SHORT REPORT

Factors affecting stress among high school students in Phitsanulok Province, Thailand

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ABSTRACT

This cross-sectional study aimed to determine the factors affecting stress in high school students. The sample participants were 365 high school students in Phitsanulok Province selected by stratified random sampling. Data were collected by a self-administered questionnaire consisting of 6 parts: 1) socio-demographic characteristics; 2) lifestyle factors; 3) disease prevention motivation; 4) social support; 5) stress prevention behaviors, and 6) stress. Frequency, percentage, mean, standard deviation, and binary logistic regression were used for data analysis. All significance levels were set at 0.05. The results showed that 72.9% of the sample participants were female and 75.10% had stress. Female students were more likely to experience stress than male students (OR_{adj} = 1.902; 95%CI: 1.117 - 3.241). Excessive expenses possibly caused stress (OR_{adj} = 3.618, 95%CI = 1.031-12.694). The students with intermediate resilience faced greater stress than those with extraordinary strength (OR_{adj} = 3.198; 95%CI: 1.957 – 5.224). The sample participants who received mild and average social support tended to experience greater stress than those with higher levels of social support (OR_{adj} = 4.762, 95%CI = 1.012-22.412, OR = 2.036, 95%CI = 1.155-3.589). This study suggests that related institutes strengthen living skills and improve social support for high school students to prevent severe stress.

Key words:
stress; high school students; factors; Thailand

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INTRODUCTION

Stress is a mental condition in which individuals feel pressured when they are harassed or in high-stress situations.[1] Stress can break the balance of health and the mind in humans when individuals encounter certain stimuli or uncomfortable life events that cause unhappiness, or lead to a chaotic mind. Most people perceive stress negatively and stress can occur normally in any person of any age or gender at any time.[2] However, adolescents aged between 10-19 years, who are in the process of transferring from childhood to adulthood both physically and mentally, will experience their own thoughts and independent desires.[3] These adolescents can exhibit sensitivity and instability since they are particularly affected by emotional fluctuation. Therefore, adolescents need to be loved and accepted by their peers, family, and society. At the same time, adapting is crucial for young people to obtain their needs in adolescence.[3] The inefficiency of adaptation results in problematic behavior among adolescents, especially those aged between 17-19 who exhibit risky behavior and are sensitive to emotional problems such as stress, panic, and depression disorder.[3] Various individual factors can lead to stress in adolescence such as gender, age, and genes.[2] The external factors consist of family relationships, friendships, lovers, and teachers.[4]

Moreover, pressure, role, environment, parental divorce, passing away of others to whom they are close, medical condition, university entrance preparation, examinations, online gaming, work overload, self-dissatisfaction, poor educational results, poor sleep and rest, studying, peer or family conflicts, and authoritarian parenting styles can also cause adolescent stress.[5-12] In other words, self-value recognition, good family relationships, mental strength, optimism, and social support can prevent and reduce stress in adolescents.[13-14]

According to the World Health Organization (WHO), the prevalence of mental disorders among adolescents was 51% in the US and 20% in Australia.[10] Additionally, India reported a prevalence of anxiety at 80.85% and stress at 47.02%, as well as a combination of depression, stress, and anxiety at 50%, mostly among those aged 18 years.[10] China reported self-harm and mental problems caused by stress accounting for 27.60%.[13] Indeed, accumulated and chronic stress can increase the number of mental patients suffering from depression, which is the second leading cause of suicide in adolescents aged between 15-19 years.[15-16]

In Thailand, a mental health survey from the National Statistics Department found that 33.21% of youth aged between 15-24 were at the lowest level of mental health compared to others.[17] In addition, 54.7% of secondary school students had stress above the average level and the prevalence of stress was observed at 51.2%.[18,19] The Rajanagarindra Institute Call Center Services on mental health problems reported around 10,000 cases of child and adolescent mental health issues on the basis of callers seeking advice in 2019.[20] A majority of the adolescents were stressed and had anxiety at 51.36%, while 21.39% had love problems, and 9.82% suffered from depression.[20]

Stress, especially accumulated stress in adolescents, leads to negative health effects such as anorexia, tiredness, insomnia, and headaches.[20] Continued stress can bring about heart disease and high blood pressure along with mental health issues such as attention deficit hyperactivity disorder (ADHD), irritability, boredom, overthinking, loss of self-confidence, damaged intelligence, poor memory, and panic.[20] Other behavioral issues may also arise including introversion, substance abuse, anti-social behavior, aggression, crime, and a tendency

to deliberately instigate conflict with others or react badly to others.[1,6,20]

In 2021, the number of high school students in Phitsanulok Province aged between 15-19 who received screening for mental health problems amounted to 0.04% of 35,394 students.[21] Hence, adolescents were largely ignored by the screening, and this might lead to misunderstandings for most people in society about stress in adolescents. The confusion indicated that stress can only occur in adulthood, in those who have more responsibility and problems, rather than in adolescents.[4] Additionally, mental health care for adolescents is often ignored in the early phase.[4] As a result, 35.28% of adolescents enacted self-harm in Phitsanulok Province, which was ranked second in the Center of Health Service Support Region 2 (lower northern region of Thailand).[21]

Previous studies of related factors to stress among high school students in Phitsanulok Province are still relatively few. Most of them focused on solving problems in adults rather than adolescents. In this situation, we are interested in studying the factors affecting stress among high school students in Phitsanulok Province by applying protection motivation theory and social support theory to identify the relevant factors. The findings will be utilized to develop a stress prevention model for high school students to be implemented by health personnel, schools, communities, and related institutes for stress prevention in the early phases. Therefore, severe stress and its consequences among high school students can be decreased in the future.

METHODS

This cross-sectional study was approved by the Naresuan University Institutional Review Board by using the full board review method, COA No. 488/2021, IRB No. P3- 0178/2564.

Population and samples

This study was conducted in November 2021. The study population comprised 2,269 high school students in schools affiliated to the Department of General Education, academic year 2021, Phitsanulok Province.

The sample participants comprised 365 high school students in Phitsanulok Province. The sample size was calculated based on population proportion estimation[22] with the finite population formula. The prevalence of stress among high school students in the previous study was 0.51,[19] and the distribution coefficient was 1.96. Six high schools out of 12 were selected by simple random sampling and stratified random sampling was used to recruit the sample participants into the study. Students from each school were randomly selected based on the population proportion distributed by grades (10-12). Inclusion criteria for the study subjects were: 1) aged between 15-18 years; 2) no self-harming or suicide history; 3) having permission from their parents, and 4) being able to read and write Thai. The exclusion criteria for study subjects were: 1) wished to withdraw from the study, and 2) unable to come to school on the data collection date. Shown in Fig.1

Sampling process

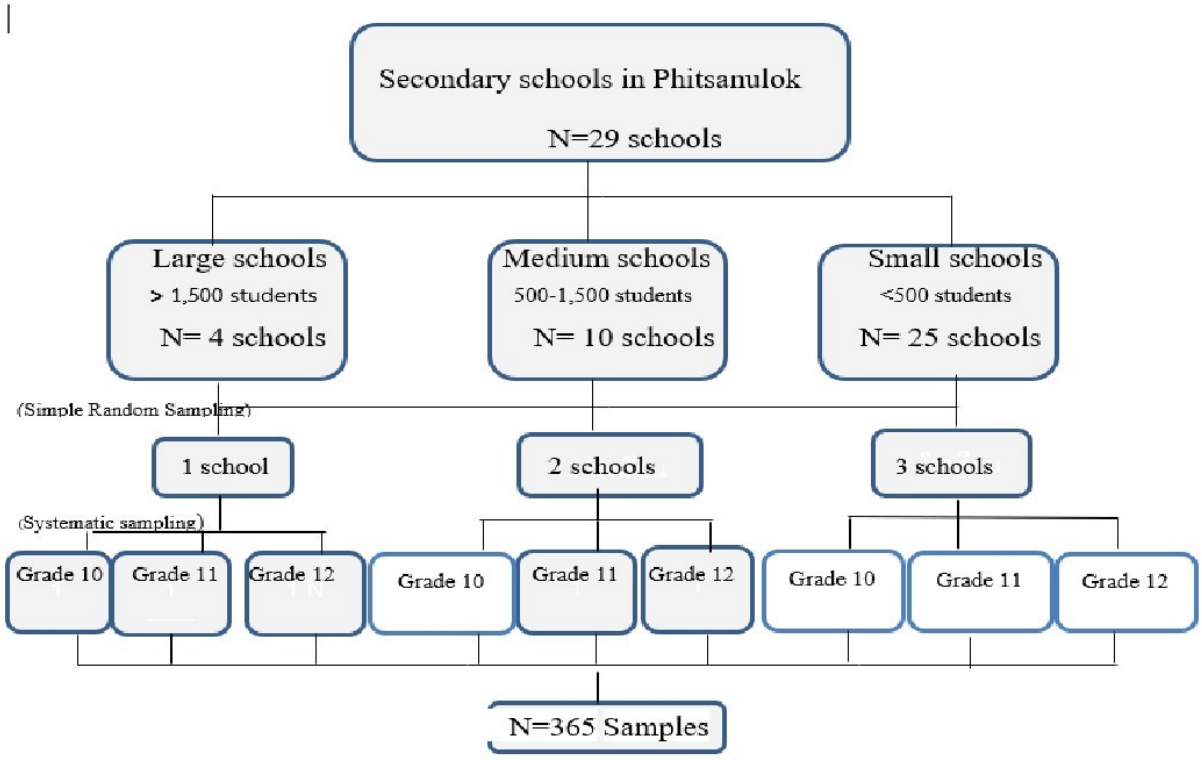

Figure 1. flow chart for study selection

Research instrument and qualification

The research instrument in this study was a self-administered questionnaire designed by the researcher on the basis of a literature review of the related articles and theories. The questionnaire consisted of 7 parts as follows:

1. Socio-demographic characteristics consisted of 13 items including gender, age, grade, grade point average, family mental health history, order of children, number of siblings, family structure, parent education, parent occupation, amount of allowance, spending, and receiving information about stress. The questionnaire in this part was assessed in the form of multiple-choice and fill-in-the-blank items.
2. Lifestyle factors comprised 31 items. Questions of self-esteem, resilience, and positive thinking were rated using a 5-point scale ranging from 5-1: most (5), much (4), moderate (3), little (2), and least (1). The scores were interpreted as high (19-25 points), moderate (12-18 points), and low (5-11 points). Additionally, questions of relationships with family/ friends/society and parenting style were assessed in the form of a 5-point scale ranging from 5-1: always (5), often (4), sometimes (3), seldom (2), and never (1). The scores were classified as high (29-40 points), moderate (17-28 points), and low (5-16 points).[23]

The content validity index[24] was between 0.66 – 1.00, whereas the Cronbach's alpha coefficients[25] of self-esteem, resilience, positive thinking, relationships of family/ friends/society, and parenting style were 0.80, 0.74, 0.71, 0.70, and 0.70, respectively.

3. The motivation for disease prevention questionnaire was constructed using Roger's Disease Prevention Motivation Theory[26] and consisted of 24 items. The questions of perceived severity of stress, perceived susceptibility of stress, and response efficacy of prevention were evaluated by a 5-point scale ranging from 5-1: strongly agree (5), agree (4), uncertain (3), disagree (2), and strongly disagree (1). The questions of perceived self-efficacy of stress prevention were rated using a 5-point scale ranging from 5-1: absolutely practical (5), practical (4), uncertain (3), impractical (2), absolutely impractical (1). The scores were interpreted as high (24-30 points), moderate (16-23 points), and low (8-15 points).[23] The content validity index[24] was between 0.66 – 1.00 and the Cronbach's alpha coefficients[25] of perceived severity of stress, perceived susceptibility of stress, response efficacy of prevention, and perceived self-efficacy of stress prevention were 0.74, 0.75, 0.72, and 0.73, respectively.
4. The social support questionnaire included 10 items with a 5-point scale ranging from 5-1: always (5), often (4), sometimes (3), seldom (2), and never (1). The scores were interpreted as high (37-50 points), moderate (23-36 points), and low (10-22 points).[23] The content validity index[24] was between 0.66 – 1.00, whereas the Cronbach's alpha coefficient[25] of social support on stress was 0.84.
5. The stress prevention behaviors questionnaire consisted of 11 items. Each item was rated by a 5-point scale: always (5), often (4), sometimes (3), seldom (2), and never (1). The scores were presented as high (41-55 points), moderate (26-40 points), and low (11-25 points).[23] The content validity index[24] was at 0.66 – 1.00, and the Cronbach's alpha coefficient[25] of stress prevention behaviors was 0.80.
6. The stress was assessed by a stress test with the 5-questionnaire (ST5).[27] This part involved self-assessment of emotional condition in the past 2-4 weeks. The questionnaire was in the form of a 4-point scale: almost every day (3), often (2), seldom (1), and never (0). The scores were interpreted as severe (10-15 points), high

(8-9 points), moderate (5-7 points), and mild (0-4 points). Stress was then categorized into 2 groups: stress (5-15 points), and non-stress (0-4 points). The Cronbach's alpha coefficient of this part was 0.79.[28]

Data collection and analysis

The data collection began after this project was approved by the Institutional Review Board, Naresuan University. Then, the researcher sent a letter from the Faculty of Public Health to the school directors requesting their cooperation. After receiving the responses from all selected schools, the researcher visited each school to inform teachers and students about the objectives of the study, the data collection, and participation. The high school students were then given explanations about how to answer the questionnaires. This study was designed to guarantee the privacy of the participants after they had obtained permission from their guardians to participate in providing data for collection. When all the questionnaires were received, they were inspected for completion and accuracy before the data analysis. The data were analyzed according to the study assumptions using the statistical computer program SPSS version 22.

Descriptive statistics including percentage, mean, standard deviation, minimum values, and maximum values were used to analyze the socio-demographic characteristics and the overview of lifestyle factors, disease prevention motivation, social support, stress prevention behaviors, and stress. The factors affecting stress among high school students were analyzed by binary logistic regression. Statistical significance was determined at 0.05 as the criterion for hypothesis acceptance.

RESULTS

Socio-demographic Characteristics

A total of 365 subjects were included in the study and 72.9% were females. For 37.3% the mean age was 16 years and 37.3% were studying in grade 10. Their average grade point was 3.00 and over at 74%, and 50.1% had 2 siblings. More than half (54.8%) were the first child. Most of the parents of students lived together accounting for 52.6%, while 42.5% of students lived with their father and mother while studying. Thirty-eight percent of parents had graduated from primary school, and 40% worked as laborers. Most students (81.9%) received pocket money for school, which is less than 80 baht per day and 89.3% had enough money for their expenditures. Approximately 99% of students had received information about stress and 60.5% of those students received their information from the internet. Lastly, 98% of their parents had no history of mental health illness.

Stress

Most of the students were female (72.90%) with high levels of stress, followed by severe stress and moderate stress levels, at 32.90%, 27.10%, and 15.10%, respectively. Prevalence of stress was higher among females than males (79.70%, 62.60%, respectively). Therefore, the cumulative total for moderate, high, and severe levels of stress for the students was 75.10%. The mean score of overall stress was 7.12 (S.D. = 3.81) (Table 1).

Table 1. Frequency and percentage of students classified by gender, levels of stress and grouped stress (n = 365)

Level of Stress	Frequency	Percent
Gender of students		
Male	99	27.10
Normal	37	37.40
Stressed	62	62.60
Female	266	72.90
Normal	54	20.30
Stressed	212	79.70
Level of Stress		
Severe Stress (10 – 15)	99	27.10
High Stress (8 – 9)	120	32.90
Moderate Stress (5 – 7)	55	15.10
Mild Stress (0 – 4)	91	24.90
Grouped Stress		
Normal	91	24.90
Stressed	274	75.10
Mean = 7.12, S.D. = 3.81, Min = 0, Max = 15		

Lifestyle factors

The lifestyle factors of students including self-esteem, resilience, positive thinking, the relationships of family/friends/society, and the parenting style were at a moderate level, recorded as 79.5%, 61.9%, 51.8%, 63.0%, and 78.6%, respectively (Table 2).

Motivation for disease prevention, social support, and stress prevention behaviors

Perceived severity, perceived susceptibility, response efficacy, and perceived self-efficacy of students were at a moderate level, measuring 66.3%, 49.9%, 75.9%, and 56.4%, respectively. Similarly, social support and stress prevention behaviors of students were at a moderate level, at 69.6% and 74.2%, respectively (Table 2).

Table 2. Number and percentage of students distributed by lifestyle factors, motivation for disease prevention, social support, and stress prevention behaviors (n = 365)

Variables	Frequency	Percent
Lifestyle factors		
Self-Esteem		
high	2	0.5
moderate	290	79.5
low	73	20.0
Mean = 1.81, S.D. = 0.41		
Resilience		
high	135	37.0
moderate	226	61.9
low	4	1.1
Mean = 2.63, S.D. = 0.50		

Variables	Frequency	Percent
Positive Thinking		
high	169	46.3
moderate	189	51.8
low	7	1.9
Mean = 2.44, S.D. = 0.53		
Relationships of Family/Friends/Society		
high	119	32.6
moderate	230	63.0
low	16	4.4
Mean = 2.28, S.D. = 0.53		
Parenting Style		
high	74	20.3
moderate	287	78.6
low	4	1.1
Mean = 2.19, S.D. = 0.42		
Motivation for disease prevention		
Perceived Noxiousness		
high	72	19.7
moderate	242	66.3
low	51	14.0
Mean = 2.06, S.D. = 0.57		
Perceived Probability		
high	171	46.8
moderate	182	49.9
low	12	3.3
Mean = 2.44, S.D. = 0.55		
Responses Efficacy		
high	75	20.5
moderate	277	75.9
low	13	3.6
Mean = 2.17, S.D. = 0.46		
Self-Efficacy		
high	153	41.9
moderate	206	56.4
low	6	1.6
Mean = 2.40, S.D. = 0.52		
Social support		
high	80	21.9
moderate	254	69.6
low	31	8.5
Mean = 2.13, S.D. = 0.53		
Stress prevention behaviors		
high	89	24.4
moderate	271	74.2
low	5	1.4
Mean = 2.23, S.D. = 0.45		

Factors affecting the stress levels of high school students

Binary logistic regression was employed to identify the factors affecting stress in high school students. Twenty-four factors were assessed and the factors significantly affecting stress among students (p-value < 0.05) included gender, spending, resilience, and social support. Female students were more likely to become stressed than male students (OR_{adj} = 1.902; 95%CI: 1.117 - 3.241). Students who had insufficient expenditure tended to be more stressed than those with sufficient expenditure (OR_{adj} = 3.618; 95%CI: 1.031 -12.694). Students with a moderate level of resilience had more chance to experience stress than those with a high level (OR_{adj} = 3.198; 95%CI: 1.957 – 5.224). Lastly, students who were at low and moderate social support levels had a greater risk of stress than those with good social support (OR_{adj} = 4.762; 95%CI: 1.012-22.412; OR_{adj} = 2.036; 95%CI: 1.155 - 3.589, respectively (Table 3).

Table 3. The stepwise binary logistic regression analysis of factors affecting stress among high school students (n = 365)

Variables	Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Gender of students				
Male (Reference)				
Female	0.427(0.258-0.707)	0.001*	1.902 (1.117 - 3.241)	0.018*
Spending				
Sufficient (Reference)				
Insufficient	0.225(0.068-0.750)	0.015*	3.618 (1.031 -12.694)	0.045*
Resilience				
High (Reference)				
Moderate	3.198 (1.957– 5.224)	0.000*	3.198 (1.957 – 5.224)	0.001*
Low	- (0.000)		- (0.000)	0.999
Social support				
High (Reference)				
Moderate	2.674(1.567-4.564)	0.000*	2.036 (1.155 - 3.589)	0.014*
Low	10.717(2.392-48.072)	0.002*	4.762 (1.012-22.412)	0.048*

*: p < 0.05

DISCUSSION

The purpose of this study was to identify the factors affecting stress in high school students.

The findings in the present study revealed that high school students felt more stress than in previous studies.[9] This might be because high school students are in late adolescence and they are undergoing various changes in life including physical and mental development, having their own thoughts, and showed a tendency to engage in risky behavior while showing sensitivity to mental health problems.[3] They were also worried about their future and their university entrance preparation. This caused increased stress. However, the difference in stress levels may result from many factors such as the environment, family, society, and personal type.[2] Additionally, this study was conducted during the COVID-19 outbreak when

students spent more time at home without going out to see and talk to their friends. This situation might in itself have caused more stress.

According to the results, there were four variables affecting stress in high school students. These factors consisted of gender, sufficient expenditure, resilience, and social support.

Female students were more likely to experience stress than male students. Female students might be more sensitive to mental or emotional changes than male students and this can lead to their becoming stressed more easily. Furthermore, male students might have better life skills in decision making for problem solving and stress management than female students.[29] This is in line with previous studies which found that female students were more worried and stressed than male students.[10] On the other hand, this research involved more female than male students, which might be one of the reasons that affected our findings.

Students who had insufficient expenditure were affected by greater stress than those with sufficient expenditure. It can be explained that the economic situation in the present period has caused an increase in consumer goods prices and the cost of living. This has resulted in an increased incidence of insufficient expenditure among students and this has affected their stress.[7] Our findings are consistent with previous studies which indicated that personal insufficient expenditure was associated with stress.[7] Therefore, students should not only study the coursework in classes, but they should also engage in career upskilling to gain more money to allow an increase in expenditure.

Moreover, students who had poor resilience tended to become more stressed than those with better resilience. Resilience might help to prevent mental health concerns. Students who had good strength in life were more likely to be patient in dealing with any barriers or bad situations. Then, they were more confident and had the self-acceptance capacity to create their goals in life. They could cope with any situation and maintain their normal life through their own management.[30] Creating stress management from the strength of mind helped to reduce stress.[14] Persons who had good resilience believed that all problems could be solved and they saw the problems as challenging and reasonable events.[30] As a result, activities of resilience for high school students should be promoted to prevent stress and its consequences.

Social support was another factor affecting stress in high school students. Low or absent social support leads to an increase in stress. Social support helps people to cope with stress since it can motivate the people to feel loved, stable, proud, valued, and a part of society.[31] Social support is also a source of enhancement and motivation that helps people to be able to face their problems. Consequently, people can change their behavior for better health. This finding is consistent with previous studies which found high levels of parental support can help prevent teenage children from attempting suicide due to stress.[32] Further, social support can be employed for stress management to reduce stress.[33] It indicates that social support can build resilience. If resilience increases, stress will decrease. Thus, activities of social support should be implemented for high school students, family, friends, communities, and schools in order to prevent stress.

LIMITATIONS OF THIS STUDY

There were more female students than male students in our study. This may lead to affect the findings.

CONCLUSION AND RECOMMENDATIONS

The factors such as gender, insufficient spending, strength in life, and social support affect stress among high school students. Therefore, the relevant official institutes should respond to this problem and implement solutions such as creating efficient strength in life and strengthening of the social support in order to prevent severe stress among high school students, especially in the case of female students. Further studies should determine additional factors related to stress among high school students to increase the power of prediction. These would help to develop effective guidelines and programs for stress prevention in high school students.

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