A Study on Attention Deficit Hyperactivity Disorder among Students in A Professional College in Tumakuru City: A Cross-Sectional Study

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ABSTRACT

Objective: To estimate the proportion of Attention Deficit Hyperactivity Disorder (ADHD) and to assess its association with selected sociodemographic factors among engineering students in a professional college in Tumakuru city.

Material and Methods: Using convenience sampling, a cross-sectional survey was done from April to June 2025 among 520 students in a professional college in Tumakuru city who were at least 18 years old. Those who had a history of mental illness were excluded. Sociodemographic information was gathered by a standardized questionnaire. Using a standardized self-report screening instrument, ADHD was evaluated. Chi-square test and descriptive statistics was used to analyse the data. p-values less than 0.05 were regarded as statistically significant.

Results: The percentage of research participants with ADHD was 13.8%. Males were considerably more likely to have ADHD (16.8%) than females (11.4%) (p-value = 0.048). Younger age groups (18–19 years) were found to have statistically significant association with ADHD (p-value = 0.005). There was no discernible correlation between ADHD and the type of household or the study year.

Conclusion: Younger age and males were found to be vital predictors of ADHD, which is particularly common among engineering students. In order to promote early detection and suitable psychological care, it is advised that universities implement regular screening and awareness programs.

Keywords: ADHD, college students, engineering students, Tumakuru, cross-sectional study.

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Introduction:

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental condition that disrupts development and functioning through a persistent pattern of impulsivity, hyperactivity, and inattention[1]. One of the most prevalent juvenile mental illnesses, ADHD often lasts into adolescence and adulthood.[2] About 40.0–60.0% of children with ADHD are estimated to still have clinically significant symptoms as adults, according to longitudinal research.[3]

According to neurobiological research, executive functioning-related brain areas such as the cerebellum, prefrontal cortex, and basal ganglia are linked to structural and functional abnormalities in ADHD[4]. The ADHD pathogenesis has been related to dysregulation of the dopaminergic and noradrenergic neurotransmitter systems, which explains why stimulant and non-stimulant pharmaceutical therapy are effective[5] . Given that heritability estimates range from 70.0% to 80.0%, genetic variables are significant. ADHD is also influenced by environmental risk factors, including preterm, low birth weight, early psychosocial trauma, and prenatal exposure to alcohol or tobacco[6] . Numerous functional deficits are linked to adult ADHD. People frequently struggle with time management, organization, working memory, sustained attention, emotional control, and impulse control[7,8] .

Comorbidity is prevalent among people with ADHD. Learning difficulties, substance use disorders, depressive disorders and anxiety disorders are among the conditions that frequently co-occur[9] . Comorbid mental health disorders make diagnosis and treatment even more difficult, and they frequently result in individuals with ADHD being underdiagnosed[10]. The incidence of symptomatic adult ADHD may reach 6.0%–7.0% worldwide, according to epidemiological research, and the prevalence of persistent adult ADHD is roughly 2.5%–3.4%[11] . A systematic review found that the ADHD diagnosis or significant ADHD symptoms are associated with lower academic performance in college students, particularly those with inattention symptoms[12] .

Students in college are especially vulnerable to functional impairment associated with ADHD. Executive functioning abilities, self-regulation, sustained attention, and greater independence are all necessary for the move to higher education[13]. Students with ADHD frequently find it difficult to adjust to these pressures and show poor academic performance than their peers without ADHD[14]. According to research, a commonly mentioned

disability among college students requesting academic accommodations is ADHD [15].

According to international studies, between 3.5% and 16% of college students have ADHD[16-18] . According to existing research, the frequency among medical and college students in India ranges from 5.48 to 25.7%[19-22]. According to these results, ADHD is a serious but little-known mental health issue in Indian universities and colleges. There have been numerous reports of gender variations in the prevalence of ADHD, with the many of the studies showing a higher prevalence in men. Nevertheless, women can exhibit more inattentive symptoms according to new data, which are less disruptive and hence more likely to go unnoticed[23].

Data on ADHD among Karnataka's professional college students, especially engineering students, is still limited despite mounting evidence. For the purpose of creating institution-based screening programs, raising staff and student awareness, and creating referral channels for diagnosis and care, regional prevalence data are crucial. The aim of the study was to determine the proportion of ADHD and its correlation with specific sociodemographic characteristics among students enrolled in a Tumakuru city professional college.

Materials and Methods:

In Tumakuru city, Karnataka, India, a professional (engineering) college's students participated in this cross-sectional survey between April and June of 2025. Students enrolled in undergraduate programs at the time of data collection who were at least eighteen years old made up the study sample. Students who had a prior diagnosis of a mental illness were not allowed to partake in the study in order to prevent confusion when evaluating symptoms of ADHD.

Based on a 95.0% confidence level and acceptable error, the required sample size was determined using the predicted prevalence of ADHD among college students from earlier Indian studies. 520 pupils made up the study's final sample size. Convenience sampling was used to choose participants based on their availability during the study period. Before starting the study, prior approval from the college administration was acquired.

A standardized, self-administered questionnaire was used to gather data. There were two sections in the questionnaire. Age, gender, year of education, joint or nuclear family type, and birth order were the sociodemographic factors included in the first section. The Adult ADHD Self-Report Scale (ASRS v1.1)[24], a standardized screening instrument created in collaboration with the World Health Organization to evaluate adult ADHD symptoms, made up the second segment. The Diagnostic and Statistical Manual of Mental Disorders criteria for diagnosing ADHD are reflected in the 18 items on the ASRS v1.1. The screening component consists of the first six questions (Part A), which are thought to be the most predictive of ADHD. Participants were categorized as screening positive for ADHD symptoms based on a predetermined threshold score.

All participants were educated with the study's goal prior to data collection, and written informed consent was acquired. Because no personal identifiers were gathered, confidentiality and anonymity were guaranteed. Participants were made aware that participation in the study was voluntary. Gathered data was entered in Microsoft Excel, and the relevant statistical software was used for analysis. The prevalence of ADHD and its sociodemographic features were expressed using descriptive statistics like frequency and percentage. Using the Chi-square test, the relationship between ADHD and specific sociodemographic factors was evaluated. p-value below 0.05 were regarded as statistically significant.

Ethical approval was procured from the Institutional Ethics Committee of Sri Siddhartha Medical College. Written informed consent was taken from all participants prior to data collection.

Results:

The sociodemographic profile of the 520 undergraduate engineering students that were part of the study is mentioned in Table 1. The age group that made up the most of the participants were students of the ages 20 and 21 (44.2%), followed by those between the ages of 18 and 19 (28.8%). The study found more than one-fourth (26.9%) of the participants were aged 22 years or more. In terms of gender distribution, there were 310 participants (59.6%) who were male and 210 participants (40.4%) who were female.

In terms of academic year, the largest proportion of students were enrolled in the second year of study (30.8%). This was followed by first-year students (26.9%), third-year students (23.1%), and fourth-year students (19.2%). Regarding family structure, most participants reported belonging to nuclear families (73.1%), while approximately one-fourth (26.9%) belonged to joint families. With respect to birth order, nearly half of the students (48.1%) were first-born children, followed by second-born children (36.5%). Only 15.4% of participants reported being third-born or higher in birth order.

Figure 1 depicts the proportion of ADHD among the study participants based on screening results. Out of the total 520 students, 72 were identified as screening positive for ADHD, resulting in an overall proportion of 13.8%. The remaining 448 students (86.2%) did not demonstrate symptoms suggestive of ADHD according to the screening tool. This shows one in seven participants reported with ADHD.

Table 2 shows the association between ADHD and selected sociodemographic variables. A statistically

significant association was found between gender and ADHD status. Among male students, 52 out of 310 (16.8%) screened positive for ADHD, whereas among female students, 24 out of 210 (11.4%) were found to have ADHD symptoms. This difference in prevalence between males and females was statistically significant (χ^2=3.92, p-value=0.048).

Age group had statistically significant association with ADHD (χ^2=10.42, p-value=0.005). The highest proportion of ADHD-positive students was observed in the 18–19 years age group, where 32 out of 150 students (21.3%) screened positive. This was followed by the 20–21 years age group, with 34 out of 230 students (14.8%) being ADHD positive. The lowest proportion was seen among students aged 22 years and above, with only 10 out of 140 students (7.1%) screening positive for ADHD.

Although a greater proportion of students hailing from joint families (26 out of 140; 18.6%) were found to have ADHD than those from nuclear families (50 out of 380; 13.2%), this association did not exhibit statistical significance (p-value =0.12).

Similarly, no statistically significant association was found between year of study and ADHD status (p-value =0.31). ADHD prevalence ranged from 12.5% among second-year students to 17.1% among first-year students, with comparable proportions among third-year (13.3%) and fourth-year students (16.0%).

Discussion:

The current study evaluated the proportion of ADHD and its correlation with specific sociodemographic characteristics among engineering undergraduate students at a Tumakuru city professional college. With a 13.8% overall proportion of ADHD in this study, a substantial percentage of students exhibit symptoms that could be related with ADHD. From roughly 2.8% to 15.9%, similar prevalence rates have been documented among medical and college students across India[22-24] .

The frequency of ADHD differs greatly, ranging from 5.0% to 30.0%, according to international research conducted among college students[16-19]. This study showed 14.0%, which is within this documented worldwide range, confirming the idea that young adults in higher education settings frequently experience symptoms of ADHD.

Gender and ADHD were shown to be significantly correlated, with a larger proportion among males (16.8%) than females (11.4%). This result is similar to the majority of epidemiological studies that have shown that males are more prone to develop ADHD than females. In contrast to females, who typically present primarily with inattentive symptoms that may go unrecognized, males are more prone to display externalizing symptoms like hyperactivity and impulsivity, which are easier to identify[23].

Age was significantly associated with ADHD, with the highest proportion observed among students aged 18–19 years. This finding is consistent with evidence signifying that ADHD symptoms continue from adolescence into early adulthood and may gradually decline with increasing age[3,11] .

Although a higher proportion of students hailing from joint families had ADHD compared to those from nuclear families, this association was not statistically significant. Similar findings have been stated in other Indian studies, suggesting that family type alone may not be a strong predictor of ADHD.

No statistically significant association was seen between year of study and ADHD. This finding indicates that ADHD symptoms persist across different academic years and are not limited to a particular stage of undergraduate education. Similar findings have been stated in previous studies among college students[14,15] .

From a public health perspective, the presence of ADHD symptoms among a considerable proportion of engineering students has important implications. ADHD has been associated with poor academic performance, lower grade point averages, increased risk of academic probation, and reduced course completion[14,15]. Early detection of ADHD through routine screening programs in colleges can facilitate timely referral, diagnosis, and appropriate intervention, thereby improving academic performance and overall well-being.

Conclusion:

The present study reveals that ADHD is relatively common among undergraduate engineering students in a professional college in Tumakuru city, with an overall prevalence of 13.8% Younger age group and Male gender were identified as significant factors associated with ADHD. These findings highlight ADHD as an important yet underrecognized mental health concern among college students.

Early identification of students with ADHD is crucial, as untreated symptoms can adversely affect academic performance, psychosocial functioning, and overall quality of life. The findings emphasize the need to incorporate mental health screening and support services within higher education institutions.

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Conflict of Interest:

The authors have no competing interests to disclose

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List of Tables and Figures:

Table 1: Sociodemographic Characteristics of Study Participants (n=520)

Variable	Category	Frequency (n)	Percentage (%)

Age (years)	18–19	150	28.8
	20–21	230	44.2
	≥22	140	27.0
Gender	Male	310	59.6
	Female	210	40.4
Year of Study	1st year	140	26.9
	2nd year	160	30.8
	3rd year	120	23.1
	4th year	100	19.2
Family Type	Nuclear	380	73.1
	Joint	140	26.9
Birth Order	First	250	48.1
	Second	190	36.5
	Third or above	80	15.4

Table 2 : Association Between Sociodemographic Variables and ADHD (n=520)

Variable	Category	Total (n)	ADHD present n (%)	ADHD Absent n (%)	Chi-square (χ^2) value	p-value
Gender	Male	310	52 (16.8%)	258 (83.2%)	3.92	0.048*
	Female	210	24 (11.4%)	186 (88.6%)		
Age group (years)	18–19	150	32 (21.3%)	118 (78.7%)	10.42	0.005*
	20–21	230	34 (14.8%)	196 (85.2%)		
	≥22	140	10 (7.1%)	130 (92.9%)		
Family type	Nuclear	380	50 (13.2%)	330 (86.8%)	2.39	0.12
	Joint	140	26 (18.6%)	114 (81.4%)		
Year of study	1st year	140	24 (17.1%)	116 (82.9%)	3.59	0.31
	2nd year	160	20 (12.5%)	140 (87.5%)		
	3rd year	120	16 (13.3%)	104 (86.7%)		
	4th year	100	16 (16.0%)	84 (84.0%)		

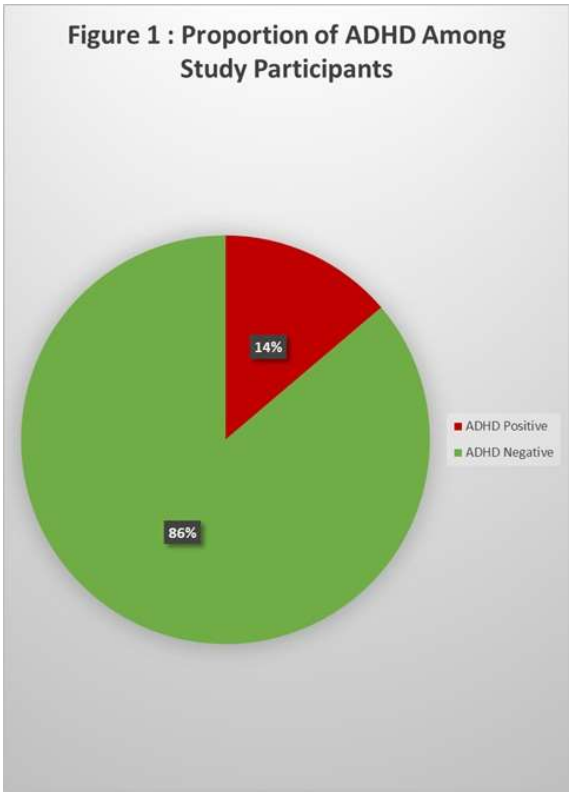

Figure 1: Proportion of ADHD among study participants (n=520)