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Original Article

Adult Attention Deficit Hyperactivity Disorder in Health Science Students of India

Bhushan Shashi[1], Piplani Shobhit[1], Tekkalaki Bheemsain[2]

[1]Intern, Department of Psychiatry, Jawaharlal Nehru Medical College, KLE University, Belagavi, Karnataka, India, [2]Assistant Professor, Department of Psychiatry, Jawaharlal Nehru Medical College, KLE University, Belagavi, Karnataka, India

Abstract

Introduction: Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder, diagnosed mostly in childhood. In adults, it is estimated at 2–7%, and 4% is generally accepted. Surprisingly very less research efforts are there to establish the prevalence of adult ADHD in India.

Purpose: The purpose of the present article was to assess the prevalence of ADHD among medical students and its impact on the self-esteem of these students.

Materials and Method : The study was conducted in a South East Asian Medical and Dental College. 900 students were randomly selected to fill up the questionnaire (620 from Medical College and 280 from Dental College). 618 students answered the questionnaire completely. Conner's Adult ADHD Rating Scales-Self Report: Screening Version was used to screen for ADHD. The Rosenberg self-esteem scale was used to measure the self-esteem. Students who were screened positive were subjected to clinical interview based on the diagnostic and statistical manual of the mental disorders fifth edition. IBM SPSS version 22 was used for statistical analysis.

Results : 45 students (7.3%) were diagnosed to be at risk with ADHD. It was also found that ADHD has no statistically significant association with age, sex, course of study, and self-esteem. The study concluded that there was a high prevalence of risk of ADHD among students of health sciences. It was found that students in dental college showed a higher prevalence of ADHD compared to students of medical college, but their self-esteem was comparable to their peers.

Conclusion: More frequent screening should be made available at the childhood for prompt detection of ADHD

Key words: Adult attention deficit hyperactivity disorder, Undergraduate students, Self-esteem, prevalence

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder, diagnosed mostly in childhood. It is recognized by attention deficit, hyperactivity, and impulsiveness. This results in poor social makeup, unsatisfactory academic performance, and occupational failures in the future.[1]

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Etiology of ADHD as reported by Curatolo, D'Agati and Moavero in 2010 included environmental factors such as prenatal exposure to alcohol and cigarette smoke, exposure to high levels of lead during infancy and malnutrition along with genetic and hereditary factors (DRD4, DRD5, SLC6A3, SNAP-25, and HTR1B), and low levels of a chemical in brain called dopamine that helped in regulating mood, movement, and attention. These factors acted together to form an array of neurobiological burden.[2] There was an increase in the prevalence of childhood ADHD from 7.8% in 2003 to 11% in 2011.[3]

Although, initially regarded as a childhood condition, evidences states that ADHD, being a neurodevelopmental disorder, persists into adulthood although the symptoms may be somewhat modified with age.[4,5] Studies have

Corresponding Author: Shashi Bhushan, H-601, Indian Oil Apartments, C-58/23, Sector-62, Noida, Uttar Pradesh, India. Phone:+91-9844420359. E-mail: teenshashi@gmail.com

reported that 30–70% of children suffering from ADHD would continue suffering from it during puberty.[6]

For an adult to be diagnosed with ADHD, he should have a history of ADHD along with present symptoms.[7] It was observed that adults with ADHD usually had job instability and interpersonal difficulties.[8] In students, ADHD was associated with weaker academic performance, because of which many of them were unsuccessful in reaching the college level. Those who got into college probably showcased better cognitive skills and coping strategies of their latent disorder.[9] Many researchers found similarity in social satisfaction and psychological welfare in college students with ADHD compared to control while other researchers found that ADHD in students was associated with poor quality of life and adjustment issues, below par academic performance, substance abuse, and depression.[10] They had difficulties in organizing and doing their tasks on time and decision-making. They also had a problem in awareness and understanding of one's own thought processes.[11]

The prevalence of ADHD in adults is estimated at 2–7%, and 4% is generally accepted.[4,12] In a previous study done on college students in Chandigarh, India, showed the prevalence of adult ADHD to be 5.4%.[13] Another cross-sectional study done in an outpatient setting in India, the prevalence of ADHD in adults was calculated to be 8.8%.[14] Apart from few studies conducted in India surprisingly very less research efforts are there to establish the prevalence of ADHD. Therefore, the purpose of the present article is to assess the prevalence of ADHD among college students in India, particularly medical students and assess the impact of Adult ADHD on the self-esteem of these students.

MATERIALS AND METHODS

The study was conducted by the Department of Psychiatry, Jawaharlal Nehru Medical College (JNMC), KLE University, India, in a South East Asian Medical and Dental College.

A sample size of 456, using determinants of ADHD with 95% confidence interval (CI), and 20% tolerable error was estimated. Keeping in mind larger drop-out rate from the study, 900 (design effect =2) students were randomly selected (620 from Medical College and 280 from Dental College). Institutional Ethical Clearance was taken for the same (IEC Reference No. – MDC/DOME/181). Students having positive medical and family history were not selected for the study.

Of 900 students, 618 students answered the questionnaire completely. Two standardized questionnaires were used for assessment.

Conner's Adult ADHD rating self-report scale: Screening version[15] was used to screen for students susceptible to ADHD. There was an inconsistency-adjusted sensitivity of 1.0, a specificity of 0.71, a positive predictive value of 0.52, and a negative predictive value of 1.0.[16] The ASRS consists of 18 questions which are based on the diagnostic and statistical manual of mental disorders, fourth edition, text revision (DSM-IV-TR) criteria and are divided into two parts: Part A and B. Six of these questions were the most predictive of adult ADHD and are included in Part A. Part B consists of the remaining 12 questions which were used just as additional cues in making the diagnosis. Both the parts were used in this study.

The Rosenberg Self-esteem Scale (RSES)[17] was used to measure the self-esteem. It was a scale of 0–30 where a score of <15 may indicate problematic low self-esteem. The RSES was designed similar to social survey questionnaires. It was a 10-item Likert-type scale with items answered on a four-point scale - from strongly agrees to strongly disagree. Five of the items had positively worded statements, and five had negatively worded ones. The scale measured state self-esteem by asking the respondents to reflect on their current feelings.

In addition, questions regarding sociodemographic, and academic performance of the 1st year, along with family/medical/drug history were asked.

Students who were screened positive under ASRS were further subjected to clinical interview based on the DSM of the mental disorders fifth edition (DSM-5)[18] by a trained interviewer.

Descriptive analysis was carried out by the mean and standard deviation for quantitative variables, frequency, and proportion for categorical variables.

The association between categorical explanatory variables and quantitative outcome was assessed by comparing the mean values. The mean differences along with their 95% CI were presented. Independent sample *t*-test was used to assess statistical significance. Correlation between quantitative explanatory and outcome variables was assessed by calculating the Pearson correlation coefficient.

The association between explanatory variables and categorical outcomes was assessed by cross-tabulation and comparison of percentages. Chi-square test was done. $P < 0.05$ was considered statistically significant. IBM SPSS version 22 was used for statistical analysis.[19]

RESULTS

There were 618 participants comprising 461 students from medical college and 157 students from dental college

were evaluated. The mean ages of the participants were 20.03 ± 1.45 years. A total of 382 females and 236 males participated in the study.

The prevalence rate of self-reported ADHD symptoms using the ASRS screener was 20.2%. After using the DSM-5 criteria for diagnosing ADHD, the prevalence rate of ADHD in the study population was calculated to be 7.3% [Tables 1 and 2].

The adult ADHD was considered as a primary outcome variable. Course, age group, and gender were considered as an explanatory variable.

On studying the association of ADHD with gender, it was found out that there was no significant difference between both the genders. There was also no significant association of ADHD with the age which can be inferred from the table.

Furthermore, it was found that students in the dental college showed a higher prevalence of risk for developing ADHD compared to students of the medical college, but it was not statistically significant.

On using RSES for measuring the self-esteem of the students, we found that there was also no significant difference in the ratio of participants who had low self-esteem in the ADHD group as compared to the students who did not have ADHD. Therefore, no significant association was found between ADHD and low self-esteem.

Therefore, it was found that ADHD is quite prevalent in health sciences, but it has no statistically significant association with age, sex, or course of study. Furthermore, there is no statistically significant association of ADHD with self-esteem [Tables 3].

DISCUSSION

There have been very less studies pertaining to adult ADHD in India. The study done on 224 college students in Chandigarh, showed the prevalence of adult ADHD to be 5.4%, but the study population recruited by the author consisted of students from different streams and colleges and the diagnosis were made only on the basis of self-assessing questionnaires.[13] Another cross-sectional study was done in an outpatient setting in India where 283 adults were screened and interviewed for ADHD. The prevalence of ADHD in adults was calculated to be 8.8%. The limitation of this study was that the investigators conducted it in an outpatient setting. Thus, the results could not be generalized for the adult population.[14]

In our study, 7.2% of the respondents had ADHD symptoms. Although the average prevalence of ADHD in adults is taken as 4%, it has been reported to be 2–7% in previous studies.[4,12] A study conducted on medical students to determine the prevalence rate of ADHD in Kenya was found out to be 8.7%[20] while in a study conducted in Iran; it was found to be 15.4%.[21] Thus, our findings have been consistent with many of the studies done previously in this field.

In this study, we found that the ADHD was higher in males as compared to females by a very little margin. This is, however, not concordant with the earlier research which states that males have almost double the chances of presenting ADHD in both childhood (2:1) and adulthood (3:2).[14] It might be possible that this ratio tends to decrease as the students enroll in colleges where ADHD can be found commonly in both males and females.[22]

We also found that the percentage of college students with ADHD did not vary from students without ADHD in terms of self-esteem. Several researches have shown that low self-esteem is associated comorbidity of ADHD.[23,24]

Table 1: Classification of ADHD according to dominant presentation

Baseline characteristic (n)	Inattention (%)	Hyperactivity/impulsivity (%)	Combined symptoms (%)	Total (%)
Age group*				
17–18 (88)	3 (3.4)	1 (1.1)	3 (3.4)	7 (7.9)
19–20 (302)	9 (2.9)	8 (2.6)	6 (2)	23 (7.6)
21–22 (197)	6 (3)	5 (2.5)	4 (2)	15 (7.6)
23–24 (31)	0 (0)	0 (0)	0 (0)	0 (0)
Total (*n*=618)	18 (2.9)	14 (2.3)	13 (2.1)	45 (7.3)
Sex†				
Male (236)	5 (2.1)	8 (3.4)	5 (2.1)	18 (7.6)
Female (382)	13 (3.4)	6 (1.6)	8 (2.1)	27 (7.1)
Total (*n*=618)	18 (2.9)	14 (2.3)	13 (2.1)	45 (7.3)
Course of study‡				
MBBS (461)	13 (2.9)	10 (2.2)	10 (2.2)	33 (7.1)
BDS (157)	5 (3.1)	4 (2.6)	3 (1.9)	12 (7.6)
Total (*n*=618)	18 (2.9)	14 (2.3)	13 (2.1)	45 (7.3)

*Chi-square: 0.003, *P*=0.953, †Chi-square: 6.187, *P*=0.103, ‡Chi-square: 0.311, *P*=0.577, ADHD: Attention deficit hyperactivity disorder

Table 2: Classification of ADHD according to the severity

Baseline characteristic (n)	Mild (%)	Moderate (%)	Severe (%)	Total (%)
Age group				
17–18 (88)	6 (6.8)	1 (1.1)	0 (0)	7 (7.9)
19–20 (302)	18 (6.0)	4 (1.3)	1 (0.3)	23 (7.6)
21–22 (197)	11 (5.6)	3 (1.5)	1 (0.5)	15 (7.6)
23–24 (31)	0 (0)	0 (0)	0 (0)	0 (0)
Total (*n*=618)	35 (5.7)	8 (1.3)	2 (0.3)	45 (7.3)
Sex				
Male (236)	14 (5.9)	3 (1.3)	1 (0.4)	18 (7.6)
Female (382)	21 (5.5)	5 (1.3)	1 (0.3)	27 (7.1)
Total (*n*=618)	35 (5.7)	8 (1.3)	2 (0.3)	45 (7.3)
Course of study				
MBBS (461)	26 (5.6)	6 (1.3)	1 (0.2)	33 (7.1)
BDS (157)	9 (5.7)	2 (1.3)	1 (0.6)	12 (7.6)
Total (*n*=618)	35 (5.7)	8 (1.3)	2 (0.3)	12 (7.3)

ADHD: Attention deficit hyperactivity disorder

Table 3: Relation between ADHD and self-esteem

Self-esteem[§]	ADHD positive (%)	ADHD negative (%)
High (499)	34 (6.8)	465 (93.2)
Low (119)	11 (9.2)	108 (90.8)
Total (*n*=618)	45 (7.3)	573 (92.7)

[§]Chi-square: 0.840, *P*=0.359. ADHD: Attention deficit hyperactivity disorder

However, our results are not in line with their findings. This states that although people with ADHD might be perceived as emotionally unstable, they had no problem in adjusting in the colleges. They already were academically qualified and at par with their peers thus showing better coping abilities.

The limitation of our study is that first, only 618 from the selected 900 students participated for the research. From the remaining 282 students, 131 people did not fill the form completely, 98 students were excluded on the basis of the positive family, medical, and drug history, and 53 students were absent on the day when the study was carried out. Second, the present percentage was calculated from a sample of college students, and external validity is affected by this. The generalization of the result should be limited only to the college student population. Furthermore, for a more elaborative investigation about the symptoms, parents, and teachers are also need to be interviewed to confirm the diagnosis of ADHD. Further studies are needed in India with a larger population size in general setting, and special importance should be given assessing the comorbidities associated with ADHD.

CONCLUSION

Although medicine is considered one of the most competitive branches for the intelligent students, ADHD is still significantly prevalent in this stream. Citing the importance of early diagnosis, more frequent screening should be made available at the childhood. There is a need of prompt detection and management of ADHD in college students so that they might be able to cope up with the social and psychological problems in their occupational, educational, and familial lives they are at risk with.

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