Correlation Between Anxiety Level and Compliance with Health Protocol in Medical Faculty Students 3 Years After the COVID-19 Pandemic

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ABSTRACT

Background: Face-to-face learning after the COVID-19 pandemic with the requirement of implementing health protocols tends to make students vulnerable to experiencing psychological problems such as anxiety. Anxiety is a basic human emotion consisting of fear and uncertainty and usually occurs when an individual believes that the event is a threat to self or self-esteem.

Objective: To determine the correlation between anxiety levels and compliance with health protocols among students from the Faculty of Medicine, Medical Study Program Class of 2021, Airlangga University after 3 years of the COVID-19 pandemic.

Method: Survey using the Zung Self-Rating Anxiety Scale and Health Protocol Compliance questionnaire which was distributed online via Google Form.

Results: The level of anxiety that most students experience is mild anxiety (60,8%). Regarding gender, female students' anxiety levels in all categories are higher than male students, where levels of mild, moderate, and severe anxiety in female students are (60,6%, 76,47%, and 100%). It was found that (59,49%) of students did not comply with the implementation of health protocols 3 years after the COVID-19 pandemic. The results of the chi-square statistical test showed a significant relationship between anxiety levels and compliance with the implementation of health protocols with a p-value of 0,008.

Conclusion: The anxiety level of the majority of students from the Faculty of Medicine in Surabaya is mild anxiety. Most of the students from the Faculty of Medicine in Surabaya do not comply with implementing health protocols.

Keywords: Anxiety, pandemic, COVID-19, students, health protocols

INTRODUCTION

During the transition from the COVID-19 pandemic to the new normal era, the Indonesian government made policies for the education sector, namely that students could now carry out face-to-face learning by implementing health protocols and/or online. The return of students to school or college does not necessarily solve all problems in the education sector during the pandemic[1]. Even though students' physical health is gradually improving in the post-pandemic period, mental health problems as a consequence of the pandemic may persist

or even worsen, so it is necessary to pay attention to how the transition period of changing the learning system from online to offline affects students' mental health[2].

There have been many changes after the COVID-19 pandemic hit Indonesia, especially in higher education, which in the end can have an impact on anxiety among students[3]. The American Psychological Association[4] stated that anxiety is an emotional state that appears when an individual is stressed, characterized by feelings of tension, thoughts that make the individual feel worried, and accompanied by physical responses such as a fast heartbeat and rising blood pressure. Anxiety during the lockdown caused by the COVID-19 pandemic has not only affected students' physical and psychological health but also their academic careers and families[5]. It was found that the prevalence rates for symptoms of anxiety, depression, and post-traumatic stress disorder (PTSD) after the COVID-19 pandemic were 25,0%, 29,7%, and 3.4%[2]. Most students (55%) cannot relax while on campus and (35%) students agree that they experience sleep disturbances due to anxiety about returning to campus. It was also found that (35%) of students felt nervous and anxious when they were on campus and with the same percentage they felt anxious even after returning home, (43%) of students felt nervous when talking to lecturers or passing people they knew and more than (42%) felt tense when talking to their classmates and around (39%) reported having difficulty making eye contact with others[5].

The level of anxiety among post-pandemic students is still relatively high because the COVID-19 pandemic itself continues to affect students' mental health status, especially because the policy of implementing strict health protocols tends to make students afraid and unable to adapt, making them vulnerable to experiencing psychological problems such as anxiety due to worriness about the development of the pandemic and the possibility of infection[6].

Apart from that, students' expectations regarding offline learning after undergoing online learning for 2 years also pose challenges in themselves, such as their fear of how to understand the learning material and finding it difficult to understand the material in face-to-face learning[7]. Symptoms of anxiety, depression, and PTSD remain higher in the post-COVID-19 period. This is evidence that the pandemic itself continuously affects the mental health status of students[2].

Therefore, the decline in students' mental health with symptoms of anxiety and stress is not only limited to the pandemic lockdown period but also extends to the post-lockdown period.

MATERIALS & METHODS

This research was conducted in January – May 2024. This research was approved by the Health Research Ethics Committee of the Faculty of Medicine, Airlangga University 45/EC/KEPK/FKUA/2024 on July 3, 2024. The population in this research were faculty of medicine students at a university in Surabaya, Indonesia that is currently pursuing offline lectures after 3 years of the COVID-19 pandemic. The sample size of this study was total sampling so all faculty of medicine students who met the inclusion criteria became research subjects, namely 263 students.

This research was conducted online by distributing questionnaires via Google Form. The questionnaire used in this research was the Zung Self-Rating Anxiety Scale to assess students' anxiety levels and the health protocol compliance questionnaire to see the overall picture of health protocol compliance behavior. The variables studied were anxiety levels and health protocols.

STATISTICAL ANALYSIS

The data obtained from the questionnaire was then analyzed with SPSS software with chi-square test to determine the correlation between the two variables.

RESULT

Table 1 Distribution by gender and age

	Total	Percentage
Gender		
Male	87	33
Female	176	67
Age		
19	5	1,90
20	107	40,68
21	138	52,47
22	13	4,94

Of the total 263 medical students, 87 (33%) were male students and 176 (67%) were female students. The average age of the 263 students is 20.60 years old with the youngest being 19 years old and the oldest being 22 years old.

Table 2 Distribution based on characteristics

Characteristics	Total	Percentage
Have been infected with COVID-19		
Yes	56	21,29
No	207	78,70
Family or close friends have been infected with COVID-19		
Yes	166	63,11
No	97	36,88
Have a history of psychiatric disorders		
Yes	-	-
No	263	100
Smoking		
Yes	3	1,14
No	260	98,85
Taking medication regulary		
Yes	1	0,36
No	262	99,61
Have a chronic disease		
Yes	-	-
No	263	100
Afraid of possibility of another pandemic		
Yes	209	79,46
No	28	10,64
Afraid to take public transportation		
Yes	10	3,80
No	253	96,19
Afraid of being infected with COVID-19		
Yes	254	96,57
No	9	3,42
Still uses mask in public spaces		
Yes	151	57,41
No	112	42,58
Still wash hands after doing activites		
Yes	226	85,93
No	37	14,06
Still tries to implement health protocols		
Yes	25	9,50
No	238	90,49
Still worried about crowding in public places		
Yes	24	9,12
No	239	90,87

Of the total 263 medical students, 207 (78,70%) had never been infected with COVID-19, 166 (63,11%) had family or close friends who had been infected with COVID-19 and 209 (79,84%) felt afraid of the possibility of another pandemic occurring in the future while 254 (96,57%) students expressed a more specific fear, the risk of contracting COVID-19. In addition, there was one student who regularly consumed medication, namely Methylprednisolone but the reasoning behind the student's regularly taking the drug is unknown.

Table 3 Zung Self-Rating Anxiety Scale score

Anxiety Level	Total	Percentage
Mild	160	60,8
Moderete	102	38,7
Severe	1	0,38
Panic	-	-

The most common anxiety experienced by medical students is mild anxiety, as many as 160 out of 263 (60,8%), followed by moderate anxiety experienced by 102 students (38,7%) and one (0,38%) student

was found to experience severe anxiety. The average score of the Zung Self-Rating Anxiety Scale from 263 students was 43.98 with the highest score being 61 and the lowest score being 33.

Table 4 Zung Self-Rating Anxiety Scale score based on gender

Anxiety Level	Male (%)	Female (%)
Mild	63 (39,3)	97 (60,6)
Moderete	24 (23,25)	78 (86,47)
Severe	-	1 (100)
Panic	-	-

A total of 97 female students (60,6%) experienced mild anxiety, which was much higher compared to 63 male students (39,3%) who experienced anxiety at the same level. Apart from that, the results also showed that 78 female students (76,47%) experienced moderate anxiety, while only 24 male students (23,52%) were at the same level of anxiety and there was one case of female students experiencing severe anxiety. and no male students were found who were at the same level of anxiety.

Table 5 Health Protocol Compliance Questionnaire

Health Protocols	Answers	Total	Percentage
Washing hands diligently after activities	Strongly disagree	0	0
	Disagree	38	14,44
	Agree	204	77,56
	Strongly agree	21	7,98
Always carry handsanitizer in public places	Strongly disagree	6	2,28
	Disagree	100	38,02
	Agree	144	54,75
	Strongly agree	13	4,94
Always wear mask in public spaces	Strongly disagree	2	0,76
	Disagree	101	38,40
	Agree	146	55,51
	Strongly agree	14	5,32
Always maintain distance of at least 1 mete	Strongly disagree	18	6,84
	Disagree	237	90,11
	Agree	7	2,66
	Strongly agree	1	0,38
Avoids crowded area in public spaces	Strongly disagree	7	2,66
	Disagree	235	89,35
	Agree	16	6,08
	Strongly agree	5	1,90

The following are the results of the health protocols compliance questionnaire, the best application of health protocols from

respondents is shown by the statement "Washing hands diligently after activities" namely a score of 3 for 204 students

(77,56%) and a score of 4 for 21 students (7,98%) and the implementation of health protocols is the lowest among respondents were indicated by the statement "Always maintain a distance of at least 1 meter" namely score 2 as many as 237 students (90,11%) and score 1 as many as 18 students (6,84%).

Table 6 Distribution of health protocol compliance

Health Protocol Compliance	Total	Percentage
Comply	106	40,30
Not complying	157	59,69

Of the total 263 medical students, the majority show behavior of not complying with health protocols (59,69%) after 3 years of the COVID-19 pandemic.

Table 7 Correlation between gender and anxiety level

Gender	Anxiety Level			Total	P-value
	Mild (%)	Moderete (%)	Severe (%)		
Male	63 (39,3)	24 (23,52)	-	87	0,023
Female	97 (60,6)	78 (86,47)	1 (100)	176	

Based on table 7, female students scored higher in all categories of anxiety levels with one female student experiencing severe anxiety. The results of the chi-square test showed p-value = 0,023 (p<0.05) showing that there is a significant relation between gender and anxiety level.

Table 8 Correlation between gender and health protocol compliance

Gender	Health Protocol Compliance		Total	P-value
	Comply (%)	Not Complying (%)		
Male	82 (94,25)	5 (5,74)	87	0,001
Female	75 842,61)	101 (57,38)	176	

Based on table 8, female students show higher health protocol compliance behavior than male students. The results of the chi-square test showed p-value = 0,001 (p<0.05) showing that there is a significant relation between gender and health protocol compliance.

Table 9 Correlation bewteen anxiety level and health protocol compliance

Anxiety Level	Health Protocol Compliance		Total	P-value
	Comply (%)	Not Complying (%)		
Mild	107 (67)	53 (33)	160	
Moderete	50 (49)	52 (51)	102	0,008
Severe	-	1 (100)	1	

Non-compliance with health protocols was more common among medical students with mild levels of anxiety (67%) compared to medical students with moderate (33%) and severe levels of anxiety. The results of the chi-square test showed p-value = 0,008 (p<0.05) showing that there is a significant relation between gender and health protocol compliance.

DISCUSSION
In this study, the most common anxiety experienced by medical students was mild anxiety, as many as 160 out of 263 (60,8%), followed by moderate anxiety experienced by 102 students (38,7%), and one (0,38%) students found to experience severe anxiety. These results are the same as the results of a literature review study, which found that mild anxiety is the highest level of anxiety experienced by students compared to other levels of anxiety[8]. In Switzerland[9], the most common anxiety experienced by 2223 students was also mild anxiety (38,6%). Mild anxiety often occurs when there is tension in daily life. At this stage, someone

who experiences mild anxiety becomes more alert, and the person's motivation to learn, growth, creativity, and ability to see, hear, and perceive increases more than before[3].

At the time this research was conducted, medical students were already back to face-to-face learning, this resulted in increased social interaction which could reduce the incidence of anxiety after the COVID-19 pandemic. Apart from that, as time goes by and age increases, a person's level of emotional maturity will increase. Emotional maturity is a person's ability to accept negative things from the surrounding environment without reacting negatively, but reacting wisely according to existing conditions[10].

In its distribution by health protocol compliance, it was found that 157 medical students were not compliant with health protocols after 3 years of the COVID-19 pandemic. This result is the same as the result from other Faculty of medicine that shows (93,5%) of the medical students did not comply with the health protocols after 3 years of the COVID-19 pandemic[11]. The most difficult health protocol compliance is maintaining a minimum distance of 1 meter (96,95%) and avoiding crowds in public places (92%). A study from Tunisia also shows that the most difficult health protocol for students to comply with is related to social distancing[12]. On the other hand, the health protocol most adhered to by students is washing hands (85,54%) followed by wearing mask (60,83%). Factors that influence students to follow health protocols are quite balanced based on the percentage level. The majority of students have an almost equal percentage of views regarding the effectiveness of health protocols[13]. Situational factors and inconsistency factors such as regulations that are not strict and the decreasing spread of the coronavirus in the area as well as forgetting and being lazy about wearing masks because of an element of compulsion can be the reason why individuals do not comply with health

protocols 3 years after the pandemic COVID-19[14].

The results of the chi-square correlation test for gender with anxiety level obtained a p-value of 0,023 (< 0.05) so statistically there is a significant relationship, which means female students have a higher level of anxiety compared to male students. A study at 49 private faculties of medicine in Indonesia showed results of mild, moderate, and severe anxiety were mostly experienced by female students (30,6%, 10,1%, 5%) than male students (27,8%, 7,3%) %, 4%)[15]. This is because being female is a significant independent predictor of anxiety among medical students. In addition, it is stated that women are twice as likely to experience mental disorders related to stress and anxiety as men. This is caused by differences in the hormonal influence of men and women on fear and stress mechanisms[16].

The correlation between gender and health protocol compliance based on the results of the chi-square correlation test obtained a p-value of 0,001 (< 0.05) which means there is a significant relationship between the two variables. Female students show more compliance with the implementation of health protocols than male students. It was found that 26 out of 35 students who were compliant with health protocols were female students[17]. Females are more worried about health thus resulting in healthy behavior protect themselves from disease by implementing health protocols. This causes the behavior of women to tend to comply with health protocols[18].

Anxiety level and health protocol compliance also show a significant relationship with a p-value of 0,008 (< 0.05). The proportion of students with mild levels of anxiety was greater in the group who did not comply with health protocols, namely 107 students (67%) compared to those who complied, namely 53 (33%). On the other hand, the proportion of students with moderate and severe levels of anxiety was greater in the group that complied with health protocols, 52 students (51%) and 1

student (100%) compared to 50 students who did not comply (49%). In Java, it was found that there is a correlation between anxiety levels and health protocol compliance among university students[19]. This means that the higher a person's anxiety, the higher the risk assessment related to COVID-19. On the other hand, someone who has low anxiety is at risk of showing less behavioral compliance with health protocols.

CONCLUSION

In the research conducted on 44 women who delivered their baby at the delivery room of Airlangga University Hospital Surabaya, the following conclusions were achieved:

1. The most common anxiety level of students from the Faculty of Medicine, 3 years after the COVID-19 pandemic from January – May 2024 is mild anxiety.
2. The compliance of the majority of students from the Faculty of Medicine in implementing health protocols for 3 years after the COVID-19 pandemic from January– May 2024 is non-compliance.
3. There is a significant relationship between the level of anxiety and compliance with health protocols among students from the Faculty of Medicine (p-value < 0.05).

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