

Frequency of behavioural tendencies resembling attention-deficit hyperactivity disorders in undergraduate medical students: a cross sectional study

Amna Hamid¹, Tayyaba Shahzad², Shanza Faridi³, Amina Nadeem⁴

Abstract

Objective: To determine the frequency of behavioural tendencies resembling attention deficit hyperactivity disorders in undergraduate medical students.

Methods: The descriptive cross-sectional study was conducted from January 2017 to November 2018 at the Army Medical College, Rawalpindi, Pakistan, and comprised medical students from four medical institutions in the twin cities of Rawalpindi-Islamabad. Data was collected using the Adult attention deficit hyperactivity disorder Self-report scale V1.1 screener. Behavioural patterns were assessed on the basis of the the symptoms checklist of the scale. Data was analysed using SPSS 25.

Results: Of the 409 subjects, 191(45.7%) were males and 218(53.3%) were females. Overall, 4 or more symptoms were found in 121(29.6%). Of these, 59(30.9%) were males and 62(28.4%) were females. Those who scored high showed higher levels of inattention and hyperactivity ($p < 0.005$).

Conclusion: A significant number of medical students showed behavioural tendencies that resembled attention deficit hyperactivity disorders.

Keywords: Adult ADHD, ADHD, Attention deficit hyperactivity, ASRS-V1.1, Pakistan.

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Introduction

Attention deficit hyperactivity disorder (ADHD) is defined as an attention span that is not appropriate to the developmental stage or an impulsive, hyperactive behaviour that is not suitable to the age of a person.¹ ADHD was initially believed to be a disorder that only affected children. Diagnostic and Statistical Manual of Mental Disorders version IV (DSM-IV) was the first to incorporate 'Adult ADHD' into the diagnostic criterion that still remains difficult to diagnose and recognise.² However, long-term follow-up studies revealed that ADHD symptoms tend to persist in adulthood in 10-60% individuals. American Psychiatric Association (APA) in 1994 systematised the major symptoms observed in ADHD. These symptoms fit into three broad categories: inattention, hyperactivity and impulsivity.³ ADHD in adults presents the same way as it does in children, but symptoms' intensity, especially hyperactivity, may be less and do not explicitly manifest.⁴ The worldwide prevalence is between 5.29% and 7.1% in children and adolescents respectively, while it is 3.4% (range 1.2%-7.3%) in adults.⁵ ADHD and learning disorder (LD) remain prevalent globally and are also speculated to have a high occurrence in Pakistan⁶ although very little information is available.

Healthcare services and management decrease as an

¹⁻³4th Year MBBS Student, Army Medical College, Rawalpindi, Pakistan;

⁴Army Medical College, Rawalpindi, Pakistan

Correspondence: Amna Hamid. e-mail: amnaahamid97@gmail.com

adolescent transitions into adulthood which is part of the reason why ADHD goes unnoticed in adult years.⁷ A qualitative analysis in 2017 stated that the core theme of the barriers to healthcare observed for the adults with ADHD revolved around the lack of knowledge amongst healthcare professionals and society.⁸

Resolving the debate about adult ADHD will benefit both clinicians and researchers. If the diagnostic continuity of child and adult ADHD can be established, clinicians will have a foundation for generalising the vast paediatric ADHD research literature to adult patients. Adolescents with ADHD are more likely to fail in academics, and adults are likely to face unemployment and show violent behaviour,⁹ while still remaining undiagnosed.

Medical Education stands at the pinnacle of the most demanding academic curriculums. Despite the rapid advancements in the methods of medical education, students are still required to memorise a significant amount of information during the theoretical academic years.¹⁰ This requires a high level of cognitive ability to retain that knowledge.¹¹

As the dense curriculum, social and peer pressure already complicate the learning process, even minor degrees of inattention will negatively affect the educational development of medical students that will slowly manifest in their behaviour inside and outside of the academic environment, such as shortcomings in relational

functioning.¹² In order to prevent this, it is imperative to find out the behavioural patterns among medical students undergoing a strenuous and demanding syllabus.

No such study has been carried out in Pakistan. The current study was planned to fill the gap by ascertaining the frequency of behavioural tendencies resembling ADHD in medical students.

Subjects and Methods

The descriptive cross-sectional study was conducted from January 2017 to November 2018 at the Army Medical College (AMC), Rawalpindi, Pakistan, and comprised medical students from four medical institutions in the twin cities of Rawalpindi-Islamabad. After approval from the institutional ethics review committee, the sample size was computed using the World Health Organisation (WHO) calculator¹³ with a 5% margin of error and 95% confidence interval (CI). In order to increase the power of the study the sample size was expanded by >6%. The sample was raised using non-probability convenience sampling technique from among the students of AMC, Rawalpindi Medical College (RMC), Foundation Medical and Dental College (FMDC), Islamabad and Riphah International Medical University (RIMU), Islamabad. ; who agreed to participate in this research study. The subjects were medical and dental students aged 15-23 years of either gender enrolled in the 2017 academic year. Those falling outside the age bracket or not willing to participate were excluded, and so were those taking medication for any psychological or medical disorder or with a history of chronic anxiety and depression.

Data was collected after obtaining written informed consent under supervision.

The Adult ADHD Self-Report Scale (ASRS) V1.1¹⁴ was administered to all the subjects. The screening scale was developed in conjunction with revision of the WHO Composite International Diagnostic Interview (CID). Students were guided on how to fill the likert-scale questionnaire and instructed to choose the options that were consistent with their behaviour in the preceding 6 months.

A positive score on it warranted the need for further clinical assessment. ASRS is a 5-point likert scale based on 18 DSM-V symptoms corresponding to ADHD Criterion A of 'never' to 'very often'. It is constructed in two parts. Part A is based on 6 symptoms that determine the positive ADHD behaviour with high sensitivity (68.7% v. 56.3%), specificity (99.5% v. 98.3%), total classification accuracy (97.9% v. 96.2%) and Cohen's kappa (0.76 v. 0.58).¹⁵

Part B gives more detail to the behaviour of the subject. It

is further divided into two subscales of Inattention and Hyperactivity with 9 items each¹⁶ for which variables were computed where a score of 3 or more was equal to 1, and 2 or less was equal to 0.

Data was analysed using SPSS 25. Reliability analysis was performed to assess the psychometric properties of ASRS in our setting. Internal consistency for the 18 items was high (Cronbach's $\alpha=0.771$). Frequency distributions were calculated. Chi-square was used to assess significance of gender and age groups with the symptom occurrence. Inattention and hyperactivity were also correlated using Chi square test. Phi correlation coefficient was calculated in order to quantify the degree of association. $P<0.05$ was taken as significant.

Results

Of the 409 subjects, 191 (45.7%) were males and 218 (53.3%) were females. Also, 202 (49.4%) subjects were aged 18-19 years, 151 (36.9%) 20-21 years and 56 (13.7%) 22-23 years.

Frequency distributions of 18 symptomatic behaviours was noted (Figure).

Overall, 4 or more symptoms out of the 6-item part A of the scale were present in 121 (29.6%) subjects (Table 1).

Of them, 59 (30.9%) were from the male group and 62 (28.4%) were from the female group ($p>0.05$). Maximum frequency 53 (35%) was found in students aged 20-21 years ($p>0.05$) (Table 2).

Table-1: Frequency of symptoms of ADHD in total sample population.

		Medical students (n= 409)
		n (%)
ASRS V1.1 Score	Positive (moderate to severe inattention, hyperactivity)	121 (29.6)
	Negative (mild to no inattention, hyperactivity)	288 (70.4)

ADHD: Attention deficit hyperactivity disorder; ASRS: Adult ADHD Self-Report Scale

Table-2: Comparison of positive ASRS V1.1 score between male and female medical students.

	Significance of age			
	18-19 yrs n= 202	20-21 yrs n= 151	22-23 yrs n= 56	p-value for age range
Positive ASRS score (Inattention, Hyperactivity)	52	53	16	0.160*
Frequency	25.7%	35.1%	28.6%	
	Significance of gender			p-value for gender
	Male students n= 191	Female students n= 218		
Positive ASRS score (Inattention, Hyperactivity)	59	62		0.588*
Frequency	30.9%	28.4%		

* $p<0.05$ is considered as statistically significant; ASRS: Adult Self-Report Scale

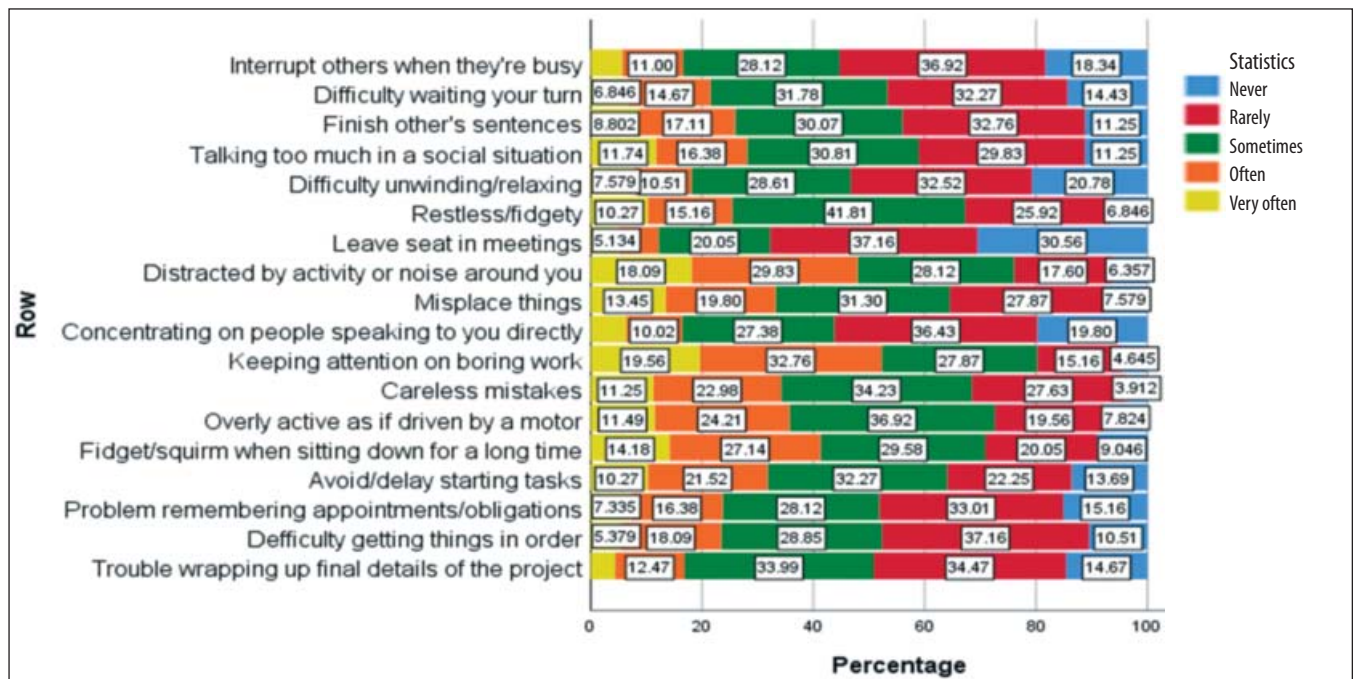


Figure: Overall description of Adult Self-Report Scale (ASRS) V1.1 scores of the medical students.

Those who scored high in Part A also had higher scores on the Inattention and Hyperactivity subscales ($p < 0.005$). There was a statistically weak positive association between part A of the scale and the Inattention subscale ($\phi = 0.566$), indicating that the individuals who scored positive on the ASRS scale also presented more symptoms of inattention. However, Hyperactivity subscale showed little or no association ($\phi = 0.339$).

Discussion

Findings showed that 29.6% students scored positive on the ASRS scale on self-reporting basis. The rate is similar to a psychopathological screening carried out on medical students in 2017 in a transversal comparative study where 28% of students reported high on the ASRS.¹⁷ Another preliminary screening carried out on a non-clinical sample in 2018 computed a 37% frequency.¹⁸ With the ASRS being highly used in clinics and psychiatric departments now for initial screening of patients, a study reported that 23.9% of outpatients in a psychiatric clinic showed symptoms of inattention and hyperactivity.¹⁹ The high results warrant the necessity for further studies to unmask confounding factors and rule out co-morbid conditions so that a definite diagnosis can be reached.

In an anonymous survey carried out in the United States, 5.5% of the medical students reported to have ADHD and 72.2% of them had been diagnosed after the age of 18 years.²⁰ A prevalence of 7.28% has also been reported in a sample of undergraduate computer sciences students in

Islamabad.²¹ A similar pattern of academic burden and a strenuous study workload magnifies the importance of this result for our research. Because ADHD is known to cause functional impairment with concentration and attention, it is generally assumed that it will have a low prevalence in medical students. A rigorous 4-5-year plan of medical education is thought to filter out the ones who cannot reach the merit to enter. Our study, however, is the first to display the possibility of ADHD being present in medical students in Pakistan.

Male students of our sample showed a higher frequency (30.9%) compared to the females (28.4%) although gender correlation was statistically insignificant ($p > 0.05$). A gender difference has been known to exist in attention and hyperactivity impairment in ADHD. A National Comorbidity Survey observed that prevalence was higher in males (5.4%) versus females (3.5%).²² Another demographics report in US stated that men are at 3 times more risk to develop ADHD than females.²³ One study observed clear difference in behavioural patterns between male and female college students with a higher prevalence in women.²⁴ With the increasing prevalence and the expansion of literature on this matter, questions are arising whether this gender difference is an important neuropsychiatric distinction or a product of methodological artefact and socio-cultural influences.²⁵ As more data is being collected and no uniform pattern is seen across gender, it is highly likely that the latter is a more

probable answer as also proven by the current study.

Our sample was also grouped into three age groups in order to ascertain the association between heterogeneity of ADHD symptoms and their intensity across the age range. The worldwide prevalence estimated in children and adolescents is 5.3%-7.1%²⁶ and only 1.2%-3.4% in adults.²⁷ Our study observed the highest frequency of 35.1% in the 20-21 age group, but no significant correlation was found between age groups and symptoms ($p=0.160$).

Prevalence is known to decrease as the individuals grow older. This can also pertain to the fact that the ADHD symptoms are subtler in adults compared to children and may not explicitly manifest as such. It often appears as subnormal decision-making, low academic adjustments and a lower grade point average (GPA).²⁸ Significant amount of needs of these students could be met if career counsellors are equipped with apt knowledge to provide help and direction to match their functioning tendencies and weaknesses.²⁹

There is a strong need to raise primary awareness about ADHD among the people on urgent grounds through workshops, seminars and discussion forums. It may help the family members and the faculty members of various institutions to better understand the intensity of concern. A study in Karachi measured teachers' knowledge of the signs and symptoms of ADHD with significant mean scores difference ($p<0.005$) of the tests carried out before and after the training programme.³⁰ No such study has been brought to light regarding ADHD awareness since then in Pakistan. The symptoms, effects and treatments of ADHD must be made known to the adolescents and young adults so that the disorder could be identified early and not misinterpreted at an early stage. Parents must also be guided about the medications and the interventional techniques that can effectively provide support and mutual benefit.

The current study was limited by the fact that it was institution-based with an unequal sample size for different age groups and random male-to-female ratio which together lower the generalisability of the findings over a wider community. Also the study did not explore if western cultural influence had a role in the application of ASRS V1.1 on Pakistani population. Further studies with larger samples having comparable number of male and female participants are needed to better evaluate age- and gender-specific differences. Careful follow-up with clinical investigation is recommended for individuals who score high on the questionnaire to formulate proper diagnosis. Without proper treatment, ADHD continues to produce chronically impaired functioning and social skills. Medical

students may develop these behaviour patterns which may mimic the symptoms of Adult ADHD through their undergraduate student years. It is imperative that research be carried out to analyse the factors that may be causing these symptoms. The current study provides only a broad view of what remains a challenging research issue. It can provide a platform for future analytical studies on ADHD and its co-morbid associations.

Conclusion

A significant number of medical students showed symptoms that corresponded with ADHD in the age group that is on average in the second and third years of undergraduate medical education. Causal association between various risk factors and the appearance of ADHD-like symptoms in these students should be determined so that effective steps can be taken to better understand and possibly eradicate the problem.

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Conflict of Interest: None.

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