Situation of Depression, Anxiety and Stress among High School Students Preparing for University Admissions during COVID-19 Pandemic: A Cross Sectional Study

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Abstract

Background: Mental health in adolescents is very important. Many of them preparing for university admissions and with the COVID-19 they are at higher risk of developing mental health problems. Purpose: The objective of this study was to assess depression, anxiety, and stress among high school students during the COVID-19 pandemic and to study the associated factors for depression, anxiety, and stress. Methods: Cross sectional online survey, high school students from grades 10-12 who could access the internet were invited to participate in completing the online questionnaire. A total of 732 students participated. Sociodemographic factors were analyzed by descriptive statistics and the DASS-21 scale was used to assess the levels of Depression, Anxiety, and Stress. Result: Most students displayed normal levels of depression, anxiety, and stress at (n=486, 66.39%), (n=479, 65.44%) and (n=682, 93.17%) respectively. The associated factors for depression were gender while the associated factors for stress was class level. Conclusion: The outbreak of the COVID-19 affected the mental health of many high school students. During the lockdown period students had to adjust their lifestyle including learning style therefore leading to some mental health affected. The associated factors for depression was gender while the associated factors for stress was class level. Therefore, understanding students' mental health associated factors and giving appropriate support could help prevent mental health problems.

Keywords: Depression, Anxiety, Stress, High school, students

Introduction

Nowadays Education is highly competitive, the primary goal of high school students, parents and students see the importance of preparation for university entrance exams and has the values to study at a reputable institution in popular fields or being in demand in the future labor market, making students aware of one of the ways in which students are interested in preparing and increase their own knowledge to increase the chances of taking entrance exams is learning extra out of the classroom [1] In the view of the general public believe that special education can increase the knowledge, potential and abilities of their children. But in fact, is it too much extra learning? Beyond the student's physical and mental capacity to receive may lead to stress [2] and nowadays scores are used in many parts, requiring planning and preparation since grade 10 for the entrance exams to prestigious universities. The University Entrance Examination system under normal circumstances, students preparing for university entrance exams are stressed by many factors such as: expectations to be able to take the entrance examinations to the university or faculty expected by their family, themself and study plans, the workload of assignments along with the preparation for university entrance exams, etc., are all stressful factors [3].

From the report of Department of Mental Health, it was found that Thai teenagers between 10-19 years are risky to depression more than 3 million and have the symptoms more than a million. Moreover, from the information of the call center of mental health advice hotline in case of teenagers from 11-19 years, there were 10 calls in 2019, 120 calls in 2020 and 11,112 calls in 2021. Besides, the most 3 problems ranking for calling are depression, anxiety, depressive symptoms, and love [4]. Thus, it's obviously seen that the depressive disorder can be found in every age. Especially in teenagers. [5,6] because it's a transition from childhood to adulthood, which is at risk of developing mental health problems because of various stimulation accompanied by rapid changes in the emotion and society [7] and it considers to be the most evolving rapidly in all areas especially physical aspect. It's not only from the more intensive lessons but also educational changing system, for example, faculty selection, moving from school to the university. These can cause many sequential problems such as studying problem, family relationship, social expectation, and their own self pressure for planning their own future for career. When they can't handle and manage these kinds of problems properly, it will lead to depression [8]. These kinds of problems also influence their value and self-esteem and may cause suicide finally. Many factors that affect Thai's teenagers are interpersonal relationship liked spiritual intelligence, intimacy with family and friends, internet

addiction and family status (marital status, financial status, bringing up pattern including the value of education). Moreover, the social expectation about being an excellent is getting good grade in the famous university. These kinds of expectation will impact their decision to plan their won education in the future including their profession [9]. If they cannot deal with these matters efficiently, it can lead to stress and depression. These factors are consistent with depression [10-11] in line with the theory of Bronfenbrenner [12] that focus on the self-esteem. In this case, we will discuss about preliminary factor: Human, interpersonal relationship and relationship with family, community and society that affect the development and individual mental health. In case of teenagers, friends are the most significant factor that impact their mind. Furthermore, COVID-19 pandemic effects the educational system and state of mind extremely. Online learning is the new normal, teenagers have to adapt themselves more or less. This can cause anxiety. Online teaching in the situation of COVID-19 is quite new, Adolescents need to adjust to the extent that they can cause stress. The stress of studying online can be more or less. It may be due to various factors that may affect the mind, slow down perception, problem-solving ability decreasing, confusing thoughts, less of concentration, inappropriate emotional expressions, loss of confidence in the ability to manage one's own life and affects academic achievement. The cause of stress may be caused by the general environment, social environment relationships with others [13]

A study of students' mental health during the COVID-19 outbreak found that 82.0% of students were worried about their grades [14]. 81.0% of students were stressed by the COVID-19 pandemic [15]. 20.5% of students had severe anxiety and 38.0% had depression [16]. The effect suggests that students will need to prepare for university entrance exams considering the changing circumstances this change may cause stress and subsequent mental health problems.

In addition, it was found that many teenagers who are pursuing high school must prepare for entrance examinations in higher education. Anxiety and stress can lead to depression. Therefore, the researcher is interested in studying the factors influencing student depression, which is of great importance today. The results of this research will inform the current mental health situation of adolescents and apply the results obtained as a basis for planning and monitoring mental health promotion to reduce the factors affecting it to continue to effectively treat depression for adolescents.

Methods

Participants and procedures

This was a cross-sectional observational study. An online questionnaire was purposely developed and made available through Google from between June-22 and -October-22. All students who were eligible were invited to participate in the study. The invitation was sent via an online channel to social media platforms. The students have access to the platform, so they all receive an invitation. In this invitation, information about the objectives of the study as well as the ethical guarantee of confidentiality and anonymity in the data collected as stated in the informed consent were explained. Participation was completely free and voluntary, and no personal data were collected from any participant.

Instrument

The questionnaire was developed based on a literature review including [17] Mental health, Depression, anxiety and stress, and the COVID-19 from NHS UK, Mayoclinic, Johns Hopkins University [1] related studies were used to assess each of the dimensions in this study [2] DASS21 questions were used to assess level of depression, anxiety, and stress of the sample group.

A preliminary version of the instrument was reviewed by 3 experts to validate its content. A pre-test was then performed with a small sample of high school students to test for comprehension and difficulty. All the questions remained without modifications. The psychometric characteristics of the questionnaire were tested, as described in the statistical analysis subsection.

The final version of the questionnaire contained 23 questions: 2 about sociodemographic factors (gender and grade level) and 21 items from the DASS-21.

The DASS-21 is a self-report questionnaire designed to assess the levels of depression, anxiety and stress.[9]. It consists of a total of 21 items with 7 items for each subscale [10]. It is a shortened version of the DASS which was originally developed by SH and PF Lovibond, so the scores obtained from DASS-21 need to be multiplied by 2 to calculate the final score [11]. Studies on the validity show that the DASS-21's subscales can be used to measure depression, anxiety and stress validly and can also be studied further psychologically as well.

Statistical analysis

The analysis was performed using SPSS for windows, version 26 to analyze psychometric characteristics of the scales, an exploratory factor analysis, using principal component analysis with varimax rotation, was carried out. The descriptive analysis was presented in absolute (n) and relative (%) frequencies, mean (M) and standard deviations (SD). To assess the differences between the outcome variables (Levels of depression, anxiety, and stress) and the sociodemographic characteristics, considering the sample size, independent t-test and the ANOVA were used as appropriate. A generalized linear model was calculated to determine the predictive variables of the preventive behaviors. Exp (β) and the respective 95% confidence intervals (95% IC) were presented. Statistical significance was defined as $p < 0.05$.

Ethical Approval

Ethical approval was obtained from the study sites prior to data collection, and consent was assumed as completing the survey questions. Participants were informed that their participation was voluntary and that they could withdraw from the study at any point or choose not to answer any question. Participants' confidentiality was maintained as no identifying information was collected and findings will be disseminated only in aggregate.

This research uses an anonymous data collection method to collect data from grades 10-12 Students who could access the internet, using Google form. The invitation was sent on social media groups to the students. In these invitations, information about the study's objectives and the ethical guarantee of confidentiality and anonymity in the data collected as stated in the informed consent was explained. Participation was completely free and voluntary, and no personal data were collected from any participants.

Results

In table 1, a total of 732 high school students participated in this study. Most participants were female (n=541, 73.80%) and male (n=191, 26.10%). 35.20 % (n=358) of participants were grade 10 students, followed by grade 11 students (n=257, 35.10%) and grade 12 students (n=217, 29.64%).

Table 1. Participants' characteristic (n=732)

Variable	N (%)
Gender	
Male	191 (26.10)
Female	541 (73.80)
Class Level	
Grade 10	358 (35.20)
Grade 11	257 (35.10)
Grade 12	217 (29.64)
Total	732 (100.00)

From the result of DASS21, depression level of participants illustrated in Table 2, most participants reported a normal level of depression (n=486, 66.39%), followed by a mild level of depression (n=113, 15.44%) and a moderate level of depression (n=113, 15.44%) and a severe of depression (n=20, 2.73%). Most of grade 10 students showed a normal level of depression (n=177, 68.60%), followed by a mild level of depression (n=37, 14.34%), a moderate level of depression (n=37, 14.34%), and a severe level of depression (n=7, 2.71%). For grade 11 students, majority showed a normal level of depression (n=156, 60.70%), followed by a moderate level of depression (n=51, 19.84%), a mild level of depression (n=42, 16.34%), and severe level of depression (n=8, 3.11%). Most of grade 12 students reported a normal level of depression (n=153, 70.50%), followed by a mild level of depression (n=134, 15.67%), a moderate level of depression (n=25, 11.52%), and a severe level of depression (n=5, 2.30%).

Table 2 Depression Level among participants categorized by class level

Class	Normal	Mild	Moderate	Severe	Extremely Severe	Total
Grade10	177 (68.60%)	37 (14.34%)	37 (14.34%)	7 (2.71%)	0 (0%)	258
Grade 11	156 (60.70%)	42 (16.34%)	51 (19.84%)	8 (3.11%)	0 (0%)	257
Grade 12	153 (70.50%)	34 (15.67%)	25 (11.52%)	5 (2.30%)	0 (0%)	217
Total	486 (66.39%)	113 (15.44%)	113 (15.44%)	20 (2.73%)	0 (0%)	732

From the result of DASS21, anxiety level of participants indicated in Table 3, most participants reported a normal level of anxiety (n=479, 65.44%), followed by a moderate level of anxiety (n=118, 16.12%), a mild level of anxiety (n=86, 11.75%) and a severe level of anxiety (n=42, 5.74%) and an extremely severe level of anxiety (n=7, 0.96%), respectively. A large numbers of grade 10 students presented a normal level of anxiety (n=172, 66.67%), followed by a moderate level of anxiety (n=39, 15.12%), a mild level of anxiety (n=28, 10.85%), a severe level of anxiety (n=15, 5.81%) and an extremely severe level of anxiety (n=4, 1.55%). Grade 11 students were mostly a normal level of anxiety (n=157, 61.09%), followed by a moderate level of anxiety (n=48, 18.68%), a mild level of anxiety (n=34, 13.23%), a severe level of anxiety (n=16, 6.23%) and an extremely severe level of anxiety (n=2, 0.78%). Most of grade 12 students showed a normal level of anxiety (n=150, 69.12%), followed by a moderate level of anxiety (n=31, 14.29%), a mild level of anxiety (n=24, 11.06%), a severe level of anxiety (n=11, 5.07%) and an extremely severe level of anxiety (n=1, 0.46%).

Table 3 Anxiety Level among participants categorized by class level

Class	Normal	Mild	Moderate	Severe	Extremely Severe	Total
Grade10	172 (66.67%)	28 (10.85%)	39 (15.12%)	15 (5.81%)	4 (1.55%)	258
Grade 11	157 (61.09%)	34 (13.23%)	48 (18.68%)	16 (6.23%)	2 (0.78%)	257
Grade 12	150 (69.12%)	24 (11.06%)	31 (14.29%)	11 (5.07%)	1 (0.46%)	217
Total	479 (65.44%)	86 (11.75%)	118 (16.12%)	42 (5.74%)	7 (0.96%)	732

From the result of DASS21 assessment, stress level of participants indicated in Table 4, most participants reported a normal level of stress (n=682, 93.17%), followed by a mild level of stress (n=35, 4.78%) and a moderate level of stress (n=15, 2.05%). Many grade 10 students showed a normal level of stress (n=237, 91.86%), followed by a mild level of stress (n=17, 6.59%) and a moderate level of stress (n=4, 1.55%). Most of grade 11 students reported a normal level of stress (n=240, 93.39%), followed by a mild level of stress (n=10, 3.89%) and a moderate level of stress (n=7, 2.72%). For grade 12 students, majority illustrated a normal level of stress (n=205, 94.47%), followed by a mild level of stress (n=8, 3.69%) and a moderate level of stress (n=4, 1.84%).

Table 4 Stress Level among participants categorized by class level

Class	Normal	Mild	Moderate	Severe	Extremely Severe	Total
Grade10	237 (91.86%)	17 (6.59%)	4 (1.55%)	0 (0.00%)	0 (0.00%)	258
Grade 11	240 (93.39%)	10 (3.89%)	7 (2.72%)	0 (0.00%)	0 (0.00%)	257
Grade 12	205 (94.47%)	8 (3.69%)	4 (1.84%)	0 (0.00%)	0 (0.00%)	217
Total	682 (93.17%)	35 (4.78%)	15 (2.05%)	0 (0.00%)	0 (0.00%)	732

From analysis of factors associated with depression, anxiety and stress among participants by Pearson's Chi-Square, the results showed that the gender associated with stress (p=0.030), and class associated with stress (p=0.006), as shown in Table 5.

Table 5 Factors associated with depression, anxiety and stress among participants

Variable	P Value Depression	P Value Anxiety	P Value Stress
Gender	0.006	0.301	0.030
Class	0.129	0.154	0.006

Discussion

According to a survey with the online mental health questionnaire (DASS21) of high school students during the preparation for university entrance exams, it was found that most respondents were women, representing 73.80% (N=541). Most participants were grade 10 student (N=358, 35.2%). From the depression survey Anxiety and stress found that the depression of most of the survey respondents were in the normal range, representing 66.39%, followed by the low and moderate levels at 15.44% and at severe level, representing 2.73%. Participants reported their level of anxiety, most were at a normal level (65.44%), followed by moderate, low and severe criteria, respectively, representing 16.12%, 11.75% and 5.74%, respectively. Anxiety was the most severe level, representing 0.96%. According to the survey, most of the respondents had stress in the normal range, representing 93.17%, followed by a low threshold, representing 4.78% and the least was in the middle category, representing 2.05%. The factors affecting depression were gender and the factors affecting stress were gender and class level.

In general, preparing for exams to study at the university level affects the mental health of students at different levels depending on the person and environmental factors associated with stress, anxiety and stress of the respondents, may be factors in the expectations of those around them. The amount of homework and workload support from those around them, the family's financial situation circumstances around them, such as perception of the risk of contracting COVID-19 [18]

The results of this study show that most of the respondents Depression, anxiety and stress were at normal levels. Out of all 732 respondents, this may be because each respondent may have a goal or approaches to higher education that are different. For example, some people may not be able to decide on further tertiary education. Or in the search for themselves (Gap year), while some people have clear guidelines for further education at the tertiary level. Thus, causing stress, anxiety had risen to some extent especially students who aim to study in highly competitive faculties. [19] On the other hand, another group of people aims for admission to faculties or subjects that are not very competitive. This factor in competition can also cause stress and anxiety among students. However, nowadays people in society are increasingly aware of mental health problems, causing many agencies in the public and private sectors such as the Department of Mental Health to focus on mental health care especially on the high school students who are preparing for university entrance exams. This has resulted in the creation of a variety of ways to alleviate anxiety. [20] This is also one of the aids that can help reduce stress and anxiety among students. Another factor that may affect student stress and anxiety is the survey time period, as the survey data was collected in 2022, when measures related to the Corona Virus epidemic has eased. [21] the students or questionnaires have decreased stress and anxiety. This compares with student survey data during the time that measures related to the coronavirus pandemic have been rigorously implemented.

This is consistent with the study by Ingfah Siriamornthep (2021) of Depression, Anxiety and Stress among High School Students in Singapore International School of Bangkok during the COVID-19: A cross sectional study found that most respondents Moderate levels of depression, anxiety, and stress Because the respondents in this group are students at international schools. If studying at a university, this group of students will choose to study in an international program. or choose to study abroad When comparing the data,   it was found that the competitive level of admission to international universities in Thailand or admission to a university abroad is lower than the competitive level of admission to general courses or regular courses of universities in Thailand This may be due to the financial factor that drives most people to choose to pursue a general education program or regular courses. Therefore, this factor creates a high competition for admission to general courses or

regular courses of universities in Thailand. As a result, most students were more depressed, anxious and stressed than international students.

It is different from the study by Parit Kosonsasitorn (2022) [22] which studied about Stress and Depression during COVID-19 among high school students in Chiang Mai province found that the majority of respondents depression, anxiety and stress were at the highest levels which is a consequence of The school has encouraged students to compete with each other at a high level. Even though the readiness and learning ability of the learners were not assessed at any level. Therefore, some students who do not have the readiness and ability to learn or there is a level that is not very high compared to other students. Depression, anxiety and high stress, and another factor contributing to depression, anxiety and stress among students in this school is the coronavirus epidemic because respondents originally may have depression, anxiety and stress. Stress is already high as the original capital. Therefore, as more strict measures were taken to control their daily living, depression, anxiety and stress among the respondents also increased.

And unlike the study by Apitta Euasobhon (2021), it examines the impact of the COVID- 19 Pandemic on Symptoms and Prevalence of Depression and Stress of High School Students in Bangkok. Depression, anxiety and stress were at the highest levels. This may be due to a high-pressure school environment. For example, the school has a system that encourages students to compete causing all the students in this school to work hard in order to have good grades. This is a source of depression, anxiety and high stress that follows. In addition, the survey was conducted during the severe coronavirus epidemic. As a result, strict and serious control measures have been put in place, leading to a worsening effect on the mental health of students, as everyone is unable to lead a normal life as before.

Limitation

This study conducted data through online surveys, there was a possibility that participants who are teenagers might not fully participate in answering questions attentively.

Conclusion

According to a survey with the online mental health questionnaire (DASS21) of high school students during the preparation for university entrance exams, it was found that the majority of respondents were women, representing 73.80%, and 35.20 in 4TH year students. From the depression survey Anxiety And stress found that the depression of most of the survey respondents were in the normal range, representing 66.39%, followed by the low and moderate levels at 15.44%, and the least of the survey respondents. Depression was severe, accounting for 2.73%, followed by anxiety from the survey found that most survey respondents. Anxiety was in the normal criteria, accounting for 65.44%, followed by moderate, low, and severe criteria, respectively, representing 16.12%, 11.75% and 5.74%, respectively, and the least of the survey respondents. Anxiety was the most severe, accounting for 0.96%, and the last was stress. According to the survey, most of the respondents had stress in the normal range, representing 93.17%, followed by a low threshold, representing 4.78% and the least was in the middle category, accounting for 2.05%. The factors affecting depression were gender and the factors affecting stress were gender and class level.

Recommendation

1. Suggestions for student development department of various schools in this research data can be used to plan for mental health care of students in schools to avoid excessive depression, anxiety and stress. The school may have a reduction in class time or add on free time in order to allow students to relieve stress from studying or can use that free time to do things that benefit themselves and to the organization.

2. Suggestions for student development department of various schools to measures for mental health care of students should be appropriate for their gender and the academic year level of each student. This is because the research data indicates that the gender and school year of students have different effects on depression, anxiety, and stress.

3. Suggestions for the academic department of various schools, there should be alternate between heavy and light classes. Students' daily schedule should not be organized with multiple subjects that are too hard in a row because studying hard for a long time can cause depression, anxiety, and stress in students.

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