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Depression, Anxiety and Stress During the COVID-19 Pandemic Among High School Students In Bangkok

Paweenut Somboonwarakon
Triam Udom Suksa School Bangkok, Thailand

***Corresponding Author:**
Paweenut Somboonwarakon
Triam Udom Suksa School Bangkok, Thailand

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Abstract

Background: Coronavirus disease (COVID-19) has become a global pandemic forced government to take measure of isolation which affect our life, especially youth's.The objective of this research was to study the prevalence and factors associated with depression, anxiety and stress among high school students experiencing isolation during COVID-19 pandemic in Bangkok.

Purpose : To assess the level of depression, anxiety, and stress of high school students during COVID-19 pandemic.

Methodology: A cross sectional study, the survey was collected from 10 August to 23 August 2021 via google forms. The data was collected from 386 student participants from a public school in Phayathai districts. The PHQ-9 questionnaire, GAD-7 questionnaire, and ST-5 questionnaire, were used for data collection to measure the severity of depression, anxiety, and stress. Descriptive statistics were used to analyse participants' characteristics; frequency, percentage, and standard deviation. Generalised Linear Models were used to analyse predictive factors of depression, anxiety, and stress.

Findings: From 386 participants (29.3% male, 70.7% female), the level of overall depression, anxiety and stress were mild.The prevalence of depression, anxiety and stress in grade 10-12 students (mild to severe) were at 69.95%, 70.72%, and 74.36%; respectively. The predictive factors for depression, anxiety, and stress were mental health conditions (EXP (β)=0.365, EXP (β)=0.371,EXP (β)=0.302) and physical health conditions (EXP (β)= 0.179, EXP (β)=0.146, EXP (β)=0.135). From the study, it indicated that mental health conditions and physical health conditions of the students should be aware as predictive factors for mental health problems. Policy makers, schools and parents should support and encourage students to balance their activities.

Keywords: Depression, Anxiety, Stress, mental health conditions, COVID-19, high school students

Introduction

Coronavirus disease or COVID-19 is an infectious disease caused by the SARS-CoV-2 virus which can spread from small liquid particles of an infected person's cough, sneeze, or breath. The COVID-19 symptoms of each patient may differ in severity, however, the common symptoms are cough, fever, tiredness, and loss of taste or smell. In some cases, COVID-19 can lead to difficulty in breathing, malfunction in lungs or even death. [1] The World Health Organisation (WHO) on March 11, 2020, has declared the novel coronavirus (COVID-19) outbreak as global pandemic.

Coronavirus Disease has affected our life, especially youth's. During the time of research, Thai government has been putting several measures in places such as, school closure. Therefore, over ten million students all over Thailand are forced to learn online classes with no exception. [2] Family financial problems, technical difficulties, and the lack of personal gadgets have been problems for most students. [3] Most schools are still using the old on-

premise curriculums, students have to spend more than 8 hours a day sitting in front of the screen so they have no time to relax or do exercise. Furthermore, online schools have prevented students from having physical interaction with friends and family due to the government's social distancing policy. From isolation and loneliness, They tend to develop depression, anxiety and stress. School reopening was nowhere to be seen because of the delay of vaccination and the rising of new COVID-19 cases. And the government is doing only a few things to help these students who are suffering in their lives when they are supposed to study and socialise.

Adolescence, a period between childhood and adulthood, is the transition period at the highest risk of developing the mental conditions. [4] The most common disorders are depression, anxiety, and stress, which known as DAS. Stress is the feeling of overwhelming. Any challenges, such as performance at work/school, or significant life change, can develop stress. [5] Anxiety is a feeling of unease, such as worry or fear, that can be mild or severe. Occasional anxiety is an expected part of life but anxiety disorders involve more than temporary worry or fear. For a person with anxiety disorder, the anxiety does not go away on its own and can get worse over time. The symptoms can interfere with daily activities, such as job performances, school works, or relationships. [6] Depression, major depressive disorder or clinical depression is a common but rather severe mood disorder. It can cause severe symptoms that can affect how you feel, think, and handle daily activities like sleeping, eating, or working. [7] These DAS problems cause high schoolers to be unable to concentrate on studying online. They will likely develop violence behaviour and become more socially isolated, leading to suicidal thoughts. [4] Many factors for example, illness, friends and family relationships, financial problems, or pressure during the coronavirus pandemic situation made adolescents at high risk of developing DAS.

As a result, the research focused on a public school in Phayathai district, a senior high school, which is one of the most competitive schools in Thailand. [8] It has approximately four thousand students and majorities are aiming to get into the university. There are a lot of diversities, students from almost everywhere in Thailand. This public school is in the centre of Bangkok, the capital of Thailand; therefore, students and teachers, have a very high risk of getting infected with Coronavirus Disease, which leads to hesitation of reopening school. Because of the combination of the coronavirus pandemic and school closure, students are more likely to develop depression, anxiety, and stress.

Methods

Participants and procedure

This was a cross-sectional observational study. An online questionnaire was purposely developed and made available through Google From between 10 Aug 21 and 23 Aug 21. All grade 10-12 students who were eligible and willing to participate in the study. The invitation was sent to school social media groups. The students have access to the school social media groups, 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. Of 4,398 students in public school in Phayathai districts, a total of 386 students participated in the study (response rate: 23.63 %).

Instrument and Analysis

Depression scale (PHQ-9), Anxiety scale (GAD-7), and Stress scale (ST-5) were used to measure participants' mental health status during the COVID-19 pandemic. These tests focus on three dimensions, (1) depression, (2) anxiety, and (3) stress. In total there are 21 items and are self-administered questionnaires, which has been widely used in many countries.

1) The PHQ-9 was initially developed by Kroenke et al, as a subset of 9 questions from the full PHQ. The Patient Health Questionnaire (PHQ) is a self-administered version of the PRIME-MD diagnostic instrument for common mental disorders. The PHQ-9 score is calculated by assigning scores of 0, 1, 2, and 3, to the response categories of 'not at all', 'several days', 'more than half the days', and 'nearly every day', respectively, and adding together the scores for the nine questions. Scores of 0-6, 7-12, 13-18, and 19-27 are taken as the cut-off points for normal, mild, moderate and severe depression, respectively. [9]

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2) The GAD-7, developed by Robert L. Spitzer, a 7 questions brief self-report scale to identify probable cases of anxiety. The GAD-7 score is calculated by assigning scores of 0, 1, 2, and 3, to the response categories of 'not at all', 'several days', 'more than half the days', and 'nearly every day', respectively, and adding together the scores for the seven questions. Scores of 0-4,5-9, 10-14, and 15-2 are taken as the cut-off points for normal, mild, moderate and severe anxiety, respectively. [10]

3) The ST-5 is a 5 questions brief self-report scale to identify probable cases of stress. The ST-5 score is calculated by assigning scores of 0, 1, 2, and 3, to the response categories of 'not at all', 'several days', 'more than half the days', and 'nearly every day', respectively, and adding together the scores for the nine questions. Scores of 0-4, 5- 7, 8-9, and 10-15 are taken as the cut-off points for normal, mild, moderate and severe depression, respectively. [11]

For the present study, descriptive statistics, including frequency, percentage, mean, and standard deviation, were conducted to achieve the research objectives.

Ethical Considerations

This research uses an anonymous data collection from grade 10-12 Students of a public school in Phayathai district, Bangkok, Thailand, by using Google form. The invitation was sent by google forms to the line square of the school which every student can access. 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 participant.

Results

This study comprised a total of 386 students. The sociodemographic characteristics of a sample are presented in Table 1. Most students were female (n=273, 70.7%). Most students class level were in M.5 (n=158, 40.9%) followed by M.4 group (n=132, 34.2%). 271 (70.2%) of the students were in Science-Mathematics Program while the second with 83 (21.5%) were in Language-Arts Program. Most target faculty were health science (n=271, 70.2%) followed by Humanities / Social Sciences / Comm Arts / Fine Arts / Arts / Political Science (n=84, 21.8%) and Engineer / Science / Architecture (n=51, 13.2%), respectively. 167 (43.3%) of the students had a very good relationship with their family while the second with 143 (37%) of the students had a good relationship with their family. 168 (43.5%) of the students had a good relationship with friends followed by 159 (41.2%) had a very good relationship with friends and 53 (13.7%) of the students had an acceptable relationship with their friends, respectively. Most students had moderately financial effected from COVID-19 situations (n=133, 34.5%) while 91 (23.6%) of the students had severe financial effected from COVID-19 situations. 146 (37.8%) of the students had slight COVID-19 risk perception followed by 128 (33.2%) of the students had moderate COVID-19 risk perception. Most students had no mental health conditions (n=253, 65.5%). Most students had slightly physical health conditions (n=139, 36%) followed by not at all physical health condition (n=106, 27.5) and moderately health conditions (n=74, 19.2%), respectively (Table 1).

Table 1. Differences in outcomes according to the sociodemographic characteristics of participants (N = 386)

Sociodemographic characteristics	N (%)
Gender	
Male	113 (29.3)

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Female	273 (70.7)
Grade Level	
Grade 10	132 (34.2)
Grade 11	158 (40.9)
Grade 12	96 (24.9)
Study Program	
Science-Mathematics	271 (70.2)
English-Mathematics	32 (8.3)
Language- Arts	83 (21.5)
Target Faculty	
Health Science	197 (51.0)
Engineer / Science / Architecture	51 (13.2)
Business Management / Commerce / Economics	29 (7.5)
Humanities / Social Sciences / Com Arts / Fine Arts / Arts / Political Science	84 (21.8)
Others	25 (6.5)
Family Relationship	
Very Poor	2 (0.5)
Poor	10 (2.6)
Acceptable	64 (16.6)
Good	143 (37)
Very Good	167 (43.3)

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Friend Relationship	
Poor	6 (1.6)
Acceptable	53 (13.7)
Good	168 (43.5)
Very Good	159 (41.2)
Financial effect from COVID-19	
1 Not at all	40 (10.4)
2 Slightly	86 (22.3)
3 Moderately	133 (34.5)
4 Very	91 (23.6)
5 Extremely	36 (9.3)
COVID-19 Risk Perception	
1 Not at all	52 (13.5)
2 Slightly	146 (37.8)
3 Moderately	128 (33.2)
4 Very	47 (12.2)
5 Extremely	13 (3.4)
Mental Health Condition	
No	253 (65.5)
Yes	133 (34.5)
Physical Health Condition	
1 Not at all	106 (27.5)

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2 Slightly	139 (36)
3 Moderately	74 (19.2)
4 Poor	59 (15.3)
5 Very Poor	8 (2.1)
Total	389 (100)

Regarding the depression level, students have depression, the majority have mild depression (n=167, 43.26%) followed by moderate depression (n=77, 19.95%) and severe depression (n=26, 6.74%), respectively. Students in grade 10 showed the highest severe depression level (n=10, 7.58) while 6.33% of the students in grade 11 and only 6.25% of grade 12 had a severe depression. Grade 11 students showed the highest moderate level(n=36, 22.78%) followed by grade 10 with 18.94%. Students in grade 12 showed the highest level of mild depression (n=45, 46.88%) followed by grade 10 (n=57, 43.18%) and grade 11 (n=65, 41.14%), respectively (Table 2).

Table 2. Level of depression among participants

Grade Level/ Depression Level	Normal	Mild	Moderate	Severe	Total
Grade 10	40(30.30)	57(43.18)	25(18.94)	10(7.58)	132(34.20)
Grade 11	47(29.75)	65(41.14)	36(22.78)	10(6.33)	158(40.93)
Grade 12	29(30.21)	45(46.88)	16(16.67)	6(6.25)	96(24.87)
Total	116(30.05)	167(43.26)	77(19.95)	26(6.74)	

Regarding the anxiety level, most of the students have anxiety, 174 (45.08%) students have a mild depression followed by moderate depression (n=70, 18.13%) and severe depression (n=29, 7.51%), respectively. Students in grade 10 showed the highest severe anxiety level (n=12, 9.09%) while 7.29% of the students in grade 12 and only 6.33% of grade 11 had severe anxiety. Grade 10 students showed the highest moderate level of anxiety (n=26, 19.70%) followed by grade 11 with 18.35%. Students in grade 12 showed the highest level of mild anxiety (n=46, 47.92%) followed by grade 11 (n=70, 44.30%) and grade 10 (n=58, 43.94%), respectively (Table 3).

Table 3. Level of anxiety among participants

Grade Level/ Anxiety Level	Normal	Mild	Moderate	Severe	Total

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Grade 10	36(27.27)	58(43.94)	26(19.70)	12(9.09)	132(34.20)
Grade 11	49(31.01)	70(44.30)	29(18.35)	10(6.33)	158(40.93)
Grade 12	28(29.17)	46(47.92)	15(15.63)	7(7.29)	96(24.87)
Total	113(29.27)	174(45.08)	70(18.13)	29(7.51)	

Regarding the stress level, students have a stress, the majority have a mild stress (n=144, 37.31%) followed by moderate (n=65, 16.84%) and severe stress (n=78, 20.21%), respectively. Students in grade 11 showed the highest severe stress level (n=35, 22.15%) while 20.83% of the students in grade 12 and only 17.42% of grade 10 had severe stress. Grade 10 students showed the highest moderate level of stress (n=25, 18.94%) followed by grade 11 with 17.09%. Students in grade 12 showed the highest level of mild stress (n=40, 41.67%) followed by grade 10 (n=50, 37.88%) and grade 11 (n=54, 34.18%), respectively (Table 4).

Table 4. Level of stress among participants

Grade Level/ Stress Level	Normal	Mild	Moderate	Severe	Total
Grade 10	34(25.76)	50(37.88)	25(18.94)	23(17.42)	132(34.20)
Grade 11	42(26.58)	54(34.18)	27(17.09)	35(22.15)	158(40.93)
Grade 12	23(23.96)	40(41.67)	13(13.54)	20(20.83)	96(24.87)
Total	99(25.65)	144(37.31)	65(16.84)	78(20.21)	

Results from the generalised linear model analysing predictive factors of depression, anxiety and stress found that mental health condition (EXP (β)=0.365, p<0.01) and physical health condition (EXP (β)= 0.179, p<0.01) had a statistically effect on depression. For anxiety, it also indicated that mental health condition (EXP (β)=0.371, p<0.01) and physical health condition (EXP (β)=0.146, p<0.01) had a statistically effect on the level of anxiety of the participants. For stress, the result showed that mental health conditions (EXP (β)=0.302, p<0.01) and physical health conditions (EXP (β)=0.135, p<0.01) had a statistically effect on the level of stress of the participants (Table 5).

Table 5. Generalised Linear Model Predicting Depression, Anxiety and Stress

Sociodemographic characteristic	Depression P Value			Anxiety P Value			Stress P Value		
	P	EXP(	95%IC	P	EXP(	95%IC	P	EXP(	95%IC

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s		β)			β)			β)	
Gender	0.081	0.073	-0.105-1.803	0.209	0.054	-0.296-1.346	0.105	0.073	-0.107-1.123
Grade Level	0.424	-0.033	-0.789-0.332	0.29	-0.044	-0.742-0.223	0.848	0.008	-0.326-0.397
Study Program	0.847	-0.012	-0.863-0.708	0.902	-0.008	-0.718-0.633	0.818	-0.015	-0.565-0.447
Target Faculty	0.991	-0.001	-0.453-0.448	0.957	-0.003	-0.399-0.377	0.664	0.029	-0.226-0.355
Family Relationship	0.000	-0.277	-2.291--1.166	0.00	-0.26	-1.863--0.895	0.000	-0.255	-1.324--0.599
Friend Relationship	0.737	0.015	-0.505-0.713	0.386	-0.038	-0.755-0.293	0.203	-0.06	-0.647-0.138
Financial effect from COVID-19	0.186	0.058	-0.132-0.676	0.218	0.054	-0.13-0.565	0.28	0.05	-0.117-0.404
COVID-19 Risk Perception	0.923	0.004	-0.438-0.483	0.833	-0.009	-0.439-0.354	0.28	-0.05	-0.46-0.134
Mental Health Condition	0.000	0.365	3.047-5.035	0.000	0.371	2.627-4.338	0.000	0.302	1.378-2.66
Physical Health Condition	0.000	0.179	0.452-1.278	0.001	0.146	0.242-0.953	0.004	0.135	0.129-0.661

Discussion

A total of 386 students participated in this study. From the results, the level of overall depression, anxiety and stress were mild. The predictive factors for depression were mental health condition (EXP (β)=0.365, p<0.01) and physical health condition (EXP (β)= 0.179, p<0.01). Predictive factors for anxiety were mental health conditions (EXP (β)=0.371, p<0.01) and physical health conditions (EXP (β)=0.146, p<0.01). Predictive factors for stress were mental health conditions (EXP (β)=0.302, p<0.01) and physical health conditions (EXP (β)=0.135, p<0.01). This shows participants developed existing mental conditions; by being forced to stay isolated from others for an extended period of time by safety measures put out by the government. Lacking of interactions with friends and family, isolation and loneliness led to the rising in the

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depression, anxiety and stress level. [12] And those with existing physical conditions were worrying because the data showed that they would be at far more dangerous risk if they got infected with the virus. [13] Moreover, the gym, park, and pool were closed due to the government measures, so they cannot exercise as properly as normal situations.

A previous study by Apitta Euasobhon on Impact of the COVID-19 Pandemic on Symptoms and Prevalence of Depression and Stress of High School Students in Bangkok showed 89.7% of students in grade 10-12 faced depression. The associated factors were workload, relationships with family and friends, mental health conditions, having friends with mental health conditions, and financial impact from COVID-19 pandemic. There are 53.52% of students in grade 10-12 had stress. The associated factors were workload, relationships with family and friends, and financial impact from COVID-19 pandemic. [14] Consistent with a study by Sujitra Uratanamnee and Supawadee Lerdsamran on stress anxiety and depression of high school teenager in preparation for university admission showed family expectation and workloads are positively associated with DAS level. However, family income and family support are negatively associated with DAS level. [15] As a previous research paper mentioned above, The associated factors were similar which are family income and relationships with family. However, these are not the factors that associated with DAS of the participants in my research because the participants of this study were students from only public schools in Phayathai districts, one of the top schools in Thailand and most of their family backgrounds were financially stable and less problematic. On the contrary, the students were under a lot of pressure during school admissions. [16] Students had to study twice as hard as other school's students. Even though they had studied harder and harder, it might not be enough. They need their family support for encouragement and money, for extra classes or expensive textbooks. As a result, most students can reach extra financial help because of a good financial status. Even though most of them faced a financial effect on COVID-19 but it does not affect much on how they live in daily life. Additionally, staying at home reduced the cost of living compared to going to school with a high cost of living. The analysis of the data gathered showed that stability in financial status strongly interacted with family relationships. It revealed that the family with unstable financial status would also have fostered conflict in the strength of the bond with family members. [17] A good family relationships will lower a level of anxiety, depression and stress. [18]

Limitation

The data was gathered using Google Form during the Coronavirus Disease 2019 pandemic; hence, the participants were only those who had access to the internet and smartphone, tablet or laptop. And possibly higher risks of DAS due to the 'New Normal Life' under the government's coronavirus counter measure.

Conclusion

Among 386 students participated in this study, a significant number of participants were reported from mild level of overall depression, anxiety, and stress. 270 (69.95%) participants were reported a depression symptoms at ranging from mild, moderate, and severe at 167 (43.26%), 77 (19.95%), and 78 (20.21%), respectively. 273 (70.72%) participants were reported an anxiety symptoms at ranging from mild, moderate, and severe at 174 (45.08%), 174 (45.08%), and 29 (7.51%), respectively. 287 (74.36%) participants were reported a stress symptoms at ranging from mild, moderate, and severe at 144 (37.31%), 65 (16.84%), and 78 (20.21%), respectively. From the generalised linear model analysis, the predictive factors for depression were mental health condition (EXP (β)=0.365, $p<0.01$) and physical health condition (EXP (β)= 0.179, $p<0.01$). Predictive factors for anxiety were mental health conditions (EXP (β)=0.371, $p<0.01$) and physical health conditions (EXP (β)=0.146, $p<0.01$). Predictive factors for stress were mental health conditions (EXP (β)=0.302, $p<0.01$) and physical health conditions (EXP (β)=0.135, $p<0.01$).

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