Original Article

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A Study of Stress and Depression in Health Science Students at a University in Bangkok, Thailand

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Abstract:

Objective: Stress and depression are emotional disturbances affecting cognition, emotion, and behavior. Adolescent depression in particular is a major, global mental health concern. This study aimed to investigate stress, depression, and associated factors among health science students.

Material and Methods: The Suanprung Stress Test-20 (SPST-2020) and The 9 Question Depression Rating Scale (9Q) assessment tools were used to assess participants' psychological status. Relationships between stress/depression and different factors were analyzed using the chi-square test, Fisher's exact test, and logistic regression. Logistic regression was used to calculate the odds ratios for stress/depression factors. Additionally, the Pearson correlation coefficient measured the stress and depression correlation.

Results: The sample comprised of 257 individuals from the health science student cohort: 218 females (84.82%) and 39 males (15.18%). The study found that stress levels were moderate in 31.12%, high in 46.69%, and severe in 19.85% of participants. Study program and income sufficiency influenced stress levels. Depression severity was reported to be 1.95%, with associated factors including: study program, personal/familial history of depression, and stress. A significant correlation ($r=0.554$, p-value<0.001) was found between stress and depression levels.

Conclusion: This study's findings reveal that health science students experience stress and depression, which can be attributed to various factors including: study program, financial concerns, and personal or familial histories of depression.

Keywords: depression, depressive disorder, mental health, risk factor, stress, undergraduate

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Introduction

In recent years there has been a documented increase in the prevalence of mental health issues among the Thai population[1]. Accordingly the Department of Mental Health, Ministry of Public Health, Government of Thailand, psychiatric and substance abuse clinics reported 22,481 psychiatric patients in 2022, that primarily presented with symptoms of depression and anxiety disorders[1]. Similarly, national data revealed an increase in diagnosed depressive disorders from 355,537 individuals in 2020 to 358,267 in 2021. Additionally, the suicide rate rose from 5–6 per 100,000 between 2004 and 2020 to 7.38 per 100,000 individuals in 2021. Notably, the highest suicide rate was in the 15–34 year age group; encompassing individuals in the adolescent and early working age brackets. Contributing factors for depression included: challenges in interpersonal relationships with family members or colleagues, chronic physical or mental health conditions, alcohol and substance abuse, and stress arising from economic factors[2].

Research conducted on stress and its management among health science students in Thailand revealed its multifaceted nature, stemming from various factors. These factors include: adaptation to different learning and teaching methodologies, changes in living arrangements, assimilation into unfamiliar social environments, preparation for future employment and establishment of families. Identifying and addressing these factors should significantly reduce the risk of stress among students[3]. Moreover, research on students' mental well-being has highlighted factors associated with depression; such as relationship challenges, family issues, inadequate sleep and family-related concerns[4–5].

The increasing incidence of stress and depression among students is a growing concern, given its potential impact on both physical and academic well-being[2, 4–5]. It can lead to reduced concentration, academic underachievement, instability in relationships, feelings of life dissatisfaction, and self-harm. Therefore, this paper investigated the prevalence of stress and depression as well as their associated factors among health science students. This will empower educational institutions and educators to effectively address and prevent mental health issues among students.

Material and Methods

Study design and procedures

This study involved 257 undergraduate students majoring in health sciences during the academic year 2023; specifically comprising 65 students from Medical Technology, 64 from Thai Traditional Medicine, 64 from Public Health, and 64 from Occupational Health and Safety programs. The sample was selected through stratified random sampling. The sample size for sampling and data collection within a population is determined by the formula: $n=[N/(1-Ne^2)]$; wherein, N represents the population size (720), and e signifies the expected margin of error (0.05) for a 95% confidence interval[6]. Data was collected from August to September 2023, through an online survey platform. The participants received the document or a link by e-mail for accessing the questionnaires. The questionnaires included a general information questionnaire, the Suanprung Stress Test-20 (SPST-2020), and the 9 Questions Depression Rating Scale (9Q). Before initiating data collection, the researchers clarified the research objectives, outlined the methods used for data collection, and disclosed the rights of participants. Participation in the survey was voluntary, and anonymity was ensured by not disclosing names. The participants provided their consent by signing an informed consent form, and the research findings were presented in an aggregated format, avoiding the disclosure of personal information or specific methodologies.

This study was reviewed and approved by the Research Ethics Committee on Human Research, Research and Development Institute, Bansomdejchaopraya Rajabhat University: COA No. BSRU-REC 660902.

Measurements

The general information questionnaire

The general information questionnaire collects data on gender, age, study program, parental status, financial status, personal and familial history of depression, critical problems, and sources of counseling.

The Stress Perception Scale for Thai (Suanprung Stress Test-20, SPST-20)

The Stress Perception Scale for Thai (Suanprung Stress Test-20, SPST-20) was developed by the Suanprung Psychiatric Hospital, Department of Mental Health, Ministry of Public Health. It consists of 20 questions divided into five different categories. The questionnaire focuses on mental states; specifically inquiring about conditions; such as sadness, anxiety, anger, and physical expressions of stress experienced over the past six months. The resulting scores were subsequently classified into four stress levels: mild stress (0–23 points), moderate stress (24–41 points), high stress (42–62 points), and severe stress (63 points and above)[7].

The 9 questions depression rating scale (9Q)

The 9 Question Depression Rating Scale (9Q), developed by the Department of Mental Health, Ministry of Public Health, was developed to evaluate the severity of depressive symptoms over two weeks. It comprises nine questions, with symptom assessment scored on a scale of four levels as follows: No symptoms at all=0 points; symptoms occurring on some days (1–7 days)=1 point; symptoms occurring on more than seven days (>7 days)=2 points; and symptoms occurring every day=3 points. The total score, which ranges from 0 to 27 points, is used to categorize the severity of the depressive symptoms into four levels: Level <7 points, indicating no or minimal symptoms; Level 7–12 points, signifying mild symptoms; Level 13–18 points, indicating moderate symptoms; and Level ≥19 points, indicating severe symptoms[8-9].

Statistical analysis

A descriptive analysis of all variables; including gender, age, academic year, study program, parental status, income sufficiency, source of income, family history of depression, personal history of depression, primary counselor and critical problem, was presented in terms of frequency and percentages to delineate the characteristics of the participants. The chi-square test and Fisher's exact test were employed to analyze the relationships between stress and depressive symptoms and various factors; such as gender, age, academic year, study program, parental status, income sufficiency, family history of depression and personal history of depression. Logistic regression was used to compute the odds ratio (OR) for potential factors associated with stress and depression. The Pearson correlation coefficient was used to analyze the relationship between stress and depression. The Statistical Package for the Social Sciences (SPSS) software, version 25.0, was utilized for data analysis. A significance level of p-value<0.05 was determined.

General information

The demographic profile of the sample group of 257 health science students yielded valuable insights. Of the 257 individuals, 218 (84.82%) were female, and 39 (15.18%) were male. The age distribution of the participants spanned from 17 to 22 years. Among the respondents, 89.89% indicated that they relied on financial support from their parents, while 50.58% indicated that they had sufficient income to meet their monthly expenses. Regarding history of depression, 5.84% of the participants had received treatment for depression, while 6.61% had a family member undergoing treatment for depression. In times of stress,

46.31% of the sample group turned to their parents for advice; whereas, 25.68% preferred to seek advice from friends. The primary concerns among the participants involved education (36.97%), followed by financial issues (32.68%).

Prevalence of stress among health science students

Of the 257 health science students across four study programs, 46.69% of them experienced elevated stress levels. Additionally, 31.13% reported moderate stress, while 19.84% reported severe stress. Upon analyzing the data categorized by study program, the prevalence of high to severe stress was found highest among participants from the Medical Technology program, with 80% (*n*=65) experiencing stress, followed by the Thai Traditional Medicine program, with 73.44% (*n*=64). Among the participants of the Occupational Health and Public Health programs, the prevalence was 64.07% (*n*=64) and 48.44% (*n*=64), respectively (Table 1).

Prevalence of depression among health science students

The distribution of depressive symptoms among 257 health science students across all four study programs was as follows: 53.31% reported no depressive symptoms, 36.58% reported mild depressive symptoms, 8.17% reported moderate depressive symptoms, and 1.94% reported severe depressive symptoms. Upon categorizing the prevalence of moderate to severe depression by study program, the highest percentage of depressive participants was observed in the Medical Technology program, at 12.31% (*n*=65). Subsequently, the prevalence of high to severe depression among participants of the Thai Traditional Medicine program was observed at 17.19% (*n*=64), followed by 9.38% (*n*=64) in the Occupational Health and Safety program and 1.56% (*n*=64) in the Public Health program: as depicted in Table 1. These results are consistent with the findings from the stress analysis, highlighting the importance of addressing severe depression among the research participants.

The association between stress and depression

This study revealed a significant correlation between the levels of stress and depression (r=0.554, p-value<0.001); indicating that individuals experiencing high levels of stress are predisposed to developing depression. Additionally, it was observed that individuals with mild or no depression exhibited fewer symptoms of stress than those with moderate to severe depression: as evaluated by the SPST-20. These symptoms included: headaches, backaches, changes in appetite, restlessness, irritability, sadness, impaired memory, confusion, lack of concentration and fatigue. The disparities between these groups were determined as statistically significant at the 95% confidence level (p-value<0.05).

Analysis of factors related to stress and depression

An analysis of the relationship between stress and various factors using the chi-square test and Fisher's exact test revealed that factors associated with the study program and income sufficiency significantly affected stress levels (p-value=0.032 and 0.001, respectively). However, no statistically significant differences were found with gender, academic year, parental status, history of treatment, or depression within the family and oneself. Notably, the level of stress among the group that expressed high concerns related to academic and financial matters surpassed the level observed in groups with other contributing factors.

Upon analysis of the relationship between various factors and depressive symptoms, certain factors; such as the study program being pursued (p-value=0.002), family history of depression (p-value<0.006), personal history of depression (p-value=0.036) and stress levels

Table 1 Study results on various factors of stress and depression in health science students

Factor	Percentage of stress				p-value	Percentage of depression				p-value
	Mild	Moderate	High	Severe		Normal	Mild	Moderate	Severe	
Gender										
Male	2.56	28.21	51.28	17.95	0.935	51.29	43.59	2.56	2.56	0.423
Female	2.29	31.65	45.88	20.18		53.68	35.32	9.17	1.83	
Academia year										
1st-year students	1.56	32.81	50	15.63	0.169	50	40.63	7.81	1.56	0.359
2nd-year students	3.13	18.75	48.43	29.69		45.31	43.75	6.25	4.69	
3rd-year students	0	35.94	48.43	15.63		54.69	35.94	7.81	1.56	
4th-year students	4.62	36.92	40	18.46		63.08	26.15	10.77	0	
Study program										
Medical Technology	0	20	55.38	24.62	0.032*	49.23	38.46	12.31	0	0.002*
Thai traditional medicine	3.13	23.44	48.43	25		42.18	40.63	12.5	4.69	
Public health	3.13	48.43	35.94	12.5		76.56	21.88	1.56	0	
Occupational health and safety	3.13	32.81	46.87	17.19		45.31	45.31	6.25	3.13	
Parental status										
Married	2.86	28.57	50.28	18.29	0.409	55.43	36	8.57	0	0.074
Married but living separately	0	25	56.25	18.75		50	31.25	12.5	6.25	
Divorced	0	42.55	34.04	23.41		46.81	42.55	4.26	6.38	
Deceased	0	100	0	0		100	0	0	0	
Father or mother deceased	5.56	27.78	38.88	27.78		50	33.33	11.11	5.56	
Sufficiency of income										
Sufficient income with savings	4.17	58.33	33.33	4.17	0.001**	70.83	29.17	0	0	0.156
Sufficient income	3.77	32.08	53.77	10.38		56.6	37.74	4.72	0.94	
Sufficient income in some months	0.96	25.96	43.27	29.81		48.08	37.5	11.54	2.88	
Insufficient income	0	21.74	43.48	34.78		43.48	34.78	17.39	4.35	
Family history of depression										
No	2.62	31	48.91	17.47	0.11	55.02	37.12	6.99	0.87	0.006**
Yes	0	23.53	35.29	41.18		35.29	29.41	17.65	17.65	
Uncertainty	0	45.46	18.18	36.36		45.45	36.36	18.19	0	
Personal history of depression										
No	2.54	31.78	46.61	19.07	0.089	53.39	37.29	8.47	0.85	0.036**
Yes	0	13.33	66.67	20		53.33	26.67	6.67	13.33	
Uncertainty	0	50	0	50		50	33.33	0	16.67	
Levels of stress										
Mild	-	-	-	-	-	83.33	16.67	0	0	<0.001**
Moderate	-	-	-	-		83.75	16.25	0	0	
High	-	-	-	-		49.16	44.17	6.67	0	
Severe	-	-	-	-		11.76	52.94	25.49	9.81	

*statistic significantly by chi-square test (p-value<0.05), **statistic significantly by Fisher's Exact test (p-value<0.05)

(p-value<0.001), were found to significantly influence depressive symptoms. Conversely, no statistically significant differences were observed in factors; such as gender, academic year, parental status and income sufficiency: as illustrated in Table 1.

The results of a multivariable logistic regression analysis indicated that the associated factor for stress was the study program. Medical Technology students had a 4.24-fold increase in odds [95% CI: 1.93, 9.36] compared to Public Health students, while Thai Traditional Medicine students had a 3.05-fold increase [95% CI: 1.44, 6.45]: as shown in Table 2. Regarding depression, participants with a family history of depression had a 6.39-fold increase in odds [95% CI: 2.12, 19.31] compared to those without a family history of depression: as depicted in Table 3.

Table 2 The association between variable factors and stress in health science students

Factor	n	%	Stress					
			Crude OR	95% CI	p-value	Adjusted OR[a]	95% CI	p-value
Gender								
Male	39	15.18	1	Reference	-	-	-	-
Female	218	84.82	0.87	(0.41-1.81)	0.699	-	-	-
Academic year								
1st	64	24.9	1.36	(0.66-2.77)	0.402	-	-	-
2nd	64	24.9	2.54	(1.17-5.49)	0.018*	-	-	-
3rd	64	24.9	1.27	(0.62-2.58)	0.514	-	-	-
4th	65	25.3	1	Reference	-	-	-	-
Parental status								
Married	191	74.32	1	Reference	-	-	-	-
Devorced	47	18.29	0.6	(0.31-1.16)	0.13	-	-	-
Deceased	19	7.39	0.77	(0.29-2.04)	0.595	-	-	-
Study program								
Public health	64	24.9	1	Reference	-	1	Reference	-
Thai traditional medicine	64	24.9	2.94	(1.40-6.17)	0.004*	3.05	(1.44-6.45)	0.003*
Medical Technology	65	25.3	4.26	(1.95-9.30)	<0.001*	4.24	(1.93-9.36)	<0.001*
Occupational health and safety	64	24.9	1.9	(0.94-3.85)	0.076	1.97	(0.96-4.03)	0.064
Income								
Sufficient income with saving	24	9.33	1	Reference	-	-	-	-
Sufficient income	106	41.25	3.33	(0.36-30.70)	0.288	-	-	-
Sufficient income in some months	104	40.47	1.78	(0.21-1.77)	0.594	-	-	-
Insufficient income	23	8.95	2.72	(0.59-12.46)	0.198	-	-	-
Family history of depression								
No	229	89.11	1	Reference	-	-	-	-
Yes	17	6.61	1.65	(0.52-5.22)	0.397	-	-	-
Uncertainty	11	4.28	0.61	(0.18-2.06)	0.423	-	-	-
Personal history of depression								
No	236	91.83	1	Reference	-	-	-	-
Yes	15	5.84	3.34	(0.75-15.42)	0.113	-	-	-
Uncertainty	6	2.33	0.52	(0.10-2.65)	0.433	-	-	-

statistic significantly (p-value<0.05), [a]adjusted for all other covariates in the model, OR=oods ratio, CI=confidence interval

Table 3 The association between variable factors and depression in health science students

Factor	n	%	Depression					
			Crude OR	95% CI	p-value	Adjusted OR[a]	95% CI	p-value
Gender								
Male	39	15.18	1	Reference	–	–	–	–
Female	218	84.82	2.29	(0.52–10.10)	0.274	–	–	–
Academic year								
1st	64	24.9	0.86	(0.27–2.71)	0.793	–	–	–
2nd	64	24.9	1.02	(0.34–3.09)	0.975	–	–	–
3rd	64	24.9	0.86	(0.27–2.71)	0.793	–	–	–
4th	65	25.3	1	Reference	–	–	–	–
Parental status								
Married	191	74.32	1	Reference	–	–	–	–
Devorced	47	18.29	1.14	(0.40–3.26)	0.801	–	–	–
Deceased	19	7.39	1.8	(0.48–6.78)	0.384	–	–	–
Study program								
Public health	64	24.9	1	Reference	–	–	–	–
Thai traditional medicine	64	24.9	13.08	(1.63–104.6)	0.015*	–	–	–
Medical Technology	65	25.3	8.84	(1.07–72.89)	0.043*	–	–	–
Occupational health and safety	64	24.9	6.52	0.76–55.77)	0.087	–	–	–
Income								
Sufficient income with saving	24	9.33	1	Reference	–	–	–	–
Sufficient income	106	41.25	1	(0.1–10.17)	1	–	–	–
Sufficient income in some months	104	40.47	0.42	(0.03–6.06)	0.522	–	–	–
Insufficient income	23	8.95	0.25	(0.05–1.37)	0.11	–	–	–
Family history of depression								
No	229	89.11	1	Reference	–	1	Reference	–
Yes	17	6.61	6.39	(2.12–19.31)	0.001*	6.39	(2.12–19.31)	0.001*
Uncertainty	11	4.28	2.61	(0.52–12.98)	0.243	2.61	(0.52–12.98)	0.243
Personal history of depression								
No	236	91.83	1	Reference	–	–	–	–
Yes	15	5.84	2.43	(0.64–9.28)	0.193	–	–	–
Uncertainty	6	2.33	1.95	(0.22–17.41)	0.552	–	–	–

*statistic significantly (p-value<0.05), [a]adjusted for all other covariates in the model

Discussion

This study observed that most students in the sample group experienced elevated stress levels ranging from moderate to severe. This observation aligns with earlier research investigating the factors influencing stress among nursing students in Thai educational institutions[10]. The elevated stress levels observed among students may be attributed to factors associated with their academic pursuits as well as their specific field of study. This study also unveiled statistically significant differences in stress levels among health science students from different study programs within the sample group. This outcome is consistent with another investigation on stress among undergraduate students at a university in Chiang Mai, Thailand, which reported substantial distinctions in stress levels among students within the same faculty but pursuing different majors.[11] As the complexity of course content increases there is a higher likelihood of students

experiencing elevated stress; as supported by the findings of this study. It was observed that students enrolled in Medical Technology and Thai Traditional Medicine programs had higher odds of experiencing stress compared to students in the Public Health program. This could be because both of these academic programs are highly specialized and closely tied to the physiological conditions of patients. Consequently, the course content is often very complex and intricate, which could heighten students' susceptibility to stress. This observation aligns with a study by Thamnamsin et al., which investigated factors affecting the stress levels of nursing students in an educational institution in Bangkok, Thailand. Their study found a statistically significant relationship between academic factors and student stress scores[12]. Similarly, a study by Scholz et al. found that workload pressure, exams, and assessments are associated with stress and mental disorders among dentistry students[13]. Additionally, stress and depression were observed to be linked to financial problems and income insufficiency. The study discovered that students with different levels of income sufficiency exhibit statistically significant differences in stress levels. This finding aligns with a study on student stress in an educational institution, which reported variations in stress levels among students with different levels of income sufficiency. Specifically, students with sufficient income experienced lower stress levels than those with insufficient income[14–15].

Regarding depression, the sample group of health science students in this study reported experiencing a range of depression severity from mild to severe. This is consistent with previous research findings among students in the health science field at educational institutions. This observation corroborates earlier studies indicating that health science students commonly exhibit symptoms of depression spanning from mild to severe levels[16]. Furthermore, it was observed that the prevalence of depression among students, ranging from mild to severe levels, was higher than the prevalence of depression among first-year health science students at Prince of Songkla University, even during the COVID-19 outbreak in Thailand[17]. The evidence indicates that, beyond the pandemic-induced anxiety experienced during the academic period depression among students was triggered by prolonged exposure to other contributing factors. Factors related to depression include: the field of study, which is consistent with studies on stress, anxiety, and depression among medical students and other university students[15,18–20]. Another relevant factor is stress, with varying stress levels correlating significantly to the occurrence of depression in health science students. A study on depression among students in an educational institution reported statistically significant variations in stress levels based on income sufficiency. Specifically, students with sufficient income experienced lower stress levels than those with insufficient income[5,21]. The findings of this study are noteworthy, revealing that research participants with a family history of depression have higher odds of experiencing depression; up to 6.39 times more than those without such a history. This is consistent with a study by Hongsrisuwan suggesting a genetic link[22]. Students with a personal or familial history of receiving treatment for depression are more likely to experience depression[24]. Therefore, educational institutions and instructors should place special emphasis on and provide special care to these students, to assist them in preventing or addressing emotional or mental health issues. This may include counseling by mental health professionals, academic support, and other intervention measures. In Thailand, the official guideline for managing depressive symptoms is the Clinical Practice Guideline of Major Depressive Disorder for General Practitioners (CPG-MDD-GP), which should be followed for all patients with depression; regardless of age[25]. Depression is associated with stress and anxiety symptoms; such as headaches, changes in appetite, restlessness, confusion and diminished concentration.

Individuals experiencing these symptoms should initiate self-monitoring and seek consultation from psychologists or psychiatrists to mitigate the risk of future depression onset. However, this study had limitations, primarily in data collection, as it was based on questionnaires and mental health assessments without in-depth interviews. This may have resulted in incomplete data. Therefore, further studies are necessary to verify the replicability of these findings in other sample groups characterized by diverse populations or cultural backgrounds. The data was collected from a partial sample group via online platforms, which lacked strict control over environmental factors. However, given the intricacies of mental health assessments, online surveys can ensure participant privacy and potentially elicit more candid responses.

Conclusion

Based on these comprehensive study results, the prevalence rates of moderate, high, and severe levels of stress were 31.12%, 46.69%, and 19.85%, respectively, among the health science student participants. Similarly, the prevalence rates of mild, moderate, and severe levels of depression were 36.58%, 8.17%, and 1.95%, respectively. Primary factors associated with students' stress include: the study program and income sufficiency. Factors contributing to depression include: the study program, stress levels and personal or familial history of depression. Educational institutions should focus on monitoring and addressing these issues to minimize the occurrence of stress and depression among students.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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