Original Article :

Attention Deficit Hyperactivity disorder awareness among the Saudi population: A cross sectional study

Waad Bander Aljammaz[1] , Shahad Nasser Alruqayb[1], Hanadi Mohammed Alotaibi[1] , Rana Zaid Alsaeed[1] , Khawlah Abdullah Alhaqbani[1], Razan Albrahim[1], Shahad Abduallah Albogami[1], Tabinda hasan[2]

1.PNU Students

2.Department of Anatomy, Faculty of Medicine, PNU, Saudi Arabia

Received on Dec 22, 2022, accepted for publication on June 07, 2023, dx.doi.org/10.5455/mjhs.2023.03.009

Corresponding Author:

Tabinda Hasan,

Department of Anatomy, Faculty of Medicine, Princess Noura University, Kingdom of Saudi Arabia, Riyadh, PO Box: 84428 Email: Thasan@pnu.edu.sa ; Tel:00966560211751

Abstract

Background and Aims:

Attention deficit hyperactivity disorder (ADHD) is a major public health problem because of it is associated morbidity and disability in children. It is a multi-faceted dilemma posing social, academic, psychological and psychiatric issues during childhood. This study aimed to investigate the level of awareness about ADHD among adults in Saudi Arabia.

Methods:

This cross-sectional study with a convenience sampling was conducted in Riyadh region of Saudi Arabia between September 2020 and April 2021 and the sample size was 1148. Sociodemographic characteristics, true and false beliefs, and awareness of ADHD were assessed by online survey.

Results:

Majority of the respondents agreed that ADHD needs medical treatment by a specialist at early age combined with behavior therapy(85%). 89% of the respondents believed that people with ADHD demonstrate excessive physical movements. 48% of the participants had poor knowledge about ADHD(less than 60% score), the level of knowledge varied with education level. Participants who less educated had lower level of awareness of ADHD. Also, participants who were employed, with high income showed higher level of awareness. The preferred way to increase ADHD awareness was social media(35%) followed by mass media (22%).

Conclusions:

The awareness of ADHD in adult Saudi population is reasonable but not ideal. Education and employment appear to significantly improve people's knowledge about the disorder. Social media is the main agent in spreading ADHD awareness among people. Community based proactive and accessible recourses must be developed on 'population based needs and means' in order to improve ADHD beliefs and awareness levels among the Saudi population.

Keywords:

ADHD, attention deficit hyperactive disorder, knowledge, attitude.

Introduction

Attention deficit hyperactivity disorder (ADHD) is a major public health problem because of its associated morbidity and disability in children. It is a multi-faceted dilemma posing social, academic, psychological and psychiatric issues during childhood [1]. There are three major types of ADHD include the impulsive/hyperactive type, inattentive and distractible type, and the combined type [2]. Children suffering from ADHD present with 'inattention', which means not being able to retain focus, 'Hyperactivity' that indicates excessive movement and fidgetiness and marked 'impulsivity' without thought regulation. The etiology of ADHD is related to a variety of factors that include both a genetic and an environmental component. It is one of the most heritable conditions in terms of psychiatric disorders. There is a much greater concordance in monozygotic twins than dizygotic. Siblings have twice the risk of having ADHD than the general population. Similarly, viral infections, smoking during pregnancy, nutritional deficiency, and alcohol exposure in the fetus have also been explored as possible causes of the disorder [3]. Treatment of ADHD relies on a combination of psychopharmacological, academic, and behavioral interventions, which produce response rates up to 80%[4].

Epidemiological studies in Saudi Arabia and Egypt show an estimated prevalence of ADHD 16.4% and 6.9% respectively 4, While in the West (notably in United States), the prevalence of ADHD is 11%[5, 6].

The present research aims to determine the awareness levels of ADHD (cause / early signs / management/ repercussions) among Saudi adults. First hand suggestions will be collected from participants to help enlist different ways to enhance ADHD awareness (in terms of 'what they perceive could work best for them'). Unlike most previous studies, the present research will establish correlation between socio-demographic factors and ADHD awareness levels in the Saudi adult population. Results from this research will elucidate the degree of knowledge of ADHD and observed trends and patterns in awareness distribution of the target population.

Such an inventory based in Riyadh region; will provide reliable epidemiological data adequately representing a metropolitan city of the country. This will hopefully guide epidemiologists and anthropologists in framing practicable and realistic awareness programs tailored to the unique needs of the beneficiary population. A deeper understanding of the disorder in the Arab community will assist in reducing associated morbidity making life easier for the sufferers as well as caregivers of ADHD.

Methods

Study design and survey questionnaire: This (observational) cross-sectional study was conducted in Riyadh region of Saudi Arabia during 2020-2021. A convenience sampling technique was used to recruit participants. Minimum Sample size was calculated to be 746 based on sample size calculation software developed by the American research association (https://www.surveysystem.com/sscalc.htm).Considering the metro area population of Riyadh region according to national population sensex 2019 of KSA to be 7,071,000 (https://worldpopulationreview.com/world-cities/riyadh-population).It has been conducted among Saudi adults aging between 18-65 years old, All participants were consented. Participants who are non Saudi, mentally incapacitated, minors or >65yrs and non educated were excluded. Saudi adults range from 18-65 years old with minimal formal education high school diploma were included in our study, minors or more than 65 years old, not educated formally ormentally incapacitated were excluded. A total of 1148 samples were enrolled in the present study.

Validated online questionnaire was the tool for data collection. The questionnaire was adopted from(https://revistas.um.es/analesps/article/view/analesps.30.3.168271), It has been piloted before using to confirm it's validity and it included many different sections (socio-demographic data, knowledge about causes, signs ,and treatment of ADHD). The questionnaire comprised three parts: sociodemographic (age, gender,Nationality, education level, marital status, employment status, and income), The second part determine knowledge about causes, signs ,and treatment of ADHD by using a validated reliable item, the third part was about recommend different ways to enhance awareness of ADHD based on popular participant feedback.

Data collection:

Due to the COVID-19 pandemic, an online Google form was preferred, as it was thought to be a safer option for both participants and researchers to avoid face-to-face contact and limit the chance of infection. The survey response rate was 95%.

Statistical analysis:

Data were extracted from the Microsoft excel of the filled online questionnaires into an Statistical Package for the Social Sciences (SPSS version 28) software. Basic Descriptive statistics was used. P value of <0.05 was considered significant. Confidence interval set for 95% and confidence level of 4.72 and standard deviation within +-2 SD. T test and Anova used for comparing means and for analysis of variance.

Chi square test was used for compare frequency Pearson coefficient employed for establishing correlations. Non parametric Wilcoxon-Mann-Whitney test was used to analyze the Likert- Scale type data obtained from survey.

Results

The sample size was 1148 participants, it was found that the mean age of the participants was 38.7 ±13.3 while 90.3% of them were females. 90.5% of participants were of the Saudi nationality. Concerning the level of education the table illustrated that 67.6% of the participants were in university. The majority of participants were married with a 68.2% out of the total. Regarding the employment status the most prevalent were either employed 37.1% or unemployed 25.3%. Only 7.1% of participants reported that the income was not enough and 52.7% of participants declared that their income was enough and safe (table-1). Regarding the rate of false beliefs, 84.0% of participants believed that ADHD is caused by refined sugar or food additives and 95.9% of them believed that reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD. 79.6% of participants thought that people with ADHD have a poor working memory (table-2).

Table 1: Sociodemographic characteristics of Saudi participants. n=1148

Characteristic	n (%)
Age (years)	38.7 ± 13.3
Gender	
Female	1036 (90.3%)
Male	111 (9.7%)
Education	
High school diploma	251 (21.9%)
University degree	776 (67.6%)
Postgraduate studies	120 (10.5%)
Marital status	
Single	301 (26.3%)
Married	783 (68.2%)
Divorced/widowed/separate	63 (5.5%)
Employment status	
Employed	426 (37.1%)
Unemployed	290 (25.3%)
Student	237 (20.6%)
Retired	194 (16.9%)
Income	
Enough and safe	419 (36.5%)
Enough	605 (52.7%)
Not enough	82 (7.1%)
Not enough and indebted	41 (3.6 %)
Value for age is presented as mean ± standard deviation	

Table 2: Distribution of publics rate about "False beliefs regarding ADHD"

Mistaken belief	Rate of mistaken belief (%)
Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD.	1101 (95.9%)
ADHD is caused by refined sugar or food additives	964 (84.0%)
People with ADHD have a poor working memory	914 (79.6%)
People with ADHD causes injury to others	828 (72.1%)
ADHD is largely the result of ineffective parenting skills	700 (61.0%)
People with ADHD say mean or inappropriate things	644 (56.1%)

Mistaken belief	Rate of mistaken belief (%)
Vaccines are the root cause of ADHD	612 (53.3%)
Treatments for ADHD which focus primarily on punishment have been found to be the most effective in reducing the symptoms of ADHD	474 (41.3%)
People with ADHD have mental retardation	377 (32.8%)
ADHD must best be left to spontaneously resolve	218 (19%)

The rate of true beliefs about ADHD, 38.9% believed that the main cause of ADHD is a physical lesion in the brain. 84.6% agreed that ADHD needs medical treatment by a specialist at early age combined with behavior therapy. 89% of participants believe that people with ADHD demonstrate excessive physical movement (table-3).

Table 3: Distribution of publics rate about "True beliefs regarding ADHD"

True belief	Rate of true belief (%)
Demonstrate excessive physical movement	1016 (88.5%)
Leave seat and run about or climbs too much when remaining seated is expected	999 (87%)
That ADHD needs medical treatment by a specialist at early age combined with behavior therapy	971 (84.6%)
Does not seem to listen when spoken to directly	970 (84.5%)
Need to monitor them while doing their homewor	922 (80.3%)
Difficulty in doing and finishing their homework	918 (80%)
Inability to play quietly	897 (78.1%)
Has difficulty waiting his or her turn	886 (77.2%)
Excessive use of TV, computer, or video games	607 (52.9%)
Parent training in managing an ADHD child are generally effective when combined with medication treatment	856 (74.6%)
The main cause of ADHD is a physical lesion in the brain	447 (38.9%)
ADHD has genetic predisposition	318 (27.7%)

The characteristics of the subjects and it relation to the level of awareness shows that 550 (48%) participants were had poor knowledge (considering poor knowledge as correctly answering less than 60%). Inequality of knowledge score among different education levels was evident with the uppermost being participants with university degrees 395 (66.2%) and the least being participants with postgraduate studies 46 (8.4%). Further analysis of total knowledge score according to socioeconomic characteristics revealed that participants who are employed and had a high income showed a higher level of awareness about ADHD. Participants who did not attend a course or did not know anybody with ADHD had a lower level of awareness(table-4).

Table 4: Characteristics of the subjects relating to the level of awareness

Characteristic	Awareness level		P-value
	Low awareness (<18) n = 550 (47.9%)	High awareness (≥ 18) n= 597 (52.1%)	
Age (years)	38.12 ± 13.457	39.28 ± 13.213	0.145
Nationality			
Saudi Non-Saudi	511 (92.9%) 39 (7.1%)	528 (88.4%) 69 (11.6%)	0.010
Gender			
Female Male	488 (88.7%) 62 (11.3%)	548 (91.8%) 49 (8.2%)	0.079
Education			
school diploma University degree Postgraduate studies	123 (22.4%) 381 (69.3%) 46 (8.4%)	128 (21.4%) 395 (66.302%) 74 (12.4%)	0.083
Marital status			
Single Married Divorced/widowed	159 (28.9%) 362 (65.8%) 29 (5.3%)	142 (23.8%) 421 (70.5%) 34 (5.7%)	0.143
	Employment		
Employed Unemployed Student Retired	214 (38.9%) 124 (22.5%) 115 (20.9%) 97 (17.6%)	212 (35.5%) 166 (27.8%) 122 (20.4%) 97 (16.2%)	0.223
Income			
Enough and safe Enough Not enough Not enough and indebt	193 (35.1%) 296 (53.8%) 44 (8%) 17 (3.1%)	226 (37.9%) 309 (51.8%) 38 (6.4%) 24 (4%)	0.459
Do you know anybody with ADHD			
Yes No	199 (36.2%) 351 (63.8%)	310 (51.9%) 287 (48.1%)	<0.001
Attended a course about ADH			
Yes No	52 (9.5%) 498 (90.5%)	171 (28.6%) 426 (71.4%)	<0.001

Discussion

Our study aim was to determine the awareness level of ADHD among the Saudi population regarding causes, symptoms, and treatment. The amount of participants with low and high awareness were similar, with high awareness being more dominant. Approximately, the vast majority who answered were females and had a universi-

ty degree. Difference in awareness level could be due to the factor that some participants knew someone with ADHD or attended a course about ADHD. More than half had received some form of information from different sources about ADHD. Participants have chosen different methods to increase awareness of ADHD, with the notable ones being related to technology. 52.1% of the participants have high awareness level since they answered more than 60% of the questions correctly. This could be attributed to several factors including: high income, knowing someone who has ADHD and attending a course about ADHD. More than two-thirds of the participants have high income which directly supports better awareness because they can afford the resources.19.3% of the participants attended a course about ADHD, most of them attended educational courses, while the rest took part in conferences or family associations of children with ADHD. 34.9% of the participant were not familiar with ADHD prior to the study, their information was not sufficient and appropriate.

The rest had received knowledge about this disorder, their main source of information was from people around them (family, friends, colleagues, etc). Compared to another study in Tehran, television was the source of information in 60% of the cases[8]. Participants knowledge of the etiology and treatment of this disorder was lower than their knowledge of the symptoms. More than half of the participants believed that this disorder is caused by vaccines, three large studies provided assurance that vaccines didn't cause attention deficit disorders[9]. 61% of the participants thought that ADHD is the result of ineffective parenting skills. In a study in 2007 in Shiraz 52% of parents attributed ADHD to bad parenting[10]. Studies have shown that parenting style has no correlation with ADHD[11]. 84% of the participants believed that ADHD is caused by consuming refined sugar or food additives, this hypothesis is unproven[12,13]. Their belief in the sugar etiology could possibly reflect old popular beliefs. The symptoms most commonly chosen by participants were "excessive physical movement", "leaving seat and running about or climbing too much when remaining seated is expected" and "does not seem to listen when spoken to directly". Regarding the treatment, 84.8% of respondents believe that ADHD "needs medical treatment by a specialist at early age combined with behavior therapy", 19% think that ADHD best be left to "spontaneously resolve". Although a good amount had wrongly chosen an incorrect treatment there still remains a high level of participants who are aware of the correct treatment, and this is a very im-

portant as long-term outcomes in ADHD receiving psychiatric health care showed a decrease in ADHD symptom burden [14]. In this study, the most chosen ways to enhance awareness of ADHD were mainly social media (35%), followed by mass media (22.3%) and public health campaigns (19.4%). It would make sense that the majority have chosen ways that include technology and social networks considering these are the most widely used and effective methods in this age and day.

Conclusion

The awareness of ADHD in adult Saudi population is reasonable but not ideal. Education and employment appear to significantly improve peoples knowledge about the disorder , perhaps due to improved attitudes and access to information systems. Social media is the main agent in spreading ADHD awareness among people, due to its ubiquity. Community based proactive and accessible recourses must be developed on 'population-based needs and means' in order to improve ADHD beliefs and awareness levels among the Saudi population.

Conflict of interest

none

Financial support

none

References

1. Banaschewski T, Becker K, Döpfner M, Holtmann M, Rösler M, Romanos M. Attention-Deficit/Hyperactivity Disorder. Dtsch Arztebl Int. 2017;114(9):149-159. doi:10.3238/arztebl.2017.0149
2. Watson S. Types of ADHD [Internet]. WebMD. 2020 [cited 21 August 2021]. Available from: https://www.webmd.com/add-adhd/childhood-adhd/types-of-adhd.
3. Magnus W, Nazir S, Anilkumar A, Shaban K. Attention Deficit Hyperactivity Disorder [Internet]. Ncbi.nlm.nih.gov. 2022 [cited 21 August 2022]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK441838/.
4. Austerman J. ADHD and behavioral disorders: Assessment, management, and an update from DSM-5 [Internet]. 2015 [cited 19 August 2021]. Available from: https://pubmed.ncbi.nlm.nih.gov/26555810/.
5. Aly, S., Mohammad, F. and Ahmed. Alazhar Assiut Medical Journal. AAMIJ. 2015 13(4) :14-20.
6. AlZaben F, Sehlo M, Alghamdi W, Tayeb H, Khalifa D, Mira A et al. Prevalence of attention deficit hyperactivity disorder and comorbid psychiat-

ric and behavioral problems among primary school students in western Saudi Arabia. Saudi Medical Journal. 2018;39(1):52-58.

7. Danielson ML, Bitsko RH, Ghandour RM, Holbrook JR, Kogan MD, Blumberg SJ. Prevalence of Parent-Reported ADHD Diagnosis and Associated Treatment Among U.S. Children and Adolescents, 2016. J Clin Child Adolesc Psychol. 2018;47(2):199-212. doi: 10.1080/15374416.2017.1417860.
8. Dodangi N, Vameghi R, Habibi N. Evaluation of Knowledge and Attitude of Parents of Attention Deficit/Hyperactivity Disorder Children towards Attention Deficit/Hyperactivity Disorder in Clinical Samples. Iran J Psychiatry. 2017 Jan;12(1):42-48. PMID: 28496501; PMCID: PMC5425351.
9. Michael J. Smith, Charles R. Woods; On-time Vaccine Receipt in the First Year Does Not Adversely Affect Neuropsychological Outcomes. Pediatrics June 2010; 125 (6): 1134–1141. 10.1542/peds.2009-2489
10. Ghanizadeh A. Educating and counseling of parents of children with attention-deficit hyperactivity disorder. Patient Educ Couns 2007; 68: 23-28.
11. Orenstein, B., Bowers, E., Rauf, D., By, & Vann, M. (2020, March 13). Can bad parenting cause adhd? - adhd center. Retrieved April 07, 2021, from https://www.everydayhealth.com/adhd/experts-bad-parenting-and-adhd.aspx.
12. Kim Y, Chang H. Correlation between attention deficit hyperactivity disorder and sugar consumption, quality of diet, and dietary behavior in school children. Nutr Res Pract. 2011;5(3):236-245. doi:10.4162/nrp.2011.5.3.236
13. Del-Ponte B, Anselmi L, Assunção MCF, et al. Sugar consumption and attention-deficit/hyperactivity disorder (ADHD): A birth cohort study. J Affect Disord. 2019;243:290-296. doi:10.1016/j.jad.2018.09.051
14. Nylander E, Floros O, Sparding T, Rydén E, Hansen S, Landén M. Five-year outcomes of ADHD diagnosed in adulthood. Scand J Psychol. 2021;62(1):13-24. doi:10.1111/sjop.12692