

RESEARCH ARTICLE

Exploring Awareness and Understanding of Attention Deficit Hyperactivity Disorder (ADHD) among residents of Eastern Province of Saudi Arabia: A Cross-Sectional Approach

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ABSTRACT

Background: Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that affects individuals of all ages. Although awareness of ADHD has improved in recent years, significant misinformation and gaps in understanding the disorder remain.

Aim: The current study aimed to determine the knowledge and awareness of ADHD in Eastern Province, Saudi Arabia.

Methodology: A community-based cross-sectional survey of Saudi people aged ≥ 18 years was undertaken utilizing an online, self-administered questionnaire based on DSM-5 criteria. Descriptive statistics, chi-squared tests with Bonferroni correction, and effect sizes (Cramer's V) were used. Statistical analyses were performed using SPSS version 27.

Results: The survey was filled out by 385 people (62.3% of whom were women). Social media (32.7%) and higher education (31.2%) were the most popular sources of ADHD information. Agreement with DSM-5 ADHD criteria varied from 66.5% to 88.8%, showing overall good awareness. There were significant gender differences in information sources and treatment preferences, but the impact sizes were small to moderate (Cramer's V = 0.18-0.29).

Conclusion: The findings indicate relatively high awareness of core ADHD features among adults in Eastern Province, KSA, rather than substantial knowledge gaps. Gender-based differences highlight the influence of sociocultural and educational contexts on mental health literacy. Targeted, culturally sensitive awareness initiatives remain warranted.

Keywords: Attention Deficit Hyperactivity Disorder; Awareness; Gender Differences; Eastern Province

1. Introduction

Attention Deficit Hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized by inattention, hyperactivity, and impulsivity, which can significantly impact academic, occupational, and social functioning ^[1]. Although ADHD is often associated with childhood, symptoms can persist into adulthood, affecting productivity and quality of life. Notably, ADHD in females often presents differently than in males, with less overt hyperactivity and more internalizing symptoms, such as inattention and emotional

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dysregulation, leading to underdiagnoses and mismanagement [2].

Compared to childhood, the prevalence of ADHD in adults seems to be more equal for both sexes; the estimated prevalence of adult ADHD is less than two times higher in males than in women (5.4% vs. 3.2%, respectively) [3]; however, when diagnosed with ADHD, women are more likely to be older than males [4]. Along with disparities in diagnosis rates, women are less likely than men to use ADHD medications [5].

Globally, understanding and awareness of ADHD have grown, but considerable information gaps remain, particularly regarding its expression in females. According to a study by Quinn and Madhoo in 2014 [6], when it comes to diagnosing ADHD, women are frequently disregarded because their symptoms related to the disease are less disruptive. In societies like Saudi Arabia, where stigma and cultural norms around mental health can impede candid conversation and prompt interventions, this underdiagnoses is further exacerbated [7]. This study is guided by the Mental Health Literacy Framework, which emphasizes knowledge of mental disorders, recognition of symptoms, beliefs about causes and treatments, and attitudes facilitating help-seeking. This framework is widely used to evaluate public understanding of psychiatric conditions and informed the operationalization of ADHD awareness in the present study.

These established guidelines are widely applied in research and clinical practice. During an evaluation, the skilled mental health care professional will attempt to determine the severity to which these symptoms have advanced [8]. According to research, ADHD is fairly common in the Arab world and is associated with significant impairment. Despite being extremely prevalent, it has not received enough attention in the Middle East and North Africa [9]. Numerous studies conducted in the Kingdom of Saudi Arabia have revealed a lack of awareness regarding ADHD. They have assessed the following groups: a sample of teachers in Makkah City's Al-Rusaifah district [10], female elementary school teachers in Jeddah [11], primary care physicians in the Aseer Region [12], and medical students at King Abdulaziz University's Faculty of Medicine in Jeddah [13]. However, another study found that only two-thirds of Riyadh's male primary school teachers were aware of ADHD [14]. There was a lack of research comparing male and female knowledge and opinions regarding ADHD in Saudi Arabia. Therefore, this study aimed to investigate the knowledge and awareness of ADHD among the adult population of Saudi Arabia.

2. Material and Methods

2.1. Study Design

A community-based retrospective cross-sectional study was conducted in Eastern Province, Saudi Arabia, between March and November 2024. Ethical approval (KFU-2025-ETHICS3248) was granted by the Deanship of Scientific Research at King Faisal University in Al-Ahsa, Saudi Arabia, in compliance with the Helsinki Declaration on research involving human subjects. Participants were informed about the purpose and objectives of the research, and informed consent was obtained before participation.

2.2. Study size and population

Participants were recruited from Eastern Province, Saudi Arabia. A total of 410 participants were invited to voluntarily participate in the study, with 385 participants (male = 145; female = 240) completing the questionnaire, yielding a response rate of 93.90%. The remaining 25 participants were excluded from the final analysis because of missing or incomplete answers in the questionnaire. The sample size was calculated by using Slovin's formula with the population size of 338 participants reported in a previously published study Alhowaymel and Alenezi, (2022), with a 95% confidence level and a 5% margin of error [15]. Inclusion criteria included Saudi males and females over 18 years old living in Al-Ahsa who gave informed consent. Exclusions applied to those under 18, high school students, and non-Saudi nationals to focus on a

more uniform adult group with post-secondary education, minimizing educational confounding in assessing ADHD awareness. Since participation was voluntary, the final sample reflects those willing and able to complete an online survey rather than a perfectly representative cross-section of the local population.

2.3. Data collection

A structured 16-item questionnaire was used to measure ADHD awareness. The questionnaire was based on DSM-5 ADHD diagnostic criteria and included two sections: demographic information, including age, gender, education level, and profession, and the second section contained 16 questions to measure respondents' awareness of ADHD. The ADHD awareness questionnaire's internal consistency showed respectable reliability (Cronbach's $\alpha = 0.81$). In addition, test-retest reliability was tested in a subsample of participants ($n = 40$) who completed the questionnaire twice over a two-week period, obtaining an intraclass correlation coefficient ($ICC = 0.84$), showing high temporal stability. The survey was translated into Arabic for accessibility. The widely used Google Survey platform (Google LLC, Mountain View, California, USA) was utilized to conduct the online survey. After being properly informed of the purpose of the study, every responder voluntarily consented to take part. The link to the survey was sent to the participants by email and various social media platforms. Participants received no monetary reward for this research. Responses were anonymous, and data were used solely for statistical analysis.

2.4. Statistical analysis

Data were analyzed using SPSS software (version 27.0, SPSS, Inc., Chicago, IL, USA). Categorical variables were reposted as frequencies and percentages. The chi-square test was used to assess the association between categorical variables with statistical significance set at $p < 0.05$. Missing data were addressed with listwise deletion, and incomplete questionnaires ($n = 25$) were removed. The Bonferroni correction was used for multiple comparisons (adjusted p -value = 0.0125). Cramer's V was used to report effect sizes, which were classified as modest (≥ 0.10), moderate (≥ 0.30), or large (≥ 0.50).

3. Results

The present study invited 410 participants from Eastern Province, KSA. A total of 385 participants finally completed the survey, with 145 (37.7%) males and 240 (62.3%) females. The majority (42.1%) were aged 18-25 years, followed by 26-35 years (32.5%), 36-45 years (21.6%), and >46 years (3.9%). All participants were Saudi nationals, with the highest educational level being a bachelor's degree (78.2%), followed by postgraduate study (14.3%) and high school (7.5%) (**Table 1**).

Table 1. Demographic characteristics of participants

Variable	N	%
Gender	Male	145
	Female	240
Age group	18-25	162
	26-35	125
	36-45	83
	>46	15
Nationality	Saudi	385
Educational level	Bachelor degree	301
	High school	29
	Postgraduate study	55

Figure 1. What is your source of information about ADHD?

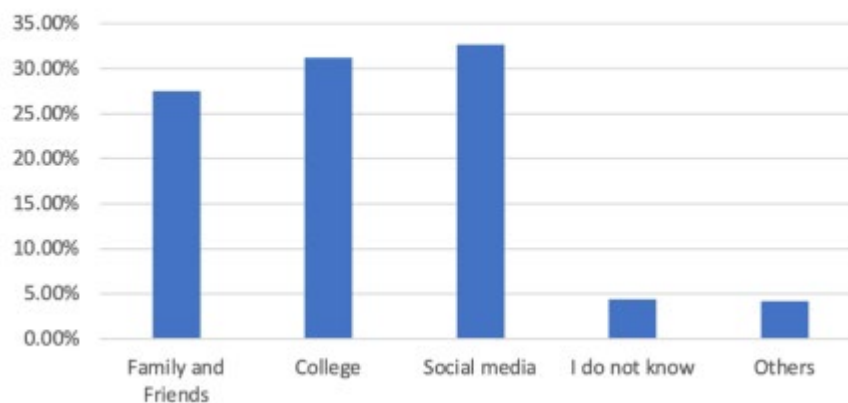


Figure 1. ADHD Source of Information

Figure 1 represents the source of information about ADHD. Out of the 385 participants, the most common source of information about ADHD was social media (32.7%), followed by college (31.2%), and family and friends (27.5%). Only a small percentage of participants reported not knowing the source of information (4.4%) or selecting "others" (4.2%).

Figure 2. What do you think ADHD is?

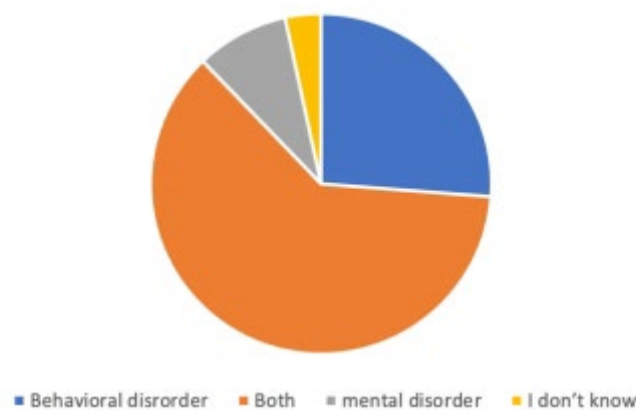


Figure 2. Understanding of participants regarding ADHD

Figure 2 shows the understanding of participants about ADHD; the majority of participants (61.6%) believed ADHD to be both a behavioral and mental disorder. About a quarter (26.2%) believed ADHD to be a behavioral disorder only, while a small percentage (8.8%) believed it to be a mental disorder. Only a few participants (3.4%) reported not knowing what ADHD was.

Table 2. Knowledge of ADHD and gender comparison

		Male		Female		P-Value
Item assessing the knowledge		N	%	N	%	
What is your source of information about ADHD?	Family and Friends	57	39.3%	49	20.4%	<0.005*
	College	13	9.0%	107	44.6%	
	Social media	64	44.1%	62	25.8%	

		Male		Female		P-Value
What do you think ADHD is?	I do not know	3	2.1%	14	5.8%	0.045*
	Others	8	5.5%	8	3.3%	
	Behavioral disorder	39	26.9%	62	25.8%	
	Both	81	55.9%	156	65.0%	
	mental disorder	16	11.0%	18	7.5%	
	I don't know	9	6.2%	4	1.7%	
What do you think are the causes of ADHD?	Physiological	44	30.3%	39	16.3%	0<0.05*a
	Multifactorial	90	62.1%	168	70.0%	
	Hereditary	8	5.5%	15	6.3%	
	Nutrition	3	2.1%	3	1.3%	
	Others	0	0.0%	8	3.3%	
	I don't know	0	0.0%	7	2.9%	
Based on your information, what are the treatment methods for ADHD?	Behavioral therapy	21	14.5%	24	10.0%	<0.005*
	Both	68	46.9%	175	72.9%	
	Pharmacotherapy	47	32.4%	36	15.0%	
	I don't know	9	6.2%	5	2.1%	

Table 2. (Continued)

Table 2 examines gender differences in ADHD knowledge, revealing statistically significant differences across all areas using the Chi-square and Fisher's Exact Test. Specifically, a higher percentage of females (44.6%) reported college as their primary source of ADHD information compared to males (9.0%). Conversely, a higher percentage of males (39.3%) reported that their source of information about ADHD came from family and friends compared to females (20.4%). Additionally, more females (65.0%) than males (55.9%) perceived ADHD as both a behavioral and mental disorder, while more males (26.9%) than females (25.8%) classified it solely as a behavioral disorder. Regarding ADHD treatment methods, a higher percentage of females (72.9%) supported a combination of behavioral therapy and pharmacotherapy compared to males (46.9%).

3.1. Criteria of ADHD Information

Table 3. Frequency of participants about Criteria of the ADHD information

Criteria item	Yes		No	
	N	%	N	%
Do you think people with ADHD talk too much?	321	83.4%	64	16.6%
Do you think people with ADHD act and speak without thinking?	318	82.6%	67	17.4%
Do you think people with ADHD call out answers before the question is complete?	342	88.8%	43	11.2%
Do you think people with ADHD have difficulty sustaining attention in tasks or play?	321	83.4%	64	16.6%

Criteria item	Yes		No	
	N	%	N	%
Do you think people with ADHD have difficulty organizing tasks/activities?	328	85.2%	57	14.8%
Do you think people with ADHD avoid doing things that require ongoing mental effort that require mental effort?	256	66.5%	129	33.5%
Do you think people with ADHD interrupt when they talk?	320	83.1%	65	16.9%
Do you think people with ADHD cannot play quietly?	313	81.3%	72	18.7%
Do you think people with ADHD cannot stay seated?	332	86.2%	53	13.8%

Table 3. (Continued)

Table 3 presents participant's responses about the criteria for ADHD, with the majority of participants responding "yes" to each item. Specifically, the majority of participants believed that people with ADHD talk too much (83.4%), act and speak without thinking (82.6%), call out answers before the question is complete (88.8%), have difficulty sustaining attention in tasks or play (83.4%), have difficulty organizing tasks/activities (85.2%), interrupt when they talk (83.1%), cannot play quietly (81.3%), and cannot stay seated (86.2%) (**Table 3**).

Overall, the results of this descriptive study suggest that social media is a common source of information about ADHD, with most participants recognizing ADHD to be both a behavioral and mental disorder. Gender differences were found in ADHD knowledge, particularly in the sources of information and treatment preferences. Additionally, the majority of participants agreed with the ADHD criteria presented to them.

4. Discussion

ADHD, short for attention deficit hyperactivity disorder, is a neurodevelopmental disorder that affects individuals of all ages. Although awareness of ADHD has improved greatly in recent years, there remain significant misconceptions and gaps in understanding the disorder ^[14]. The current study aimed to determine the awareness of ADHD in Eastern Province by analyzing demographic information, sources of information, knowledge about ADHD, gender differences, and criteria for ADHD information.

The results of the study indicated that the majority of participants were Saudi females who had attained a bachelor's degree as their highest level of education, accounting for 78.2%. Social media was the most common source of information about ADHD, comprising 32.7%, followed closely by college and family/friends. This highlights the importance of utilizing social media platforms to spread awareness and information about ADHD. Numerous research studies conducted in Saudi Arabia have examined the sources from which people learn about attention deficit hyperactivity disorder (ADHD), and they have consistently demonstrated the significance of social media. The results of a previous study ^[16] conducted in Saudi Arabia, which indicated that social media and the internet were the main sources of knowledge regarding ADHD, were supported by the findings of this study. It's interesting to note that social media is seen favorably throughout the Gulf region. A prevalent issue that has been documented in earlier research is the use of non-medical sources as the primary source of medical information for ADHD ^[17]. To prevent misunderstandings about ADHD, it is crucial to rely on trustworthy sources. Therefore, decision-makers are encouraged to

support the creation of a specific ADHD course for different community segments, and faculty training curricula should incorporate education ^[18]. Since these were the most widely used information sources, distributing these instructional programs across various social media platforms will be very helpful.

The age distribution of the sample is a crucial methodological factor in this study. While older age groups, especially those 46 years of age and beyond, were underrepresented, the majority of participants were between the ages of 18 and 35. It's possible that this distribution doesn't fairly represent the age distribution in Saudi Arabia's Eastern Province. Younger persons may have been disproportionately represented in this study since they are more likely to use digital platforms and participate in online surveys. Moreover, the use of voluntary participation might have resulted in self-selection bias because those who opted to engage are probably more interested in or have already been exposed to information about ADHD. On the other hand, people who had little knowledge of or interest in mental health issues would have been less likely to take part. As a result, when compared to the general population, the study's observed levels of ADHD awareness may be overstated.

Overall, the participants had a good understanding of what ADHD is, with the majority stating that ADHD is a behavioral and mental disorder accounting for (61.6%). "Good understanding" was operationalized as correct identification of $\geq 75\%$ of DSM-5-based ADHD criteria items. However, there were still a few participants who reported not knowing what ADHD was, indicating the need for more awareness and education about the disorder in society. In comparison, a prior study conducted in Medina found that 32.2% of the sample considered it to be a genetic tendency ^[17]. Aljammaz et al. (2023) conducted a cross-sectional survey on 1,148 adults to gauge their knowledge about ADHD ^[21]. According to the results, 85% of participants agreed that behavioral therapy and early medical treatment are essential for ADHD ^[18]. Interestingly, the study highlighted how social media is a major source of knowledge regarding ADHD ^[18]. Similarly, another study focusing on community knowledge about ADHD in Saudi Arabia found that approximately half of the participants identified social media as their main source of information. This study emphasizes the pivotal role that digital platforms play in disseminating information about ADHD within the community ^[19]. Higher levels of knowledge (90.0%) were revealed by a prior study that examined teacher's understanding of ADHD in the Kingdom of Saudi Arabia ^[20]. Understanding ADHD is vital, particularly for parents, because it influences how they nurture their affected children. This involves knowing how the illness is diagnosed, how ADHD treatment affects children's daily lives, and how to increase treatment adherence ^[21].

Gender differences were also found in the source of information and treatment methods for ADHD. Interestingly, more females reported acquiring knowledge about ADHD from college, while more males received information about ADHD from family and friends. It is important to understand these gender differences, as it can provide insights into how to better target awareness efforts in specific populations. In addition, differences were also found in the preferred treatment approach for ADHD, with more females (72.9%) responding with a combination of behavioral therapy and pharmacotherapy compared to males (46.9%). A recent study in Taiwan found that housewives spend more time monitoring their children's behavior, and as they gain parenting experience, they learn more about ADHD ^[22]. Likewise, a prior study conducted in Korea revealed that female educators knew more about ADHD than their male counterparts ^[23].

The majority of participants agreed with the ADHD information presented to them, with agreement rates ranging from 81.3% to 88.8%, in line with the DSM-5 diagnostic criteria ^[24]. This indicates that the core symptoms of ADHD, including impulsivity, hyperactivity, and inattention, are well understood. This finding underscores the positive impact of increased exposure to awareness materials. Additionally, the

statistics show that the majority of participants understood the clinical presentation of ADHD. This study is consistent with a prior survey conducted in Saudi Arabia that found 90% of teachers knew the subject, underscoring the increased awareness in the educational sector ^[14]. Similarly, McLeod et al. (2007) discovered that people's knowledge of ADHD has increased, especially after being exposed to organized information or awareness initiatives ^[14]. Rodrigo et al. (2011), on the other hand, found that the majority of respondents had inadequate awareness of ADHD symptoms ^[25]. The authors attributed this to a limited sample size and a lack of familiarity with digital awareness tools such as social media. DosReis et al. (2010) provided support for this by stressing the necessity of expanding outreach through easily accessible educational platforms in order to enhance ADHD literacy among marginalized communities. Additionally, Sayal et al. (2018) discovered in their systematic review that there are notable differences in knowledge of ADHD depending on geographic location, educational attainment, and availability of information sources ^[26]. This underscores the need for culturally and regionally adapted public health campaigns ^[27].

The current study provides useful information and insight about ADHD awareness in Eastern Province. The findings highlight the critical need for ongoing public education and awareness initiatives on ADHD, focusing on individuals who indicated having limited knowledge of the condition. These results are consistent with earlier studies, such as Alqahtani, (2010), which emphasized the lack of knowledge and common misconceptions regarding ADHD among Saudi Arabian parents and educators ^[27,28]. Furthermore, gender disparities in treatment preferences and information sources indicate that awareness campaigns need to be culturally and gender-sensitive ^[29]. Alshareef et al. (2023) discovered that men frequently relied on formal channels for mental health information, whereas women were more likely to rely on social networks ^{[28][30]}. According to AlShamrani et al. (2023), educating communities on ADHD- its symptoms, diagnosis, and available treatments- not only lessens stigma but also makes early detection and management easier. Improving the general public's understanding of ADHD can have a big impact on how quickly the illness is managed and enhance long-term results for both people and families ^[30].

5. Conclusion

The present study provides important insights into the level of knowledge and understanding of Attention-Deficit/Hyperactivity Disorder (ADHD) among residents of Al-Ahsa City. The findings reveal a significant knowledge gap among some individuals, emphasizing the need for ongoing public education and awareness campaigns. A notable portion of participants explicitly stated they were unfamiliar with ADHD, suggesting many might struggle to recognize its symptoms or comprehend its impact on daily life. Furthermore, the study identified gender-based differences in sources of information about ADHD and preferred treatment methods. These disparities highlight the importance of developing inclusive awareness campaigns and educational initiatives that address gender-specific preferences and improve information accessibility. Tailoring programs to various demographic and cultural groups can enhance outreach and effectiveness. Engaging both traditional and digital media is critical, especially since social media, while influential, can also be unreliable. Increasing accurate information about ADHD—covering symptoms, causes, and treatment options—can help reduce stigma and correct misconceptions. Such efforts may also foster better public attitudes toward mental health, encouraging more individuals to seek professional help promptly. In the long term, this can lead to earlier detection, timely intervention, and improved outcomes for local ADHD patients. Future research should employ stratified or probability-based sampling methods using official census data to ensure proportional representation across age groups. These approaches can improve the generalizability of the findings and provide a more accurate assessment of ADHD awareness at the population level. Despite these limitations, the current study offers valuable insights into ADHD knowledge

among younger and middle-aged adults, who are essential in early detection, help-seeking behavior, and the dissemination of mental health information within communities.

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Conflict of interest

The authors declare no conflict of interest

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