

RISK OF ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD) AND ASSOCIATED FACTORS AMONG MEDICAL STUDENTS AT HANOI MEDICAL UNIVERSITY IN 2025

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Abstract: Attention Deficit Hyperactivity Disorder (ADHD) is a common neurodevelopmental disorder that persists into adulthood, often impairing academic and social functioning. University students, particularly in medical fields, face substantial academic stress that may heighten vulnerability to ADHD symptoms. In Vietnam, limited evidence exists regarding ADHD prevalence among medical students. Objective: This study aimed to estimate the prevalence of ADHD risk among undergraduate students at Hanoi Medical University (HMU) in 2025 and to identify associated demographic, social, and academic factors. Methods: A cross-sectional survey was conducted among 181 students using a structured online questionnaire. ADHD risk was assessed with the Adult ADHD Self-Report Scale (ASRS v1.1). Sociodemographic and academic characteristics were analyzed using Chi-square tests and logistic regression to explore associations with ADHD risk. Results: Overall, 33.7% of participants screened positive for ADHD risk. Male students exhibited significantly higher prevalence compared to females (42.0% vs. 27.0%, $p = 0.049$). Academic program differences were marked, with General Medicine (63.2%) and Dentistry (69.2%) showing the highest risk, while Preventive Medicine students had the lowest (22.4%) ($p = 0.0004$). Logistic regression indicated female students were less likely to be at risk (OR = 0.51; 95% CI: 0.27–0.95). Other factors, including academic year, living arrangements, part-time employment, and prior mental health history, showed no significant associations. Conclusion: The prevalence of ADHD risk among HMU students was substantially higher than global estimates, underscoring an urgent need for awareness, early screening, and support services. Targeted interventions for high-risk groups, especially male students and those in clinically demanding programs, are recommended to safeguard academic performance and future professional well-being.

Keywords: Attention Deficit Hyperactivity Disorder; ADHD; medical students; prevalence; risk factors; Hanoi Medical University; mental health; academic stress; higher education

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1. Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common neurodevelopmental disorders, characterized by persistent patterns of inattention, hyperactivity, and impulsivity that interfere with functioning or development. Although traditionally considered a childhood disorder, increasing evidence indicates that ADHD frequently persists into adulthood, with an estimated prevalence of 2.58-3.1% among adults worldwide [1,2]. In adults, symptoms are often less overt than in children, manifesting primarily as difficulties with sustained attention, time management, emotional regulation, and task organization. These impairments substantially affect academic performance, occupational outcomes, and social relationships [3,4].

Medical students represent a particularly vulnerable population. The demanding academic environment, long study hours, and high expectations for professional performance place them at risk for various mental health problems, including ADHD. Previous studies across different countries have reported highly variable prevalence rates of ADHD among medical students, ranging from 3.5% in China [5] to 12.7% in the United States [6], 11% in Egypt [7], and as high as 24.4% in Cameroon [8]. A recent study in Saudi Arabia found that 11.9% of university students met criteria suggestive of adult ADHD [9]. Moreover, some studies indicate that male students may report ADHD symptoms at higher rates than females, while others suggest the opposite, reflecting potential cultural and methodological differences [10,11].

In Vietnam, research on ADHD has primarily focused on children and adolescents, while data on young adults, particularly university students, remain scarce. The condition is often underrecognized in this group, as ADHD in adults is frequently misattributed to stress, anxiety, or inadequate self-management skills. This gap in recognition may delay diagnosis and appropriate interventions, potentially exacerbating academic failure, psychological distress, and even attrition from medical school. Importantly, medical students with ADHD may also face long-term challenges in professional development and patient care quality if their condition remains unmanaged [3,4].

Several factors have been identified as potentially associated with ADHD risk among university students. These include individual characteristics such as age, sex, and personal history of mental health problems, as well as contextual factors including academic workload, living arrangements, and use of stimulants [3,10]. The interplay between these determinants in medical students in Vietnam, however, has not been systematically investigated.

Hanoi Medical University (HMU) is one of the oldest and largest medical training institutions in Vietnam, with a rigorous curriculum that combines heavy theoretical content and early clinical exposure. The academic demands and stressful learning environment may increase the risk of ADHD-related symptoms among its students. Understanding the prevalence and correlates of ADHD risk in this setting is therefore critical, both for informing mental

health support programs and for ensuring the academic success and well-being of future healthcare professionals.

This study was conducted to address these gaps by (1) estimating the prevalence of ADHD risk among medical students at Hanoi Medical University in 2025, and (2) analyzing associations between selected demographic, social, and academic factors with ADHD risk.

2. Methods

Study design and setting

A cross-sectional study was conducted at Hanoi Medical University (HMU), Vietnam in 2025.

Study population

The study population included undergraduate students enrolled at HMU during the study period.

$$n = Z_{1-\alpha/2}^2 p(1 - p)/d^2.$$

Sample size and sampling

The minimum sample size was estimated using the single-population proportion formula:

We set a two-sided confidence level of 95% ($Z = 1.96$), an expected prevalence $p = 0,119$ based on prior university-student data (11.9%), and a margin of error $d = 0,05$. The calculation yielded $n \approx 161$. Allowing for a 10% non-response rate, the target minimum became $n \approx 178$. The sample size of 181 participants was achieved through convenience sampling. Although exceeding the minimum requirement from the formula, this sample may not be fully representative of the entire student

body at HMU. Therefore, findings should be interpreted with caution regarding generalizability.

Data collection instruments

Data were obtained via a structured, self-administered online questionnaire on REDCap comprising: (i) sociodemographic/academic characteristics; and (ii) ADHD risk screening using the Adult ADHD Self-Report Scale (ASRS v1.1), 18 items aligned with DSM criteria, scored on a 5-point Likert scale. Thresholds followed standard guidance (clinically significant if Part B1 ≥ 20 or Part B2 ≥ 39).

Data management and analysis

Data were cleaned (duplicate removal, recoding, outlier checks) and analyzed in Stata 16. Categorical variables were summarized as counts and percentages; continuous variables as mean \pm SD. Associations with ADHD risk were examined using Chi-square tests and univariate logistic regression to estimate odds ratios (OR) with 95% confidence intervals (CI). Statistical significance was defined as $p < 0.05$.

Ethical considerations

Participation was voluntary with electronic informed consent from all students. The study protocol, including the informed consent form, was reviewed and approved by the Institutional Ethics Committee of Hanoi Medical University. This process ensured compliance with ethical standards, particularly given the inclusion of sensitive variables such as mental health history and stimulant use.

3. Results

Table 1. Sociodemographic characteristics of participants (n = 181)

Characteristics	n	%
Age (years, mean \pm SD)	20.9 \pm 1.3	–
Sex		
- Male	81	44.8
- Female	100	55.2
Ethnicity		
- Kinh	169	93.4
- Others	12	6.6
Religion		
- None	162	89.5
- Buddhist/Christian/Others	19	10.5
Academic year		
- Y1	31	17.1
- Y2	24	13.3
- Y3	68	37.6
- Y4	52	28.7
- Y5–Y6	6	3.3
Living arrangements		
- With family	57	31.5
- Dormitory	56	31.0
- Rented housing	67	37.0

Comment: Most participants were in their early twenties, with a slightly higher proportion of females. The majority belonged to the Kinh ethnic group and reported no religious affiliation. Third- and fourth-year students accounted for two-thirds of the sample. Living arrangements were relatively balanced between family, dormitories, and private rentals.

Table 2. Distribution of participants by academic program

Academic program	n	%
Preventive Medicine	107	59.1
General Medicine	19	10.5
Dentistry	13	7.2
Traditional Medicine	7	3.9
Public Health	6	3.3
Nursing	6	3.3
Nutrition	4	2.2
Optometry	7	3.9
Rehabilitation	12	6.6

Comment: Preventive Medicine together accounted for approximately 18%, while other health-related programs contributed smaller proportions. General Medicine and Dentistry

Table 3. Prevalence of ADHD risk by sex and academic program

Variables	At risk ADHD n (%)	Not at risk n (%)	p-value
Sex			
Male (n = 81)	34 (42.0)	47 (58.0)	0.049
Female (n = 100)	27 (27.0)	73 (73.0)	
Academic program			0.0004
Preventive Medicine	24 (22.4)	83 (77.6)	
General Medicine	12 (63.2)	7 (36.8)	
Dentistry	9 (69.2)	4 (30.8)	
Other programs*	16 (38.1)	26 (61.9)	

* Other programs include Traditional Medicine, Public Health, Nursing, Nutrition, Optometry, and Rehabilitation.

Comment: The overall prevalence of ADHD risk was 33.7%. Male students had the highest risk, while Preventive Medicine had the lowest. Differences across females. Among academic majors, programs were statistically significant.

Table 4. Logistic regression analysis of factors associated with ADHD risk

Variables	OR (95% CI)	p-value
Female vs. Male	0.51 (0.27–0.95)	0.013
Academic year (Y3–Y6 vs. Y1–Y2)	1.24 (0.65–2.37)	0.52
Living arrangement (Dormitory vs. Family)	1.12 (0.56–2.21)	0.74
Part-time employment (Yes vs. No)	1.08 (0.49–2.38)	0.84
History of mental disorders (Yes vs. No)	1.31 (0.44–3.86)	0.62

Comment: Logistic regression confirmed that female students were significantly less likely to be at risk of ADHD compared with males. Other factors, including academic year, living arrangement, part-time employment, and mental health history, were not statistically significant predictors.

4. Discussion

This study assessed the prevalence and associated factors of Attention Deficit Hyperactivity Disorder (ADHD) risk among undergraduate students at Hanoi Medical University. The findings revealed that one-third of participants (33.7%) screened positive for ADHD risk using the

ASRS v1.1 tool. Male students and those enrolled in General Medicine and Dentistry showed significantly higher prevalence compared to their peers. Logistic regression analysis indicated that female gender was associated with a lower likelihood of ADHD risk, whereas other demographic and academic factors were not statistically significant.

The observed prevalence of 33.7% is considerably higher than the global estimates of adult ADHD (2.58-3.1%) [1,2] and exceeds rates reported in many studies among university students worldwide. For instance, prevalence among medical students was 3.5% in China [5], 11% in Egypt [7], and 4.1% in the United States [6]. However, the result aligns more closely with studies conducted in sub-Saharan Africa, such as Cameroon, where prevalence was reported at 24.4% [8]. Variability across studies may stem from differences in screening tools, diagnostic thresholds, and contextual academic environments [3,9].

The finding that male students had a significantly higher ADHD risk is consistent with previous research showing a male predominance in ADHD prevalence, especially in adulthood [10,11]. This may reflect biological differences in neurodevelopment, cultural perceptions of hyperactivity, or reporting biases. Interestingly, the high prevalence in General Medicine and Dentistry compared to Preventive Medicine suggests that academic workload and the competitive environment in clinically intensive programs could exacerbate ADHD-related symptoms. These patterns warrant further

investigation into curriculum-related stressors as potential contributors to attentional difficulties [4].

Although factors such as academic performance, part-time employment, and mental health history were not statistically significant, the descriptive data indicated that ADHD risk was not confined to students with poor academic performance. This aligns with previous evidence suggesting that individuals with ADHD may develop compensatory strategies that mask academic difficulties but remain at risk for burnout, psychological distress, and impaired functioning [12,13].

This study has several strengths. It provides the first empirical evidence of ADHD risk among medical students in Vietnam, using a validated international screening instrument. It also highlights specific subgroups, such as male students and those in clinically demanding programs, who may benefit from targeted support.

However, limitations must be acknowledged. First, the sample size (181) was smaller than initially calculated, limiting generalizability. Second, convenience sampling may introduce selection bias. Third, the ASRS is a screening tool rather than a diagnostic instrument, and self-report data may be influenced by recall or social desirability biases. Finally, the cross-sectional design precludes causal inference.

Despite these limitations, the findings have important implications. The high prevalence of ADHD risk suggests an urgent need for awareness campaigns, routine mental health screening, and counseling

services within medical universities in Vietnam. Integrating early detection and support programs could help mitigate the academic and professional consequences of undiagnosed ADHD.

5. Conclusion and recommendations

This study revealed that more than one-third of undergraduate students at Hanoi Medical University were at risk of Attention Deficit Hyperactivity Disorder (ADHD) according to the ASRS v1.1 screening tool. Male students and those enrolled in General Medicine and Dentistry exhibited significantly higher prevalence, while other demographic and academic factors showed no statistically significant associations.

These findings highlight ADHD as a relevant but underrecognized concern among medical students in Vietnam. Routine screening, psychoeducational programs, and accessible mental health support should be considered within the university setting to facilitate early identification and intervention. Future studies with larger, randomly selected samples and clinical diagnostic assessments are recommended to validate these findings and inform targeted preventive strategies.

6. Limitations

This study has several limitations. First, the sample size (181) and convenience sampling approach limit representativeness and generalizability. Second, the ASRS v1.1 is a screening instrument and not a diagnostic tool, raising the possibility of overestimation. Third, only univariate logistic regression was applied, which does not control for potential confounders.

Fourth, important variables such as sleep duration, electronic device use, stress levels, social media exposure, caffeine, and tobacco consumption were not assessed, although these have been shown to influence ADHD symptoms in students. Finally, the cross-sectional design prevents causal inference.

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