

Psychological Problems During The COVID-19 Pandemic Among Medical Students : A Cross-Sectional Study

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Abstract

The pandemic of COVID-19 gave a great impact on college students learning activity, especially medical students. Thus, they may become vulnerable to have psychological problems such as anxiety, depression, and stress. The study aimed to investigate anxiety, depression, and stress rates among medical students during the pandemic of COVID-19 and the affecting factors. This cross-sectional study used DASS questionnaire online survey. 312 medical students, a total sampling in Muhammadiyah Palembang University participated in this study. The univariate analysis was used to determine the level of psychological problems while the bivariate analysis was carried out to determine the affecting factors. The study findings showed that 50.6% of the students reportedly had anxiety (12.2 % mild, 17.3% moderate, 10.9% severe, 10.3% very severe), 33% of the students had depression (13.5% mild, 11.9% moderate, 3.8% severe, 3.8% very severe), and 22.4% of the students had stress (10.6% mild, 9.3% moderate, 5.1% severe, 1.3% very severe). There were no differences between gender for anxiety, depression and stress ($p=0.335$, $p=0.261$, $p=0.134$ respectively). Junior students were more anxious than senior students ($p=0.015$). More than half of medical students experienced anxiety with moderate anxiety mostly during the COVID-19 pandemic, and junior students were more likely to suffer anxiety.

Keywords

COVID-19, Depression, Anxiety, Stress, College

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1. INTRODUCTION

The pandemic of COVID-19 has influenced people's lives all over the world, including Indonesia. COVID-19 case in Indonesia was detected firstly in March 2020 or four months after its first case was detected in Wuhan, China, and the case is still increasing in number (Tosepu et al., 2020; Khoshaim et al., 2020). The consequences of the pandemic are not only in terms of health but also in terms of learning methods in the education system (Khoshaim et al., 2020). Anticipating widespread COVID-19 infection, the government has issued the closing of schools and colleges. The students were expected to stay at home and study using virtual classes (Rondonuwu et al., 2021). This policy will result in boredom, frustration, depression, anxiety, and stress among students because of social activity restriction, and might bring negative impacts on college students (Hasanah et al., 2020; Son et al., 2020). The previous studies in United States, Bangladesh, and China have shown that anxiety, depression, and stress cases amongst college students were increasing during the COVID-19 pandemic

(Fruehwirth et al., 2021; Islam et al., 2020; Wang et al., 2020; Ma et al., 2020). Therefore, it is possible that anxiety, depression, and stress may develop among medical students during the pandemic.

Thus, this study was going to investigate anxiety, depression, and stress rates amongst the medical students during the pandemic of COVID-19 in south Sumatra, Indonesia and analyze the difference in the incidence of anxiety, depression, and stress between male and female students as well as the level of seniority. We hypothesize that anxiety, depression, and stress were more common among female and first-year college students.

2. EXPERIMENTAL SECTION

The study design of this research is cross-sectional. The research was conducted from January 2021 to April 2021. The research subjects were medical students of Muhammadiyah Palembang University, who were willing to fill out the questionnaire completely and had never been diagnosed with anxiety, depression, and stress before the pandemic. The study was approved by the Medical Faculty

Ethics Committee of Muhammadiyah Palembang University (No 04/EC/KBHKI/FK-UMP/V/2021). The research variable is the dependent variable of the level of stress (depression, anxiety, stress) students of Medical Faculty of Muhammadiyah Palembang University and the independent variables are gender and level of seniority. Data for this study were collected using an online survey through the google form together with an appended consent form. Depression, Anxiety and Stress Scale (DASS) questionnaire was used in the study and has been tested for validity and reliability. Depression is categorized as normal (score 0-9), mild (score 8-9), moderate (score 10-13), severe (score 14-20) and very severe (score ≥ 28). Anxiety is categorized as normal (score 0-7), mild (score 8-9), moderate (score 10-14), severe (score 15-19) and very severe (score ≥ 20) while stress is categorized as normal (score 0-14), mild (score 15-18), moderate (score 19-25), severe (score 26-33) and very severe (score ≥ 34). The analysis used in the univariate analysis by calculating the frequency distribution of each variable and bivariate analysis to see the relationship between the two variables using the chi-square test with a significance level (α) of 0.05 or a 95% confidence level.

3. RESULTS AND DISCUSSION

320 medical students in Muhammadiyah Palembang University participated in this study, but as many as 8 people were excluded because they did not complete the questionnaire, had a history of depression, or were taking antidepressant drugs. After 312 people have met the criteria then proceed with the analysis of research data. A total of 312 Muhammadiyah medical students in Palembang, were participated in this study. They are the second, fourth, and sixth-semester students (Table 1).

Table 1. Characteristics of the respondents

Variable	Frequency	Percentage (%)
Semester		
Second	96	30.77
Fourth	100	32.05
Sixth	116	37.18
Total	312	100
Sex		
Female	242	77.6
Male	70	22.4
Total	312	100

Most of the students were in the category of not depressed as much as 67%, anxious as much as 50.6%, and not stressed as much as 73.7%. Most students experienced mild depression as much as 42%, moderate anxiety as much as 54%, and mild stress as much as 33% (Table 2).

Female students experienced depression, anxiety, and stress more in number than males, although it is not sig-

nificant. Junior students were more likely to experience depression, anxiety, and stress than senior students and it is significant for anxiety with p value of 0.015 (Table 3).

Table 2. Depression, anxiety, and stress level of the respondents

Variable	Frequency	Percentage (%)
Depression		
Not depressed	209	67
Depression	103	33
- Mild	- 42	- 13.5
- Moderate	- 37	- 11.9
- Severe	- 12	- 3.8
- Very Severe	- 12	- 3.8
Total	312	100
Anxiety		
Not anxious	154	49.4
Anxious	158	50.6
- Mild	- 38	- 12.2
- Moderate	- 54	- 17.3
- Severe	- 34	- 10.9
- Very Severe	- 32	-10.3
Total	312	100
Stress		
No stress	230	73.7
Stress	82	22.4
- Mild	- 33	- 10.6
- Moderate	- 29	- 9.3
- Severe	- 16	- 5.1
- Very Severe	- 4	- 1.3
Total	312	100

The results showed that only a few students experienced depression (33%) and stress (22.4%), but the most experienced anxiety with a percentage of 50.6%. Most students who experienced these psychological problems were in moderate anxiety (54%), mild depression (42%), and mild stress (33%). Psychosocial stressors can happen to anyone, including students. These stressors may affect their life so that they have to adapt to cope with the arising stressors. The pandemic of COVID-19 has changed learning methods at the Faculty of Medicine. These changes may be the triggering factor of anxiety amongst medical students. Anxiety may affect their learning outcomes, because of confusion and perceptual distortions. Stress, resulting from prolonged and continuous anxiety, can influence their daily activities. They may experience depression, a more serious psychological problem, from unresolved anxiety. Students' anxiety, stress, and depression have been increasing with online learning methods during the pandemic of COVID-19 (Hasanah et al., 2020).

The study findings were consistent with previous research in China, the United States, France, Serbia, Saudia

Table 3. Bivariate analysis

	Depression	Not Depressed	Anxious	Not Anxious	Stress	No Stress
Sex						
- Female	76	166	119	123	64	178
- Male	27	43	39	31	18	52
<i>p value</i>	0.261		0.335		0.134	
Semester						
- Second	46	70	67	49	32	84
- Fourth	31	69	54	46	28	72
- Sixth	26	70	37	59	22	74
<i>p value</i>	0.134		0.015		0.665	

Arabia, Bangladesh, and India which revealed increasing anxiety depression, and stress rates amongst college students during the pandemic of COVID-19 (Ma et al., 2020; Clabaugh et al., 2021; Husky et al., 2020; Kostić et al., 2021; Khoshaim et al., 2020; Islam et al., 2020; Saravanan et al., 2021). This psychological problem had different pathological mechanisms. In depressive patients, the sub-genual anterior cingulate and amygdala were hyperactive, while the dorsal lateral prefrontal cortex and insula were hypoactive (Malhi and Mann, 2018). The amygdala was activated in an anxiety-provoking situation while the activity of the salience network and the default mode network increased in stress conditions (Holzschneider and Mulert, 2011; Van Oort et al., 2017).

Online lecture is the most frequently mentioned thing to cause anxiety in college students. It is a solution during the pandemic but it may also cause anxiety because this new learning system brings a series of things that cause anxiety regarding their lectures. The second thing that was said causing anxiety was friendship relationships. Many new lifestyle rules and habits related to new adaptations that emphasize physical distancing, made respondents worrying about their friendship (Christianto et al., 2020). Students who get support from their peers will be more confident and have confidence in their abilities, making it easier for these students to find the right coping strategies to deal with academic stress. The lack of social communication during their online studies can make academic stress experienced even higher (Lubis et al., 2021).

Students may experience quite heavy pressure while carrying out online learning during the pandemic (Lubis et al., 2021). The problems experienced by students during the pandemic can be in the form of demands being charged with online teaching and learning model that makes them depressed and eventually causes stress symptoms. Symptoms of stress experienced by students may have impacts on their health in the form of disturbed sleep patterns or difficulty sleeping, headaches, anxiety, irritability, and physical fatigue (Kartika, 2020).

Anxiety is an emotional condition characterized by excessive worry about various events of daily life. Anxiety may be difficult to be controlled and is associated with somatic symptoms, such as muscle tension, irritability, trouble sleeping, and restlessness. When anxiety occurs continuously, irrationally and the intensity increases, it can interfere with daily activities, known as an anxiety disorder. The psychological problems may be in the form of increased anxiety in the general public, patients, medical staff, children, the elderly, and college students. Several studies that have been conducted mentioned the anxiety of students during a pandemic related to various factors including their area of residence, parents' income, living with parents, relatives or acquaintances infected with COVID-19, social support, learning systems, and knowledge about COVID-19 (Kartini et al., 2021).

Anxiety, depression, and stress were found more among female students than males, although it is not significant. The finding that female students were more affected than male were consistent with previous study results (Clabaugh et al., 2021; Kostić et al., 2021; Oducado, 2021; Husky et al., 2020; Khoshaim et al., 2020; Ma et al., 2020). They had higher levels of neuroticism, more perceived stress, and worse coping compared to males (McCrae and Terracciano, 2005). They have to serve caregivers for ill family members, and balance it with academic work. Thus, females are at particular risk for psychological problems during the COVID-19 pandemic (Clabaugh et al., 2021).

First year students were found more in having psychological problems than their seniors during the COVID-19 pandemic. This finding was consistent with previous research findings in the USA and Italy (Fruehwirth et al., 2021; Romeo et al., 2021). The social isolation and online learning as results of the pandemic contributed most substantially to the observed increases in psychological problems amongst first-year students (Fruehwirth et al., 2021).

The limitation of this study is that the researcher did not examine in detail the causes of online learning so that students experienced psychological impacts. The bias that can

occur in this study is information bias because participants report independently about the conditions they feel so that the results may be less or more than the feelings they experienced. Online learning can affect the psychological state of students not only medical students as in this study but also students in general and even elementary, middle, and high school students. This is in line with Alateeq's research which found that both Elementary School, Secondary School, and University had a significant psychological impact caused by online learning. The study found that students were more likely to experience higher stress compared to Elementary and Secondary School (Alateeq et al., 2020).

4. CONCLUSIONS

The medical students who experienced anxiety, depression, and stress during the pandemic of COVID-19 were increasing in number. These psychological problems were experienced in both gender with anxiety was more in junior students. Evaluation and early intervention should be done to reduce these psychological problems amongst medical students.

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