Therefore, in this study, we aimed to support the establishment of an optimal training program for ADHD diagnosis and management by assessing ADHD knowledge and awareness among dental care providers. Our

results show that there is poor overall awareness of ADHD, whereby merely 25.5% of the participants showed good ADHD awareness. This is in agreement with prior studies reporting poor ADHD knowledge among general practitioners, underlining that there is significant space for improvement globally regarding knowledge of the disorder.<sup>[20,21]</sup> It should be noted that in our study, only 14.6% and 25.5% of participants reported having received appropriate training for the treatment and management, respectively, of patients with ADHD. Consequences of this include delays in referral and intervention, leading to an increased likelihood of adverse psychosocial and educational effects for the child and their family,<sup>[22]</sup> such as decreased vocational or academic performance, drug abuse, and involvement with the justice system.<sup>[23]</sup>

A previous study showed that 3409 pediatricians and family physicians reported a lack of ADHD knowledge, and thus referred their patients with ADHD to specialists.<sup>[24]</sup> In Turkey,<sup>[25]</sup> a study reported that while 102 (65.3%) of surveyed residents correctly answered questions evaluating their ADHD knowledge, 123 indicated that they were unable to diagnose ADHD, and 127 considered their ADHD knowledge to be insufficient, most likely because their medical education had not adequately addressed the disorder.<sup>[26,27]</sup> Hence, in order to pinpoint the areas requiring educational intervention, there is a need for further information regarding dental care providers' perceptions and knowledge of ADHD. There is an expectation that both general practitioners and community physicians should be able to recognize ADHD so that they can provide prompt diagnosis and therapy.<sup>[28]</sup> Our study further indicates that those participants who had treated a patient with ADHD tended to have more awareness of the disorder than those who had not. However, we found no significant relationship between other factors and their awareness scores, which is in agreement with other studies<sup>[25]</sup> showing that the factors of work duration and residency duration had no statistically significant effect among residents at different hospitals. This study highlights the need to develop a comprehensive and effective undergraduate training program, particularly in our region due to the lack of developmental pediatricians, child psychiatrists, and child neurologists.<sup>[29,30]</sup>

## CONCLUSION

The study shows low level of awareness toward ADHD. Moreover, participants who provided treatment for a patient with ADHD were found to show higher degree of awareness toward ADHD. The existing results

will be used in developing a well-planned program and clear policies to increase the level of awareness regarding ADHD.

## Recommendations

We should stress that the sample used in this study is relatively small, which might not represent the current population of the study.

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## Conflicts of interest

There are no conflicts of interest.

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