

# Happiness among university students and associated factors: A cross-sectional study in Vietnam

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## Abstract

**Background:** Happiness is among the fundamental concepts in mental health that have an impact on different aspects of university students. In this study, we aimed to estimate the prevalence of happiness among university students in Vietnam and to identify the factors influencing happiness.

**Design and methods:** A cross-sectional survey was conducted on undergraduate students in 8 universities and colleges in Hanoi, Vietnam. Happiness was measured using the Subjective Happiness Scale (SHS), and we used imputed Poisson regression to evaluate associations between happiness and associated factors.

**Results:** Among 9120 participants students (95.1% response rate), the prevalence of “happier group” was 80.9% (95% CI: 80.1–81.7). In the multivariable regression models, factors associated with being “less happy” on SHS were the perceived financial burden, year in university, academic motivation profile, and self-reported depression and anxiety.

**Conclusions:** University healthcare providers should pay attention to these associated factors while designing mental health care programs to promote happiness among university students.

## Keywords

Depression, anxiety, mental health, happiness, students

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## Significance for public health

This is a study with a large sample size and valid scales to identify happiness among university students in Vietnam and associated factors. The study results are evidence that university healthcare providers should pay attention to these associated factors while designing mental health care programs to promote happiness among university students.

## Introduction

According to the psychological field, happiness refers to a positive emotion which is deeper than a good temporary mood. In the field of mental health, happiness is recognized as a sustainable approach and pleasant feeling.<sup>1</sup> Diener et al.<sup>2</sup> defined happiness as pleasure, satisfaction, and meaning in life. Happiness is an important goal for many people, a critical health factor in individuals' daily

life.<sup>3</sup> In addition, happiness is one of the essential components of quality of life in all cultures in the world.<sup>4</sup> University students deal with a variety of psychosocial problems,<sup>5,6</sup> and this situation partly affects the level of happiness of students.<sup>7</sup> If students are happy during the period of university education, they may have more

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success in most aspects of their education and may even be happier in their jobs after graduation.<sup>8</sup> The happiness of students has gained the attention of researchers in the fields of social sciences and health.<sup>9</sup> Previous studies indicated that the prevalence of happiness among Chilean college students, young Swiss adults, and young Iranian adults was 30.8%, 63.0%, and 65.0%, respectively.<sup>1,10,11</sup> A study in Iran indicated that among the undergraduate first-year students of Kashan University of Medical Sciences, there was a relationship between happiness and factors such as gender, economic status, extracurricular activities, hopefulness for future occupation, academic education satisfaction, the mean score of courses, current living place, and stress status during last year.<sup>12</sup>

In Vietnam, there have been a few studies on happiness and associated factors among students.<sup>13,14</sup> However, the sample size of these studies was relatively small and only conducted across one university. Although several studies within a number of countries have investigated the prevalence of happiness and its associated factors among university students,<sup>1,15</sup> associated factors such as mental health-related factors, personal medical history, and lifestyle factors are not well documented in the literature. Hence, the present study aimed to estimate the prevalence of happiness among university students in Vietnam and to identify the factors influencing happiness. We believe that our study results could add to the literature regarding factors associated with happiness among university students. These findings would play an important role when addressing the issue of happiness among university students.

## Design and methods

### Study design and study population

A cross-sectional study was conducted with 9120 students at eight universities in Hanoi, Vietnam between October and November 2018. Hanoi, which is the capital of Vietnam and is one of the three major centers of higher education with the largest number of universities and colleges in the country. Therefore, we decided to conduct this study in Hanoi, Vietnam. The selection of participants was done by sending out the questionnaire to the entire student cohort or randomly several classes within each cohort of a given field of study. The data in our study were collected mainly in the classroom setting with the voluntary participation of students. Two universities collected data by sending the link of the questionnaire to students' email addresses. Only one university collected the data of students via a computer-based questionnaire. The details regarding our sampling strategy have been mentioned elsewhere.<sup>6</sup> STROBE checklists were followed in this study (see Supplemental Data).

### Study variables and instruments

The main outcome in this analysis was happy status (happier and less happy) measured by the Subjective Happiness Scale (SHS). The study also considered some main co-variables to identify factors related to happiness among university students in Vietnam. Demographic variables included in the analysis were age, gender, marital status, types of housemates, and perceived financial burden. The analysis also encompassed other variables, such as academic variables (the respondents' year in university, academic performance, and academic motivation), mental health-related variables (the number of stress events in the last 12 months, self-reported depression and anxiety), personal medical history-related variables (the number of comorbidities, and having an acute disease or accident in the last 4 weeks), lifestyle variables (physical activity, smoking status, and alcohol drinking in the last 12 months).

Students were interviewed with an instrument consisting of five parts: (1) Sociodemographic information; (2) Subjective Happiness Scale (SHS); (3) Patient Health Questionnaire (PHQ-9); (4) Generalized Anxiety Disorder Questionnaire (GAD-7); (5) Academic Motivation Scale (AMS).

The Subjective Happiness Scale (SHS) is an internationally recognized tool used to assess an individual's overall happiness.<sup>16</sup> The SHS includes 4 items using a 7-point Likert scale to indicate the level of happiness (e.g. Compared to most of my peers, I consider myself; 1=less happy, to 7=happier), with higher scores reflecting greater happiness.<sup>16</sup> The SHS was validated in previous studies with students' participation in the United States, and Russia. Findings showed that the SHS has high internal consistency, which has been found to be stable across samples.<sup>16</sup> In this study, the score to measure the level of happiness among students ranged from 1 to 7; therefore, we chose a neutral level in the middle, with a SHS score of 4 or higher as showing more happiness, and a SHS score of less than 4 as showing less happiness.

In our study, the PHQ-9 and GAD-7 were utilized to screen for depressive and anxiety symptoms among students. The academic motivation of students was measured using the AMS.

More details about the PHQ-9, GAD-7, and AMS were described in several previous studies conducted among Vietnamese students.<sup>5,6,17</sup> These questionnaires were translated into Vietnamese by a local expert, then another independent English expert provided back-translation from those documents into English. The final questionnaires were adjusted slightly to fit the Vietnamese culture and language. Our research team piloted the questionnaire in eight universities in Hanoi, Vietnam, and then revised it to ensure the appropriateness and consistency of content in the questionnaire.

## Data analysis

We use the Stata 15.1 Survey package to analyze the survey and Chi-square, *T*-test, and Wilcoxon rank-sum test to compare the differences among groups of students.<sup>18,19</sup>

To account for missing data in multivariable analysis, multiple imputations using Stata's *mi* chained—the sequential imputation using chained equations without statistical interactions) was conducted.<sup>20</sup> The detailed configurations of the imputation model for each covariate and auxiliary variable were described in our previous papers.<sup>5,6</sup> Regarding the outcome variables, the four items of the SHS scale were imputed using *mlogit* (multinomial logistic regression). The SHS happiness status was then calculated from the imputed four items. In the end, 20 imputed datasets were created using this procedure with Stata default burn-in iterations.<sup>18,21</sup>

Because the prevalence of being “less happy” is high among our participants, the odds ratios from conventional logistic regression would tend to overestimate the true risk ratios.<sup>22</sup> Therefore, the optimal approach would be using log-binomial regression models to estimate Prevalence Ratios (PRs); however, log-binomial regression usually suffers from convergence issues.<sup>23</sup> To avoid non-convergence, a modified Poisson regression model for binary data with robust error variances was fitted. This model would estimate PRs, which is similar to the log-binomial model.<sup>22</sup>

## Ethical considerations

Our study proposal was granted ethical clearance from the Institute Review Board, Hanoi University of Public Health, under Decision No. 430/2018/YTCC-HD3. All students in the study were informed about the objective of the study. They could be free to leave the study at any time without any threats or disadvantages.

## Results

### General characteristics of the study participants

Of the 9589 selected students, 9120 agreed to participate and completed the survey (a response rate of 95.1%). The socio-demographic characteristics of the study participants are shown in Table 1. The majority of the students in our survey were female (72.3%), single (98.6%), and had no financial burden (79.2%). The average age of the students was 20.64 (SD=1.88). The main types of housemates among the students were living with roommate(s) (45.5%) or living with family (42.2%). In terms of academic factors, the majority of the students showed self-determined motivation (62.8%). More than half of the students in our survey were freshman year students who did not have their academic performance at the time of the survey. Regarding mental health-related factors, the prevalence of the

students with depressive and anxiety symptoms was 18.9%, and 10.5%, respectively. The median number of stress events in the last 12 months was 1.00 (IQR=1.00). With regard to personal medical history, 44.4% of the students reported having at least one comorbidity, and 14.6% of the students reported having an acute disease or accident in the last 4 weeks. Regarding lifestyle, the majority of the students in our survey did not smoke (92.9%) and drink alcohol (69.3%). The prevalence of the students who participated in moderate and vigorous physical activity was 57.9%.

Among our sample, the proportion of the students from health-related disciplines and other disciplines was 65.4%, and 34.6%, respectively. There were several statistically significant differences between the two groups of students from health-related disciplines and other disciplines. Specifically, the distribution of gender showed statistically significant differences ( $p < 0.001$ ); the proportion of male students from health-related disciplines was higher than that of other disciplines (32.1% vs 18.4%). Students from health-related disciplines had a highest prevalence of living with roommate(s) while students from other disciplines had a predominant prevalence of living with family. The prevalence of mental health conditions and personal medical history among students from health-related disciplines was lower than that of other disciplines. However, students from health-related disciplines had a higher prevalence of smoking and non-self-determined motivation than students from other disciplines.

### Prevalence of happiness among university students

Table 2 illustrates the prevalence of happiness among students according to different factors; the detailed distribution of the SHS score of each item could be found in Table S1. In a total of 8858 students who completed the SHS, 7167 students were in the “happier group” (80.9%, 95% CI: 80.1–81.7), and 1691 students were in the “less happy group” (19.1%, 95% CI: 18.3–19.9). Female students had a higher prevalence of happiness than male students and other genders (82% vs 78% vs 69.2%,  $p < 0.001$ ). Students with financial burdens had a lower prevalence of happiness (69.5% vs 83.9%,  $p < 0.001$ ). In terms of discipline, students from health-related disciplines had a higher prevalence of happiness than other disciplines (82.2% vs 78.6%,  $p < 0.001$ ). Compared to the opposite groups, happiness prevalence was higher among students who had self-determined motivation (85.1% vs 73.7%,  $p < 0.001$ ), had good mental and physical health such as non-self-reported depression (86.1% vs 59.4%,  $p < 0.001$ ), non-self-reported anxiety (84.4% vs 51%,  $p < 0.001$ ), or no comorbidities (83.2% vs 81.3% vs 74.3%,  $p < 0.001$ ). Happiness prevalence was inversely associated with the frequency of alcohol

**Table 1.** Characteristics of participants.

Columns by: discipline	Health-related disciplines	Other disciplines	Total	p-Value	Missings/N (Pct)
<i>n</i> (%)	<b>5964 (65.4)</b>	<b>3156 (34.6)</b>	<b>9120 (100.0)</b>		<b>0/9120</b>
<i>Demographic</i>					
Age, mean (sd)	20.64 (1.88)	20.34 (1.61)	20.54 (1.80)	< <b>0.001</b>	620/9120 (6.80)
Gender, <i>n</i> (%)					
Male, <i>n</i> (%)	1912 (32.1)	581 (18.4)	2493 (27.4)		
Female, <i>n</i> (%)	4034 (67.7)	2554 (81.1)	6588 (72.3)		
Other, <i>n</i> (%)	10 (0.2)	16 (0.5)	26 (0.3)	< <b>0.001</b>	13/9120 (0.14)
Marital status, <i>n</i> (%)					
Single, <i>n</i> (%)	5837 (98.3)	3114 (99.1)	8951 (98.6)		
Married, <i>n</i> (%)	73 (1.2)	21 (0.7)	94 (1.0)		
Other, <i>n</i> (%)	26 (0.4)	6 (0.2)	32 (0.4)	<b>0.007</b>	43/9120 (0.47)
Types of housemate, <i>n</i> (%)					
Living alone, <i>n</i> (%)	569 (9.6)	228 (7.3)	797 (8.8)		
Living with family, <i>n</i> (%)	2215 (37.3)	1611 (51.2)	3826 (42.2)		
Living with roommate(s), <i>n</i> (%)	2934 (49.5)	1192 (37.9)	4126 (45.5)		
Other, <i>n</i> (%)	215 (3.6)	113 (3.6)	328 (3.6)	< <b>0.001</b>	43/9120 (0.47)
Perceived financial burden, <i>n</i> (%)					
No, <i>n</i> (%)	4725 (80.0)	2426 (77.7)	7151 (79.2)		
Yes, <i>n</i> (%)	1181 (20.0)	695 (22.3)	1876 (20.8)	<b>0.011</b>	93/9120 (1.02)
<i>Academic factors</i>					
Year in university, <i>n</i> (%)					
Freshman and sophomore year, <i>n</i> (%)	3560 (59.7)	1874 (59.4)	5434 (59.6)		
Junior and senior year, <i>n</i> (%)	2403 (40.3)	1282 (40.6)	3685 (40.4)	0.765	1/9120 (0.01)
Academic performance, <i>n</i> (%)					
Not available (Freshman year students), <i>n</i> (%)	3068 (51.7)	1852 (59.1)	4920 (54.3)		
Fail, <i>n</i> (%)	9 (0.2)	7 (0.2)	16 (0.2)		
Pass, <i>n</i> (%)	681 (11.5)	318 (10.1)	999 (11.0)		
Average, <i>n</i> (%)	253 (4.3)	25 (0.8)	278 (3.1)		
Good, <i>n</i> (%)	1575 (26.6)	705 (22.5)	2280 (25.2)		
Excellent/Very good, <i>n</i> (%)	328 (5.5)	217 (6.9)	545 (6.0)		
Outstanding, <i>n</i> (%)	8 (0.1)	4 (0.1)	12 (0.1)		
Unknown, <i>n</i> (%)	7 (0.1)	6 (0.2)	13 (0.1)	< <b>0.001</b>	57/9120 (0.63)
Academic motivation profile, <i>n</i> (%)					
Self-determined, <i>n</i> (%)	3278 (60.5)	1952 (67.1)	5230 (62.8)		
Non-self-determined, <i>n</i> (%)	2142 (39.5)	958 (32.9)	3100 (37.2)	< <b>0.001</b>	790/9120 (8.66)
<i>Mental health-related factors</i>					
Number of stress events in the last 12 months, median (iqr)					
Self-reported depression, <i>n</i> (%)	1.00 (2.00)	2.00 (2.00)	1.00 (1.00)	< <b>0.001</b>	0/9120 (0.00)
No, <i>n</i> (%)	4795 (83.9)	2327 (75.9)	7122 (81.1)		
Yes, <i>n</i> (%)	920 (16.1)	738 (24.1)	1658 (18.9)	< <b>0.001</b>	340/9120 (3.73)
Self-reported anxiety, <i>n</i> (%)					
No, <i>n</i> (%)	5225 (91.3)	2655 (86.3)	7880 (89.5)		
Yes, <i>n</i> (%)	499 (8.7)	423 (13.7)	922 (10.5)	< <b>0.001</b>	318/9120 (3.49)
<i>Personal medical history</i>					
Number of comorbidities, <i>n</i> (%)					
None, <i>n</i> (%)	3486 (59.0)	1499 (49.1)	4985 (55.6)		
One, <i>n</i> (%)	1330 (22.5)	727 (23.8)	2057 (23.0)		
More than two, <i>n</i> (%)	1088 (18.4)	830 (27.2)	1918 (21.4)	< <b>0.001</b>	160/9120 (1.75)
Having an acute disease or accident in the last 4 weeks, <i>n</i> (%)					
No, <i>n</i> (%)	5170 (88.2)	2471 (80.0)	7641 (85.4)		
Yes, <i>n</i> (%)	691 (11.8)	619 (20.0)	1310 (14.6)	< <b>0.001</b>	169/9120 (1.85)

(Continued)

**Table 1.** (Continued)

Columns by: discipline	Health-related disciplines	Other disciplines	Total	p-Value	Missings/N (Pct)
<i>Lifestyle factors</i>					
Physical activity, <i>n</i> (%)					
Not participate in moderate and/or vigorous physical activity, <i>n</i> (%)	2435 (42.5)	1269 (41.4)	3704 (42.1)		
Participate in moderate physical activity, <i>n</i> (%)	1109 (19.4)	681 (22.2)	1790 (20.4)		
Participate in vigorous physical activity, <i>n</i> (%)	2185 (38.1)	1115 (36.4)	3300 (37.5)	<b>0.006</b>	326/9120 (3.57)
Smoking status, <i>n</i> (%)					
Never smoke, <i>n</i> (%)	5272 (91.9)	2894 (94.6)	8166 (92.9)		
Smoke occasionally, <i>n</i> (%)	261 (4.6)	116 (3.8)	377 (4.3)		
Smoke daily, <i>n</i> (%)	203 (3.5)	48 (1.6)	251 (2.9)	<b>&lt;0.001</b>	326/9120 (3.57)
Alcohol drinking in the last 12 months, <i>n</i> (%)					
Never drink, <i>n</i> (%)	3962 (70.2)	1997 (67.6)	5959 (69.3)		
More than once a month, <i>n</i> (%)	1207 (21.4)	719 (24.3)	1926 (22.4)		
About 2–4 times a month, <i>n</i> (%)	380 (6.7)	198 (6.7)	578 (6.7)		
About 2–3 times a week, <i>n</i> (%)	62 (1.1)	27 (0.9)	89 (1.0)		
More than 4 times a week, <i>n</i> (%)	34 (0.6)	15 (0.5)	49 (0.6)	<b>0.034</b>	519/9120 (5.69)

N/A: not applicable.

Statistical comparison using:

Chi-square test for categorical variable—display as *n* (%);

T-test for continuous-normally distributed variable—display as mean (sd);

Wilcoxon rank-sum test for continuous-skewed variable—display as median (iqr);

The bold p-value indicated statistical significance (*p* < 0.05).

**Table 2.** Prevalence of happiness among university students.

Columns by: subjective happiness scale category	Happier (SHS ≥ 4)	Less happy (SHS < 4)	Total	p-Value	Missings/N (Pct)
<i>n</i> (%)	<b>7167 (80.9)</b>	<b>1691 (19.1)</b>	<b>8858 (100.0)</b>		<b>262/9120 (2.87)</b>
<i>Demographic</i>					
Age, mean (sd)	20.54 (1.79)	20.48 (1.75)	20.53 (1.78)	0.275	620/9120 (6.80)
Gender, <i>n</i> (%)					
Male, <i>n</i> (%)	1863 (78.0)	525 (22.0)	2388		
Female, <i>n</i> (%)	5276 (82.0)	1157 (18.0)	6433		
Other, <i>n</i> (%)	18 (69.2)	8 (30.8)	26	<b>&lt;0.001</b>	13/9120 (0.14)
Marital status, <i>n</i> (%)					
Single, <i>n</i> (%)	7032 (80.8)	1671 (19.2)	8703		
Married, <i>n</i> (%)	78 (85.7)	13 (14.3)	91		
Other, <i>n</i> (%)	24 (85.7)	4 (14.3)	28	0.400	43/9120 (0.47)
Types of housemate, <i>n</i> (%)					
Living alone, <i>n</i> (%)	625 (81.6)	141 (18.4)	766		
Living with family, <i>n</i> (%)	3017 (80.7)	721 (19.3)	3738		
Living with roommate(s), <i>n</i> (%)	3246 (81.3)	748 (18.7)	3994		
Other, <i>n</i> (%)	251 (77.0)	75 (23.0)	326	0.272	43/9120 (0.47)
Perceived financial burden, <i>n</i> (%)					
No, <i>n</i> (%)	5855 (83.9)	1123 (16.1)	6978		
Yes, <i>n</i> (%)	1275 (69.5)	559 (30.5)	1834	<b>&lt;0.001</b>	93/9120 (1.02)
<i>Academic factors</i>					
Discipline, <i>n</i> (%)					
Health-related disciplines, <i>n</i> (%)	4753 (82.2)	1032 (17.8)	5785		
Other disciplines, <i>n</i> (%)	2414 (78.6)	659 (21.4)	3073	<b>&lt;0.001</b>	0/9120 (0.00)
Year in university, <i>n</i> (%)					
Freshman and sophomore year, <i>n</i> (%)	4238 (80.3)	1038 (19.7)	5276		
Junior and senior year, <i>n</i> (%)	2928 (81.8)	653 (18.2)	3581	0.091	1/9120 (0.01)

(Continued)

Table 2. (Continued)

Columns by: subjective happiness scale category	Happier (SHS $\geq$ 4)	Less happy (SHS < 4)	Total	p-Value	Missings/N (Pct)
<b>Academic performance, n (%)</b>					
Reports are not available (Freshman year students), n (%)	3815 (80.0)	952 (20.0)	4767		
Fail, n (%)	11 (73.3)	4 (26.7)	15		
Pass, n (%)	779 (79.7)	198 (20.3)	977		
Average, n (%)	227 (82.5)	48 (17.5)	275		
Good, n (%)	1806 (81.9)	400 (18.1)	2206		
Excellent/Very good, n (%)	462 (85.7)	77 (14.3)	539		
Outstanding, n (%)	9 (75.0)	3 (25.0)	12		
Unknown, n (%)	10 (76.9)	3 (23.1)	13	0.051	57/9120 (0.63)
<b>Academic motivation profile, n (%)</b>					
Self-determined, n (%)	4422 (85.1)	776 (14.9)	5198		
Non-self-determined, n (%)	2269 (73.7)	811 (26.3)	3080	<0.001	790/9120 (8.66)
<b>Mental health-related factors</b>					
Number of stress events in the last 12 months, median (iqr)	1.00 (2.00)	2.00 (2.00)	1.00 (1.00)	<0.001	0/9120 (0.00)
<b>Self-reported depression, n (%)</b>					
No, n (%)	6088 (86.1)	982 (13.9)	7070		
Yes, n (%)	978 (59.4)	668 (40.6)	1646	<0.001	340/9120 (3.73)
<b>Self-reported anxiety, n (%)</b>					
No, n (%)	6598 (84.4)	1219 (15.6)	7817		
Yes, n (%)	467 (51.0)	449 (49.0)	916	<0.001	318/9120 (3.49)
<b>Personal medical history</b>					
<b>Number of comorbidities, n (%)</b>					
None, n (%)	4064 (83.2)	819 (16.8)	4883		
One, n (%)	1630 (81.3)	375 (18.7)	2005		
More than Two, n (%)	1382 (74.3)	477 (25.7)	1859	<0.001	160/9120 (1.75)
<b>Having an acute disease or accident in the last 4 weeks, n (%)</b>					
No, n (%)	6107 (81.8)	1356 (18.2)	7463		
Yes, n (%)	973 (75.8)	311 (24.2)	1284	<0.001	169/9120 (1.85)
<b>Lifestyle factors</b>					
<b>Physical activity, n (%)</b>					
Not participate in moderate and/or vigorous physical activity, n (%)	2958 (80.6)	712 (19.4)	3670		
Participate in moderate physical activity, n (%)	1478 (83.0)	302 (17.0)	1780		
Participate in vigorous physical activity, n (%)	2618 (80.0)	653 (20.0)	3271	0.030	326/9120 (3.57)
<b>Smoking status, n (%)</b>					
Never smoke, n (%)	6634 (81.9)	1462 (18.1)	8096		
Smoke occasionally, n (%)	253 (67.1)	124 (32.9)	377		
Smoke daily, n (%)	168 (67.5)	81 (32.5)	249	<0.001	326/9120 (3.57)
<b>Alcohol drinking in the last 12 months, n (%)</b>					
Never drink, n (%)	4871 (82.5)	1032 (17.5)	5903		
More than once a month, n (%)	1503 (78.5)	412 (21.5)	1915		
About 2–4 times a month, n (%)	435 (75.7)	140 (24.3)	575		
About 2–3 times a week, n (%)	61 (69.3)	27 (30.7)	88		
More than 4 times a week, n (%)	35 (71.4)	14 (28.6)	49	<0.001	519/9120 (5.69)

N/A: not applicable.

Statistical comparison using:

Chi-square test for categorical variable—display as n (%);

T test for continuous-normally distributed variable—display as mean (sd);

Wilcoxon rank-sum test for continuous-skewed variable—display as median (iqr);

The bold p-value indicated statistical significance ( $p < 0.05$ ).

drinking or smoking ( $p < 0.001$ ) as the more students drink or smoke, the less students feel happy.

### *Associated factors for happiness among university students*

In the imputed multivariable regression model (Table 3), associated factors that affected the prevalence of happiness included perceived financial burden, year in university, academic motivation, number of stress events in the last 12 months, self-reported depression, and self-reported anxiety. The prevalence of being less happy among students with financial burdens was 1.427 times higher than that of students without financial burdens (PR=1.427, 95% CI: 1.282–1.588). This prevalence was also higher for students without self-determined motivation compared to students with self-determined motivation (PR=1.376, 95% CI: 1.238–1.528). Mental health factors significantly influenced the prevalence of being less happy. Specifically, anxiety symptoms increased the prevalence of being less happy by a factor of 1.545 (PR=1.545, 95% CI: 1.342–1.779), while depressive symptoms also increased this prevalence by a factor of 1.854 (PR=1.854, 95% CI: 1.63–2.108).

### **Discussion**

This study showed that the prevalence of the “happier group” among students was 80.9% (95% CI: 80.1–81.7), and this result was greater than the reported prevalence in previous studies conducted in Chile (30.8%), Switzerland (63.0%), Iran (65.0%), and India (60.8%).<sup>1,10,11,15</sup> This discrepancy may be explained by the different instruments used to measure students’ happiness such as the Oxford Happiness Inventory (OHI), the Short Form-36 (SF-36) questionnaire, and the Spanish version of the Subjective Happiness Scale (SHS). The universities in our study have either established a Student Counseling Office in their campus or designed the mental health care program to promote happiness among students.<sup>24,25</sup> Furthermore, the majority of participants in this study were health science students. In Vietnam, these students have more job opportunities, career development and better income than students with other majors. The Vietnamese Government has been implementing many preferential policies for human resources in the health sector.<sup>26,27</sup>

The findings of the present study were indicative of a significant relationship between perceived financial burden and happiness among students. Previous studies found an association between financial problems and happiness.<sup>28,29</sup> Students, who had higher financial satisfaction were happier.<sup>9</sup> Students may have financial pressures due to living away from home and adjusting to a new environment.<sup>30</sup> This partly affects the happiness and academic performance of students.

Year in university and happiness in our study were significantly related. Students at the junior and senior year of academic education were happier than those at the freshman and sophomore year of academic education. This result was in line with previous studies around the world.<sup>8,31</sup> Changes in education and living environment could increase the stress levels among students at the freshman and sophomore year, and thus, decrease their happiness levels. In contrast, students at the junior and senior year may have more experience in solving problems in new environments, and consequently, reduce their academic stress.<sup>8</sup>

When we looked at the regression model, academic motivation was found to be a factor associated with happiness among students. This result was consistent with SafiahOmar et al.,<sup>32</sup> and Jo,<sup>33</sup> who reported that the relationship between motivation in learning and happiness among students. Students who are motivated to learn are happier.<sup>34</sup> In Vietnam, family influences and social norms play an important role in a student’s decision to enroll in a university.<sup>35</sup> These influences could be one of the causes of students with non-self-determined motivation. Besides, students may not be interested in their major at university. They were not satisfied with their academic achievement and could be more likely to drop-out or not striving for great career after graduation.

We revealed that self-reported depression and anxiety were associated with happiness among students. Previous studies indicated that the prevalence of depressive and anxious symptoms among students appears to be increasing.<sup>6,36</sup> These symptoms have a negative effect on the level of happiness among students and in severe cases might even lead to suicide.<sup>37</sup> Several studies reported that mental health problems among students come from various reasons such as living away from their family and friends for the first time, adapting to their transition into adulthood, adapting to university life, financial burden, and academic difficulties.<sup>18,30,38,39</sup> Flynn and MacLeod found that students’ happiness was determined by financial security, self-esteem, and academic success.<sup>40</sup> Besides, Gomis Chorro et al.<sup>41</sup> emphasized students’ happiness as a basic feature of life which is found from health, family, and friends.

### *Strengths and limitations of the study*

Regarding the study’s strengths, the large sample size and the use of sensitive scales such as SHS, PHQ-9, GAD-7, and AMS to identify happiness, depressive and anxious symptoms, and academic motivation may ensure the validity of the results. The study was carried out at different universities. Therefore, the results could be generalized to students in other parts of the country. Moreover, studying the impact of factors on happiness among university students would also contribute to the literature.

**Table 3.** The imputed multivariable regression model.

Factors associated with being less happy on SHS scale	Model		
	PR	95% CI	
<i>Subjective happiness scale category</i>			
Gender			
Male	REF		
Female	0894	0.796–1.004	
Other	0667	0.326–1.365	
Marital status			
Single	REF		
Married	0616	0.358–1.06	
Other	0747	0.294–1.899	
Types of housemate			
Living alone	REF		
Living with family	1052	0.878–1.261	
Living with roommate(s)	1074	0.898–1.285	
Other	1,29	0.972–1.711	
Perceived financial burden			
No	REF		
Yes	1427	1.282–1.588	***
Disciplines			
Health-related disciplines	REF		
Other disciplines	1073	0.968–1.19	
Year in university			
Freshman and sophomore year	REF		
Junior and senior year	0816	0.737–0.903	***
Academic motivation profile			
Self-determined	REF		
Non-self-determined	1376	1.238–1.528	***
Number of stress events in the last 12 months	1067	1.042–1.093	***
Self-reported depression			
No	REF		
Yes	1854	1.63–2.108	***
Self-reported anxiety			
No	REF		
Yes	1545	1.342–1.779	***
Number of comorbidities			
None	REF		
One	1046	0.924–1.184	
More than two	1099	0.973–1.24	
Having an acute disease or accident in the last 4 weeks			
No	REF		
Yes	1002	0.881–1.141	
Physical activity			
Not participate in moderate and/or vigorous physical activity	REF		
Participate in moderate physical activity	0925	0.807–1.062	
Participate in vigorous physical activity	0926	0.83–1.034	
Smoking status			
Never smoke	REF		
Smoke occasionally	1185	0.979–1.436	
Smoke daily	1203	0.946–1.529	
Alcohol drinking in the last 12 months			
Never drink	REF		
More than once a month	1095	0.973–1.232	
About 2–4 times a month	1035	0.862–1.242	
About 2–3 times a week	1034	0.704–1.518	
More than 4 times a week	0882	0.523–1.485	

\* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .



As a limitation of the study, our sample did not include students from other majors such as engineering, agriculture, or forestry, which may not be representative of all majors in universities. The study has a cross-sectional design, so it is difficult to make causal inferences. The SHS scale has not been validated in the Vietnamese language. Because there are very few studies in Vietnam using this scale on students. Although we included several auxiliary variables to increase the likelihood of this assumption, as well as increase the number of imputations, we acknowledged that our results could be biased due to the missing data. Our study did not ask for information about the dose of alcohol consumed on each occasion and distinguish between non-problematic consumers and alcohol abusers. Additionally, the study's questionnaire only mentioned current smoking status, not past smoking status. These limitations are because the questionnaire up to the parts of alcohol consumption and smoking status is too long and difficult to measure accurately other detailed information.

## Conclusion

In short, the prevalence of happiness among students in Vietnam was higher than found in previous studies in other countries. The significant associated factors of happiness among students were perceived financial burden, year in university, academic motivation profile, and self-reported depression and anxiety. We suggest prospective studies to confirm our results. Moreover, our findings may recommend that university healthcare providers should pay attention to these associated factors while designing mental health care programs to promote happiness among university students.

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## Supplemental material

Supplemental material for this article is available online.

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