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ARTICLE INFORMATION	Fill in information in each box below
Article Type	Original article
Article Title (within 20 words without abbreviations)	Prevalence of mental disorders and personality traits among Public Health Students: A cross-sectional study
Running Title (within 10 words)	Mental disorders and personality in Public Health Students
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Competing interests	No potential conflict of interest relevant to this article was reported.
Funding sources State funding sources (grants, funding sources, equipment, and supplies). Include name and number of grant if available.	Not applicable.
Acknowledgements	We sincerely thank medical students from University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam, who participated in this study.
Availability of data and material	Upon reasonable request, the datasets of this study can be available from the corresponding author.
Authors' contributions Please specify the authors' role using this form.	Conceptualization: Quang Minh Lam Data curation: Quang Minh Lam, Vy Thi Thao Ta, Dung Thi Thuy Nguyen, Mai Thi Sao Truong

Authors can't change and add items, but you can delete items that are not applicable.	Formal analysis: Quang Minh Lam, Vy Thi Thao Ta Methodology: Quang Minh Lam Software: Vy Thi Thao Ta, Quyen Nguyen Thuc Lam, Trang Vo Phuong Nguyen Validation: Quang Minh Lam Investigation: Quang Minh Lam Writing - original draft: Quang Minh Lam, Vy Thi Thao Ta, Dung Thi Thuy Nguyen, Mai Thi Sao Truong, Quyen Nguyen Thuc Lam, Trang Vo Phuong Nguyen Writing - review & editing: Quang Minh Lam, Vy Thi Thao Ta, Dung Thi Thuy Nguyen, Mai Thi Sao Truong, Quyen Nguyen Thuc Lam, Trang Vo Phuong Nguyen
Ethics approval and consent to participate	The Ethics Committee in Biomedical Research at the University of Medicine and Pharmacy in Ho Chi Minh City has approved the study under number 513/HDDD-DHYD signed on March 27, 2024.

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Prevalence of mental disorders and personality traits among Public Health Students: A cross-sectional study

Abstract

Background:

Mental disorders are common among health students. Personality traits have been identified as potential predictors of mental health. This study aimed to assess the prevalence of mental disorders and examine their association with personality traits among students at the Faculty of Public Health, University of Medicine and Pharmacy, Ho Chi Minh City.

Materials and methods:

A cross-sectional study was conducted using a self-administered questionnaire consisting of the SRQ-20 to assess mental disorders and the BFI-S to evaluate personality traits. In this study, "mental disorders" refer to probable cases identified through the SRQ-20 screening tool, which does not provide a clinical diagnosis. Data were analyzed using multivariable Poisson regression models to ascertain the relationship between mental disorders and personality traits.

Results:

Among the 427 students participating in the study, the prevalence of mental disorders was found to be 49.9%. Of those experiencing mental disorders, 39.9% reported mild disorder, 35.7% moderate disorder, and 24.4% severe disorder. Prominent personality traits among students included agreeableness, openness to experience, and conscientiousness. Multivariable regression analysis revealed that mental disorders were associated with neuroticism and extraversion. Specifically, high neuroticism was a strong predictor of mental disorders, while extraversion acted as a protective factor, helping to reduce mental disorders.

Conclusions:

Students with high neuroticism are at increased risk for mental disorders. Conversely, personality traits such as extraversion, openness to experience, agreeableness, and conscientiousness contribute to lower risks of mental disorders. Effective intervention programs are needed to alleviate mental disorders among students.

Keywords: mental disorder; personality traits; students; Faculty of Public Health; University of Medicine and Pharmacy at Ho Chi Minh City.

1. INTRODUCTION

Mental disorders are an increasingly concerning issue in the field of mental health, particularly among university students. It not only affects the quality of life but also significantly impacts academic performance and personal development.[1] Amid growing academic pressure, especially in healthcare fields, understanding and researching mental disorders is of utmost importance. This condition is identified through symptoms such as anxiety, depression, stress, and other mental disorders.[2] Previous studies have shown that mental disorders can be influenced by various factors in demographic, social, and psychological characteristics. Specifically, personality traits have been considered a critical predictor of mental disorders.[3] The Big Five personality model, which includes extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience, is commonly used to assess an individual's personality characteristics. Healthcare students often face high

academic pressures and other stressors, increasing their risk of mental disorders. Understanding the relationship between personality traits and mental disorders not only helps identify risk factors but also aids in developing effective interventions. To date, while many studies globally have examined the relationship between personality traits and mental disorders, few studies have specifically investigated this among public health students in Vietnam. Thus, this study aims to determine the prevalence, severity, and correlation between mental disorders and personality traits among students of the Faculty of Public Health, University of Medicine and Pharmacy at Ho Chi Minh City.

2. MATERIALS AND METHOD

2.1. Study design and participants

A cross-sectional study was conducted on students from the Faculty of Public Health at the University of Medicine and Pharmacy at Ho Chi Minh City. This study adhered to the CROSS (Checklist for Reporting of Survey Studies) checklist in order to ensure the development of a comprehensive manuscript that facilitates a thorough understanding and critical evaluation by readers.[4] The target population comprised all undergraduate students enrolled in the Faculty of Public Health, University of Medicine and Pharmacy at Ho Chi Minh City during the research period from April 2024 to May 2024.

At the time of the study, the faculty included 14 academic classes: 6 classes of Preventive Medicine students, 4 classes of Public Health students, and 4 classes of Nutrition students, totaling 1,130 students.

A multistage sampling method was applied as follows:

Stage 1: Stratification by training program (Preventive Medicine, Public Health, Nutrition);

Stage 2: Stratification by academic year within each program;

Stage 3: Determination of the number of students per stratum using the formula:

$$'The\ number\ of\ students\ per\ stratum' = \frac{'Number\ of\ students\ in\ each\ stratum'}{'Total\ number\ of\ students'} * 'Required\ sample\ size'$$

Stage 4: Convenience sampling was conducted within each stratum.

Selected students were informed about the study, provided written informed consent, and completed the questionnaire.

Exclusion criteria included students who were absent from class during the survey period or those who did not fully complete all the questions in the two scales measuring mental disorders and personality traits.

2.2. Sample size and sampling

To examine the prevalence of mental disorders, the sample size was calculated using the formula for determining a proportion[5]:

$$n \geq \frac{Z^2_{1-\alpha/2} * (1-p) * p}{d^2}$$

The study used an estimated prevalence rate of p=0.574 from the research by author Nguyen Thi Lan Anh[6] (2019) regarding the relationship between green spaces, mental health, and academic performance among students of the Faculty of Public Health, University of Medicine and Pharmacy, Ho Chi Minh City, which indicated that the prevalence of mental

disorders among students was 57.4%, with a margin of error at 0.05. Along with an anticipated dropout rate of 10%, the minimum total sample size required for the study was 418 students. Sampling was conducted using a multi-stage sampling method based on the number of students in each formal education program and academic year within the Faculty of Public Health. The number of students selected was balanced by education program and academic year, with a convenient sample size of 427 students.

2.3. Data collection and tool

The study collected background information on various factors, including personal factors (age, major, academic year, gender, ethnicity, residence, physical activity, self-assessment of physical and mental health, smoking habits, alcohol consumption), family factors (parental occupation, familial economic status, family allowance), and school factors (academic performance, satisfaction with academic results, study load, pressure before exams, number of retaken courses, intention to drop out, participation in extracurricular activities). Initially, students were provided with an informed consent form. They were given sufficient time to review the document and received a full explanation on relevant aspects of the study before signing up to indicate their consent to participate.

Data collection involved a pre-structured questionnaire, which was distributed by the researchers to students in class. Instructions and clarifications were provided before and during the completion of the questionnaire. The questionnaire consisted of three components:

Component A: 22 questions on personal information and related factors.

Component B: Personality trait classification using the Big Five Inventory Short Form (BFI-S), with 11 questions covering the five traits: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness.

Component C: Mental disorder assessment using the WHO Self-Reporting Questionnaire (SRQ-20) for adults, consisting of 20 questions with "Yes" or "No" response options.

Personality traits were assessed using the BFI-S scale, which consists of 11 statements describing 5 personality traits: neuroticism (questions 1, 11); extraversion (questions 2, 7); openness to experience (questions 3, 6, 9); agreeableness (questions 4, 8); and conscientiousness (questions 5, 10). Responses were recorded on a 7-point Likert scale ranging from 1 "Completely incorrect" to 7 "Completely correct." Each personality trait score was calculated by averaging the responses to the relevant items, with higher scores indicating a stronger expression of that trait.

Developed by the World Health Organization, the SRQ-20 serves as a screening tool for psychiatric issues, which encompasses three primary multidimensional factors associated with mental/psychiatric disorders: somatic symptoms, depressive/anxiety symptoms, and cognitive/low energy symptoms.[7] The SRQ-20 has also proven to be a reliable, valid, and appropriate tool for screening mental and psychiatric disorders across numerous countries, particularly in developing regions[8,9]. The severity of mental disorders was determined by the total score from the SRQ-20 scale, as follows [10,11]:

7–10 points: mild mental disorders

11–14 points: moderate mental disorders

≥ 15 points: severe mental disorders

Mental disorders were assessed using the SRQ-20 questionnaire. This component consisted of 20 questions with two response options: "Yes" or "No." A "Yes" response was assigned 1 point, while a "No" response was assigned 0 points. This severity classification was used for descriptive purposes only and does not represent a clinical diagnosis.

The SRQ-20 and BFI-S scales used in this study were previously validated in Vietnamese populations and applied without modification. The original Vietnamese version of the questionnaire is available in Appendix 3. The SRQ-20 was translated using a forward–backward method and showed good psychometric properties (Cronbach's alpha = 0.87; sensitivity = 73%; specificity = 82%). The Vietnamese version of the BFI-S, validated by Truong Thi Khanh Ha and Tran Ha Thu in 2017, demonstrated acceptable internal consistency (Cronbach's alpha = 0.804)[12].

2.4. Bias control

To control selection bias, participants were encouraged and reminded to complete all the questions in both the mental disorders and personality trait scales. For information bias management, researchers provided guidance and clarification to students if any part of the questionnaire, personality trait assessment, or mental disorders assessment was unclear. To minimize bias from the researchers, a standardized explanation was provided for each question to address participants' concerns.

The questionnaire was designed to be clear, specific, easy to understand, and tightly structured to meet the research objectives.

2.5. Statistical method

The data collected from the questionnaires were entered and cleaned using Microsoft Excel. Afterward, the data were analyzed using Stata 17.0 software. Frequency and percentage were calculated for qualitative variables. The distribution of quantitative variables was assessed for normality using the Shapiro-Wilk test and visual inspection of histograms. The median and interquartile range (IQR) were reported for skewed variables, while the mean and standard deviation (SD) were reported for normally distributed quantitative variables, including BFI-S scores and mental disorder scores.

Univariate analyses were conducted to identify factors associated with mental disorders. The Chi-square test was used for categorical variables, while the independent samples t-test and Mann-Whitney U test were applied for continuous variables, that were chosen based on data distribution.

Pearson correlation analysis was used to assess the relationship between personality traits and mental disorder scores. Additionally, multivariable Poisson regression with robust error variances was employed to estimate adjusted prevalence ratios (PRs) and 95% confidence intervals (CIs) for the association between personality traits and mental disorders while adjusting for potential confounders. Variables with a p-value < 0.2 in the univariate analysis, along with the primary personality traits of interest, were included in an initial multivariable Poisson regression model. A backward stepwise selection approach was used, where non-significant variables ($p > 0.05$) were removed one by one, with confounding checked at each step, to arrive at the final parsimonious model.

2.6. Ethical considerations

The questions posed in this study were designed to protect the autonomy of the participants and ensure that their mental and physical health was not harmed. The voluntary nature of their participation allowed them to withdraw at any stage without penalty. Written informed

consent was obtained from each student before participation. Personal information related to the participants was handled confidentially and used strictly for research purposes. The analysis results obtained from the study were only used for relevant research purposes and not for any unrelated purposes.

The study was ethically approved by the Biomedical Research Ethics Committee of the University of Medicine and Pharmacy at Ho Chi Minh City, with ID number IRB-VN01002. The IRB approval was provided in number 513/HDDD-DHYD, signed on March 27, 2024.

3. RESULTS

Among 427 approached students, no participants refused or were excluded, resulting in a 100% response rate.

3.1. Personal, family, and scholastic factors

The median age was 21 years, as the youngest participant was 19 years old, while the oldest was 32 years old. The proportion of female students who participated in the study was higher than that of male students. The number of students majoring in preventive medicine was twice that of students majoring in nutrition, and 2.8 times that of students in public health. First-year students constituted the highest percentage, while sixth-year students had the lowest. The majority of students were from the Kinh ethnic group and primarily lived with family or relatives. In the three months prior to the study, a high percentage of students had regularly engaged in physical exercise, averaging 2 to 4 times per week. A relatively high percentage of students had self-assessed their physical and mental health as unstable. Most students had never smoked cigarettes or consumed alcohol. The majority of parental occupations were civil servant, farmer/laborer, or self-employed. Their familial economic situation was prevalently perceived as ‘average’, and most received financial support from their families. Conversely, a small number of students felt that their economic situation was ‘not prosperous’ and did not receive financial support from their families.

Most students achieved ‘satisfactory’ or ‘average’ academic performance in the previous semester. A relatively high percentage of students was dissatisfied with their academic results. The majority perceived a ‘heavy’ academic load at school and exhibited pressure before exams. The remaining courses across all semesters averaged from 0 to 2 courses, with a maximum of 18 courses. A relatively high number of students considered dropping out. Most students participated in extracurricular activities at school. Characteristics of the study population are summarized in Table 1 and Table 2.

Table 1. Characteristics of study participants (n = 427)

Characteristics	Frequency	Percentage (%)
Age*	21 (20 – 22)	
Major		
Public health	81	19
Nutrition	117	27.4
Preventive medicine	229	53.6
Academic year		

Characteristics	Frequency	Percentage (%)
Year 1	108	25.3
Year 2	76	17.8
Year 3	91	21.3
Year 4	82	19.2
Year 5	36	8.4
Year 6	34	8
Gender		
Male	131	30.7
Female	296	69.3
Ethnicity		
Kinh	406	95.1
Other (Hoa, Khmer, K'ho)	21	4.9
Physical exercise		
Yes	287	67.2
No	140	32.8
Frequency of physical exercise (times/week)*	3 (2 – 4)	
Self-assessment of physical health		
Stable	330	77.3
Unstable	97	22.7
Self-assessment of mental health		
Stable	321	75.2
Unstable	106	24.8
Smoking		
Yes	5	1.2
No	422	98.8
Frequency of smoking (n = 5) (cigarettes/day)*	2 (2 – 4)	
Alcohol consumption		
Yes	33	7.7
No	394	92.3
Frequency of alcohol consumption (n = 33) (cans/week)*	2 (1 – 5)	

(*): Median [Interquartile range]

Table 2. Characteristics of familial and scholastic factors (n = 427)

Characteristics	Frequency	Percentage (%)
Familial factors		
Paternal occupation		
Civil servant	118	27.6
Laborer	133	31.2

Characteristics	Frequency	Percentage (%)
Business/Trade	32	7.5
Freelance (unstable job)	111	26
Other	33	7.7
Maternal occupation		
Civil servant	96	22.5
Laborer	129	30.2
Business/Trade	42	9.8
Freelance (unstable job)	114	26.7
Other	46	10.8
Perception of familial economic status		
Not prosperous	45	10.5
Average	360	84.3
Prosperous	22	5.2
Financial support from family		
Yes	370	86.7
Yes, but not enough	42	9.8
No financial support	15	3.5
Scholastic factors		
Academic performance in the last semester		
Excellent	14	3.3
Very good	38	8.9
Good	199	46.6
Average	134	31.4
Poor	42	9.8
Satisfaction with academic results		
Satisfied	170	39.8
Dissatisfied	257	60.2
Perception of study load at school		
Little	10	2.3
Manageable	125	29.3
A lot	237	55.5
Too much	55	12.9
Feeling pressure before exams		
Very much	101	23.6
A lot	215	50.4
Normal	99	23.2
Few	12	2.8
Number of course repetitions*	0 (0 – 2)	
Ever considered dropping out		
Have ever	124	29

Characteristics	Frequency	Percentage (%)
Never	303	71
Participated in extracurricular activities at school		
Have ever	357	83.6
Never	70	16.4

(*): Median [Interquartile range]

3.2. Personality traits of students

Students with 'amiable' traits scored the highest among personality characteristics, followed by openness to experience and conscientiousness. 'Neuroticism' scored lower than the above personality traits; however, the 'neuroticism' score was still above average and had the highest standard deviation, indicating high variability in students' neuroticism. 'Extraversion' was the least prominent among the personality traits. Details regarding the description of personality traits are presented in Table 3.

Table 3. Personality traits and mental disorder status (n = 427)

Characteristics	Frequency	Percentage (%)
Personality traits		
Agreeableness**	5.13 ± 1.08	
Openness to experience**	4.82 ± 1.04	
Conscientiousness**	4.80 ± 1.05	
Neuroticism**	4.65 ± 1.37	
Extraversion**	4.55 ± 1.23	
Mental disorder		
Yes	213	49.9
No	214	50.1
Total**	427	7.31 ± 5.34

(**): Average ± Standard Deviation

3.3. Mental disorders status of students

Nearly half of the students in the Faculty of Public Health exhibited mental disorders. At the diagnostic threshold of ≥ 7, the average score for mental disorders among students was higher than the diagnostic threshold. The rates of mental disorders among students are summarized in Table 3. Among the students experiencing mental disorders, the percentage of students with a mean SRQ-20 score indicating a severe condition was still relatively high. The mean SRQ-20 score for students with mental disorders is illustrated in Figure 1.

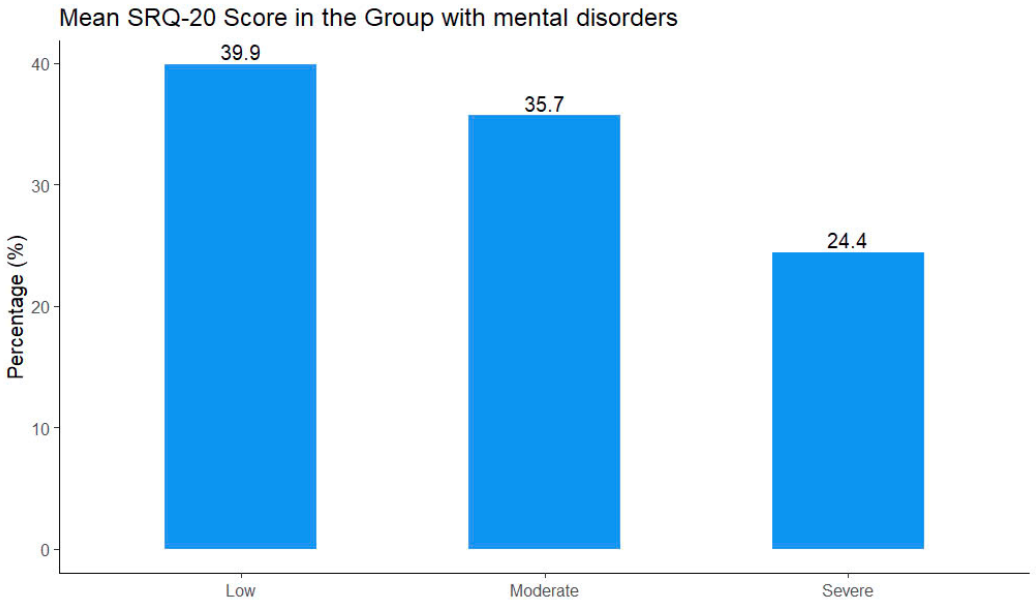

Figure 1. Mean SRQ-20 Score in the group with mental disorders (n = 213)

3.4. Factors related to mental disorders

The study found a correlation between mental disorders and personal factors, including gender, physical exercise, and self-assessment of physical and mental health. Specifically, female students had a higher rate of mental disorders compared to male students. Students who self-assessed their physical and mental health as 'unstable' had a higher rate of mental disorders than those who considered themselves 'stable'. Additionally, the more students engaged in physical exercise, the less affected they were by mental disorders.

Regarding familial factors, the results indicated a correlation between mental disorders and familial economic status. Students who perceived their familial economic situation as 'normal' had a lower rate of mental disorders than those who believed their family was 'not prosperous'.

A correlation was also found between mental disorders and scholastic factors, including academic performance in the past semester, satisfaction with academic results, perception of study load, pressure before exams, and intention to drop out. Specifically, students with 'poor' academic performance in the past semester had a higher rate of mental disorders compared to those with 'good' and 'satisfactory' performance. Furthermore, students - who were dissatisfied with their academic results and considered dropping out - also exhibited a higher rate of mental disorders. Additionally, the more students perceived the 'heavy' study load and pressure before exams, the higher the rate of mental disorders. The analysis revealed several factors associated with mental disorders among students, as presented in Table 4.

Table 4. Univariate analysis of factors associated with mental disorders

Characteristics	Mental disorders		PR	95% CI	p – value
	Yes (n = 213, 49.9%)	No (n = 214, 50.1%)			
Gender					
Male	50 (38.2%)	81 (61.8%)	1		
Female	163 (55.1%)	133 (44.9%)	1.44	1.13 – 1.84	**0.003**[a]
Physical exercise					
No	84 (60%)	56 (40%)	1		
Yes	129 (45%)	158 (55%)	0.75	0.62 – 0.90	**0.002**[a]
Frequency of physical exercise (times/week)	1.9 ± 1.8 [c]		0.94	0.88 – 0.99	**0.023**
Self-assessment of physical health					
Stable	127 (38.5%)	203 (61.5%)	1		
Unstable	86 (88.7%)	11 (11.3%)	2.30	1.97 – 2.69	**<0.001**[a]
Self-assessment of mental health					
Stable	119 (37.1%)	202 (62.9%)	1		
Unstable	94 (88.7%)	12 (11.3%)	2.39	2.04 – 2.80	**<0.001**[a]
Perception of family economic status					
Not prosperous	29 (64.4%)	16 (35.6%)	1		
Average	173 (48.1%)	187 (51.9%)	0.75	0.59 – 0.95	**0.018**
Prosperous	11 (50%)	11 (50%)	0.78	0.48 – 1.24	0.291
Academic performance in the last semester					
Poor	27 (64.3%)	15 (35.7%)	1		
Average	68 (50.8%)	66 (49.2%)	0.79	0.60 – 1.05	0.099
Good	96 (48.2%)	103 (51.8%)	0.75	0.57 – 0.98	**0.036**
Very good	15 (39.5%)	23 (60.5%)	0.61	0.39 – 0.97	**0.035**
Excellent	7 (50%)	7 (50%)	0.78	0.44 – 1.38	0.388
Satisfaction with academic results					
Satisfied	72 (42.4%)	98 (57.6%)	1		
Dissatisfied	141 (54.9%)	116 (45.1%)	1.30	1.05 – 1.59	**0.015**[a]
Perception of study load at school					
Little/Manageable	53 (39.3%)	82 (60.7%)	1		
A lot	124 (52.3%)	113 (47.7%)	1.30	1.12 – 1.49	**<0.001**[b]
Too much	36 (65.4%)	19 (34.6%)	1.68	1.26 – 2.23	
Feeling pressure before exams					
Very much	79 (78.2%)	22 (21.8%)	1		
A lot	102 (47.4%)	113 (52.6%)	0.61	0.53 – 0.69	**<0.001**[b]
Normal/Few	32 (28.8%)	79 (71.2%)	0.37	0.28 – 0.48	
Have ever considered dropping out					
Never	122 (40.3%)	181 (59.7%)	1		
Have ever	91 (73.4%)	33 (26.6%)	1.82	1.53 – 2.17	**<0.001**[a]

(a): Chi-square test
(b): Analysis by trend
(c): Mean ± Standard Deviation

Based on the univariate analysis, a multivariable Poisson regression model was constructed using variables with p-values less than 0.2. These included the following variables: gender, physical exercise, self-assessment of physical and mental health, frequency of smoking, perception of family economic status, academic performance in the previous semester, satisfaction with academic results, perceived study load, exam-related stress, and prior intention to drop out.

Table 5. Pearson correlation between personality traits and mental disorder scores of students (n = 427)

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Mental disorders score	1					
(2) Neuroticism	0.51**	1				
(3) Extraversion	-0.18**	-0.04	1			
(4) Openness to experience	-0.04	0.11	0.38**	1		
(5) Agreeableness	-0.06	0.12	0.44**	0.46**	1	
(6) Conscientiousness	-0.19**	0.08	0.23**	0.59**	0.42**	1

** $p > 0.05$*
*** $p < 0.01$*

Table 5 presents the Pearson correlation between personality traits and mental disorder scores of students. The Pearson correlation analysis indicated a strong positive correlation between 'neuroticism' and mental disorder scores ($r = 0.51$, $p < 0.01$). In contrast, extraversion showed a negative correlation with mental disorders ($r = -0.18$, $p < 0.01$). Other personality traits, including openness to experience, agreeableness, and conscientiousness, exhibited significant correlations with each other but showed no clear relationship with mental disorders. The multivariable Poisson regression model further confirmed the association between 'neuroticism', extraversion, and mental disorders. Specifically, students with higher neuroticism scores had an increased prevalence of mental disorders (PR = 1.25, 95% CI: 1.15 – 1.36, $p<0.001$). Conversely, students with higher extraversion scores had a lower prevalence of mental disorders (PR = 0.92, 95% CI: 0.86 – 0.98, $p = 0.015$). Other personality traits, including openness to experience, agreeableness, and conscientiousness, did not show statistically significant associations with mental disorders ($p > 0.05$). Multicollinearity was assessed using Variance Inflation Factors (VIFs), and no evidence of multicollinearity was found (all VIFs < 2). Goodness-of-fit was evaluated using deviance and Pearson statistics. The ratio of deviance to degrees of freedom was < 1, and the Pearson chi-square/df ratio was < 1, both indicating good model fit and no evidence of overdispersion.

Table 6 presents the multivariable Poisson regression model of mental disorders in relation to personality traits.

Table 6. Multivariable Poisson regression model of mental disorders with personality traits of students (n = 427)

Mental disorders	Univariate analysis		Multivariable Analysis[d,e]	
	PR (95% CI)	p – value	aPR (95% CI)	p – value
Neuroticism	1.42 (1.32 – 1.52)	<0.001	1.25 (1.15 – 1.36)	**<0.001**
Extraversion	0.87 (0.81 – 0.93)	<0.001	0.92 (0.86 – 0.98)	**0.015**
Openness to experience	0.98 (0.90 – 1.08)	0.703	1.05 (0.96 – 1.15)	0.268
Agreeableness	0.94 (0.96 – 1.03)	0.162	0.98 (0.89 – 1.07)	0.587
Conscientiousness	0.87 (0.80 – 0.96)	0.004	0.91 (0.82 – 1.00)	0.050

[d]Results were obtained from a multivariable Poisson regression analysis controlling for with academic results, perceived study load at school, exam-related pressure, and history of considering dropping out. Each independent variable was analyzed in relation to the five personality traits (Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness).

[e]Mean VIF = 1,48, (1/df) Deviance = 0,54, (1/df) Pearson = 0,48, R^2 = 0,37

4. DISCUSSION

The prevalence of mental disorders among students of the Faculty of Public Health at the University of Medicine and Pharmacy at Ho Chi Minh City at the time of the study was 49.9%. This result was relatively consistent with previous studies conducted on medical students using the SRQ-20 scale with a threshold score of ≥ 7. These levels were classified based on SRQ-20 total scores to describe the distribution of symptom burden among students. We emphasize that this categorization is intended for descriptive and analytical purposes only, and does not constitute clinical severity grading. This approach is consistent with prior Vietnamese studies that used SRQ-20 score ranges to stratify symptom intensity for research purposes. Specifically, Nguyen Thi Lan Anh's 2019 study showed a prevalence of 57.4% among public health students.[6] Another study by Hoang Xuan Quynh in 2022 found a mental disorder rate of 35.4% among first-year students at Hue University of Medicine and Pharmacy, suggesting that the result might not represent all students at the university. Overall, the prevalence of mental disorders among medical students was relatively high.

Public health students exhibited a prominent trait of agreeableness, followed by openness to experience and conscientiousness. These characteristics indicated a tendency among these students to be eager to learn, reliable, cooperative, and able to build relationships. Neuroticism showed high variability, reflecting a wide range in students' levels of anxiety and stress, meaning that some students experienced high levels of stress while others were less affected. Additionally, extraversion was the least prominent trait among students compared to other personality traits. However, compared to studies on students from other universities, public health students tended to have higher scores on extraversion.[13,14] This result accurately reflected the nature of public health students, who were trained to serve communities. These students frequently participated in extracurricular activities, community

practices, and public health projects. Such activities enhanced students' communication skills, teamwork abilities, and adaptability, thereby fostering extraversion. This finding aligned with previous research on university students' personality traits using the BFI-S scale. Earlier studies showed that university students generally score higher in agreeableness and conscientiousness. For example, Bui Minh Duc's research[13] highlighted agreeableness as the most prominent trait among students, while Nguyen Thi Phuong's study [14] indicated conscientiousness as the leading trait. This variation might have been due to the specific characteristics of students in each field. However, both traits had a positive impact on the academic and social environment within universities. Students with high levels of agreeableness and conscientiousness tended to build good relationships and maintain lower stress levels, contributing to better mental well-being.[15]

Regarding the relationship between personal factors and mental disorders, female students (PR: 1.44; 95% CI: 1.13 – 1.84) had a higher prevalence of mental disorders than male students. This result differed from Nguyen Thi Lan Anh's study, which did not find a link between mental disorders and gender.[6] In contrast, Hoang Xuan Quynh's study found a correlation between gender and mental disorders, with female students being 2.37 times more likely to experience mental disorders than male students. This discrepancy might have been due to differences in sample size, as Nguyen Thi Lan Anh's study had a sample size of 216, while the current study's sample size was almost twice as large, and Hoang Xuan Quynh's study had a 2.3-times larger sample size. Therefore, adequately large sample size was necessary to ensure that research results were not affected by sampling variability. Students with unstable physical and mental health reported higher rates of mental disorders (PR: 2.30 and 2.39, respectively) compared to those who rated their health as 'stable'. The results were consistent with the study by Graner in Brazil (2018), which showed that students with negative self-assessments of their physical and mental health were four times more likely to experience mental disorders.[16] This might explain why students who exercised regularly had lower mental disorder rates (PR = 0.75, 95% CI: 0.62 – 0.90) than those who did not, with a 6% reduction in mental disorders for each additional exercise session per week. This finding aligned with previous studies by Broman-Fulks et al. (2004)[17], Asztalos et al. (2009)[18], and Gerber et al. (2014)[19], which demonstrated that physical activity improves physical and mental health, reduces anxiety and stress, and enhances coping abilities.[20] This underscored the importance of encouraging students to engage in physical activities to improve their mental well-being and quality of life.

In terms of familial factors, students with less affluent family backgrounds had a higher prevalence of mental disorders compared to those with average perceived family economic conditions (PR = 0.75; 95% CI: 0.59 – 0.95). Hoang Xuan Quynh's research also identified a similar relationship between mental disorders and financial hardship among students. Students from less affluent families faced more financial pressure, leading to higher levels of anxiety and stress, which increased the risk of mental disorders.

The study also found several scholastic factors associated with mental disorders. Students with 'excellent' and 'good' academic performance had a lower prevalence of mental disorder compared to students with poor academic performance. This finding differed from Nguyen Thi Lan Anh's study, which did not find a correlation between academic performance and mental disorders.[6] In reality, students with better academic performance often possess

effective time management skills and study strategies, helping them reduce stress and anxiety. Conversely, students with 'poor' academic performance might have struggled to cope with academic pressure. Students dissatisfied with their academic results had a 1.3-times higher prevalence of mental disorder than those who were satisfied. This finding was relatively consistent with the study "Prevalence and correlates of common mental disorders among dental students in Brazil," which found that students with negative self-assessments of their academic performance were at higher risk of mental disorders.[16] Students who perceived high academic workload and exam-related pressure tended to have higher rates of mental disorders. Nguyen Thi Lan Anh's study produced similar results.[6]

Students who felt overwhelmed by their academic workload and pressure were more likely to experience high stress and anxiety, leading to feelings of overload and loss of control. Students who had previously considered dropping out had a 1.82-times higher rate of mental disorder than those who never considered it. Reasons for dropping out included academic and exam pressure, financial difficulties, societal and family pressure. Dropping out was often driven by unresolved difficulties in academic and personal life, resulting in a sense of helplessness, which increased the risk of mental disorders.

This study employed a stratified sampling method proportional to training programs and academic years, thereby enhancing representation across student groups and increasing the accuracy and reliability of research findings. By minimizing random bias, this method enabled the results to be more generalizable to the entire student population. Furthermore, the findings provided a valuable foundation for expanding future research to encompass all students at the University of Medicine and Pharmacy at Ho Chi Minh City, thereby offering comprehensive insights into the relationship between personality traits and mental disorders among students.

However, certain limitations should be acknowledged. First, bias might have arisen due to the use of the SRQ-20, a self-reported questionnaire assessing issues experienced by students within the past 30 days. As a result, recall bias might have affected the accuracy of reported prevalence and severity of mental disorders. Second, the study did not explore in depth the influence of individual, family, and scholastic factors on the association between mental disorders and personality traits. Therefore, future research is recommended to further investigate the impact of these variables to gain a more nuanced understanding of this relationship.

5. CONCLUSION

The prevalence of mental disorders among students of the Faculty of Public Health was found to be 49.99%, based on the assessment of 427 students who participated in the study. Among students with mental disorders, the rates of 'mild', 'moderate', and 'severe' disorders were 39.9%, 35.7%, and 24.4%, respectively. The study investigated factors related to mental disorders and found a significant association between mental disorders and personality traits in students. From the analysis results, neuroticism was identified as the strongest predictor of mental disorders among students. Additionally, extroversion was found to have a protective role, helping to reduce the likelihood of mental disorders. This emphasizes the importance of students actively participating in physical activities and

exercise to maintain health, reduce stress, and proactively balance study and rest to support mental well-being and academic performance.

Supplementary

Checklist for Reporting Of Survey Studies (CROSS) was utilized to maintain the credibility and transparency of research methods.

Funding sources

Not applicable.

Acknowledgements

We sincerely thank medical students from University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam, who participated in this study.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

Availability of data and material

Upon reasonable request, the datasets of this study can be available from the corresponding author.

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