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Risk Factors Analysis with Anxiety Among Medical Students in Indonesia During COVID-19 Social Restrictions

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ABSTRACT
Mental health is an aspect that needs more attention during the COVID-19 pandemic. Not only that it caused death, but the pandemic also made it mandatory for people to do self-quarantine. It restricted tourism and required a country lockdown which brought adverse effects on mental health. One of them is anxiety. The aim of the research is to examine the prevalence of anxiety and the association between anxiety and risk factors among medical students during the COVID-19 pandemic. A cross-sectional online survey was conducted among year one to three medical students between December 2020 and February 2021 in Indonesia. Electronic self-administered questionnaires comprising the Generalized Anxiety Disorder (GAD-7) and a risk factors questionnaire arranged by researchers would be the outcomes of interest of this research. The result obtained shows that respondents include 152 (73%) female students and 56 (27%) male students, with a median age of 20 years (Range 17-26 years). Anxiety was found in about 60% of respondents, with 4.8% found to have severe anxiety. From several variables of anxiety risk factor studied, there was no statistically significant association between these variables and anxiety ($p<0.05$). However, in epidemiological association, two significant variables were found. They are area of residence (PR = 1,405, 95% CI = 1,079-1,831) and history of relatives who had Generalized Anxiety Disorder (GAD) (PR = 1,689, 95% CI = 1,508-1,891) which are risk factors that will increase the occurrence of anxiety. The conclusion shows that anxiety is an unavoidable thing in the lives of students and society in general. Additionally, the COVID-19 pandemic is increasingly putting pressure on carrying out daily activities. Monitoring and preventing excessive anxiety are essential things to pay attention to for students during online learning in a pandemic situation.

Keywords: *Anxiety, Anxiety risk factor, Medical student, Medical education.*

1. INTRODUCTION

The SARS-CoV-2 virus was first identified in Wuhan, Hubei province, China in December 2019.[1] The virus spread rapidly and caused a pandemic to several other countries in the world in the form of acute infectious pneumonia or known as *Coronavirus Disease* 2019 (COVID-19). [2] Based on data from The National Health Commission of China, there were 49,824 confirmed cases of COVID-19 on February 23, 2020, with a total of 9,915 severe cases and 3,434 suspected cases in China.[3]

This condition is heavy pressure for the Chinese government, medical workers, and the public in dealing with the spread of a large-scale, infectious virus, as well as a general health condition.[4]

Based on WHO data, globally, on August 14, 2020, there were 20,687,815 cases of COVID-19, including 750,400 confirmed deaths. In the southeast Asia region, there were 2,900,347 cases. In Indonesia, from March 2 to August 14, 2020, there were 132,816 cases with 5,968 confirmed deaths. Until September 14, 2020, a drastic increase in cases reached 221,523 with 8,841 confirmed deaths.[5] Based on this data, the percentage increase of the COVID-19 cases was 67% in a one month.

In dealing with a public health problem, the Indonesian government made several policy changes to reduce the spread of the COVID-19 virus. Some of the policies implemented are limiting visits to tourism sites and implementing social restrictions to stay at home and avoid activities outside the home.[6]

In the Brooks, et al. (2020) study on the impact of quarantine on psychological health using three electronic databases, some other studies also report that the negative impact of quarantine during COVID-19 can be symptoms of post-traumatic stress, confusion, and anger. The stressor from this condition is in the form of a prolonged quarantine period, stigma, fear of being infected with COVID-19, frustration, boredom, financial problems, and inadequate information.[7]

The ongoing spread of the virus, strict isolation, and delays in the start of schools and campuses are thought to impact students' mental health.[8] During the COVID-19 pandemic, mental health is as essential as physical health.[9]

An online survey conducted on first-year students at the French Portion of the World Mental Health International College Student found an increase in anxiety by 62%.[6] This study is different from the study conducted by Cao, et al., on medical students from Changzi University, China. It was found that 25% experienced anxiety. Living in urban areas, having a stable family income, and living with parents are protective factors against anxiety.[8] Differences in research methodologies and cultural backgrounds of the two countries are thought to cause different research results.[6]

Based on this matter, the same study can be repeated for respondents in Indonesia. This study aimed to analyze the risk factors of medical student anxiety during the COVID-19 pandemic.

2. METHODS

The design of this study used a cross-sectional method. The respondents are medical students from Tarumanagara University years 2018-2020. The data was collected from December 2020 to February 2021, using an online survey and filling out digital informed consent. The instruments of this study comprised of Generalized Anxiety Disorder-7 (GAD-7) and a questionnaire containing anxiety risk factors compiled by the researcher.

GAD-7 questionnaire consists of 7 questions with a four-item Likert scale (0, 1, 2, 3). The results of the questionnaire scores from 0 – 21 were scored based on the categories of the Likert scale: not at all, several days, more than half the days, and nearly every day. The total score results were then divided into four categories: no anxiety, mild anxiety, moderate anxiety, and severe anxiety. In this study, the grouping of anxiety categories will be divided into 2: anxiety and non-anxiety.

The risk factor questionnaire comprised of variables of age, sex, location, type of residence, home-ownership status, area of residence, companion, income, history of the disease, substance abuse, access to the yard, relatives with a history of General Anxiety Disorder. The collected data will be analyzed using chi-square.

3. RESULTS

From a total of 208 respondents, there were 152 (73.1%) female and 56 (26.9%) male, with an age range between 18-26 years. Based on their place of residence characteristics, 82.7% of respondents live in urban areas and, 97.6% live with family or relatives during the COVID-19 pandemic. The total respondents who experienced anxiety were as many as 124 (59.6%) students, and 84 (40.4%) students did not experience anxiety.

From 124 respondents who experienced anxiety, 60.7% cases occurred in male students, 61.1% live in rural area, 72.7% live in apartments, 81.3% area of residence was <30 m^2, 80% live alone, 62.5% use alcohol/drugs, 60.9% have no access to the yard, balcony or terrace, 70.8% of residences are not privately owned, 64.8% have unstable income, 66.7% have a history of the disease, and 100% have relatives with GAD. Whereas 84 respondents who did not experience anxiety were 59.2% female students, 59.3% live in urban areas, 58.9% live in houses, 57.8% area of residence was ≥30 m^2, 59.1% live with a companion, 59.5% do not use alcohol/drugs, 59.5% have access to the yard, balcony or terrace, 58.2% of residences are privately owned, 55.8% have a stable income, 58.9% have no history of the disease, 59.2% do not have relatives with GAD.

Anxiety risk factor analysis with chi-square test showed no statistically significant association between anxiety risk factors and anxiety ($p<0.05$). In epidemiological association, the Prevalence Ratio (PR) of area of residence was <30m^2 = 1,405. This means that respondents who live in an area of <30 m^2 have a 1,405 times risk of experiencing anxiety compared to those who live in an area of ≥30 m^2. Variable of having relatives with GAD has the Prevalence Ratio (PR) value of 1,689. This means that respondents who have relatives with GAD have a 1,689 times risk of experiencing anxiety compared to those who do not have relatives with GAD.

4. DISCUSSION

WHO stated that during the COVID-19 pandemic, mental health was as important as physical health.[9] Some mental health disorders that can occur are in the form of anxiety, fear, and so on.[8]

In this study, 124 out of 208 medical students experienced anxiety during the COVID-19 pandemic. There was no difference in the incidence of anxiety based on sex variables. This result follows the study conducted by Saraswathi et al. (2020) and Fu, et al. (2021).[10,11] This means that during the COVID-19 pandemic, both men and women have the same experience of anxiety.[11]

Table 1. The results of the chi-square analysis of the association between anxiety risk factors and anxiety in medical students at Tarumanagara University years 2018-2020 during the COVID-19 pandemic

	With anxiety (n = 124)		No anxiety (n = 84)		**Total (N=208)**	**P value**	**PR**	**95% CI**
	N	%	N	%				
Age								
≤ 19 years old	40	58,0	29	42,0	69 (33,17%)	0,849	0,959	0,753-1,222
>19 years old	84	60,4	55	39,6	139 (66,83%)			
Sex								
Female	90	59,2	62	40,8	152 (73,08%)	0,971	0,975	0,761-1,250
Male	34	60,7	22	39,3	56 (26,92%)			
Location								
Rural	22	61,1	14	38,9	36 (17,3%)	0,989	1,031	0,772-1,375
Urban	102	59,3	70	40,7	172 (82,7%)			
Type								
Apartment	8	72,7	3	27,3	11 (5,3%)	0,531	1,235	0,844-1,806
House	116	58,9	81	41,1	197 (94,7%)			
Home-ownership status								
Renter, not owner	17	70,8	7	29,2	24 (11,5%)	0,332	1,218	0,916-1,619
Owner	107	58,2	77	41,8	184 (88,5%)			
Area of residence								
<30 m2	13	81,3	3	18,8	16 (7,7%)	0,116	1,405	1,079-1,831
≥30 m2	111	57,8	81	42,2	192 (92,3%)			
Companion								
no one	4	80,0	1	20,0	5 (2,4%)	0,650	1,353	0,860-2,129
with companion	120	59,1	83	40,9	203 (97,6%)			
Income								
not stable	57	64,8	31	35,2	88 (42,3%)	0,248	1,160	0,930-1,448
Stable	67	55,8	53	44,2	120 (57,7%)			
History of disease								
have	12	66,7	6	33,3	18 (8,7%)	0,699	1,131	0,799-1,601
don't have	112	58,9	78	41,1	190 (91,3%)			
Alcohol/Substance								
consume	5	62,5	3	37,5	8 (3,8%)	1,000	1,050	0,607-1,818
not consume	119	59,5	81	40,5	200 (96,2%)			
Access to yard								
don't have	14	60,9	9	39,1	23 (11,1%)	1,000	1,024	0,722-1,451
have	110	59,5	75	40,5	185 (88,9%)			
Relatives with GAD								
have	2	100	0	0,0	2 (1%)	0,516	1,689	1,508-1,891
don't have	122	59,2	84	40,8	206 (99%)			

The results obtained are different from the study results from WHO. The study from WHO stated that students aged 18-19 years (teenager) are more vulnerable to social health problems compared to students aged >19 years (adult).[12] Whereas on the study results obtained, it was found that 1.4% of adult students are more vulnerable to experiencing anxiety than teenage students. However, there was no statistically significant difference.

People who live in rural areas tend to be more at risk of experiencing anxiety than those in urban areas. This is in line with the study result conducted by Cao, et al. (2020).[8] In his study stated that some conditions such as limited medical workers and inadequate personal protective equipment for the general public would increase the risk of anxiety in people living in rural areas.[13] Husky, et al. (2020), stated that people who live in house-type residences have a lower risk of anxiety than those in apartments.[6] Although the type of residence has no significant association with anxiety, this can be caused by several other variables that play a role, such as area of residence and access to the yard, balcony, or terrace and several other factors.[14]

Ramiz, et al. (2021) stated that people who live in an area of residence of <30m^2 tend to be more at risk of experiencing anxiety compared to those who live in an area of residence of ≥30 m^2.[14] The results of this study are in line with the results obtained where the area of residence is the only variable that is epidemiologically significant with the PR value = 1,405 and 95% CI = 1,079-1,831.

A cramped place is considered not to guarantee privacy when someone communicate by telephone regarding work or personal matters. This is considered to increase symptoms of depression.[15] Li, et al. (2020) stated that the anxiety level of people who have access to the yard is lower than those who do not have access to the yard.[14,16] This is in line with the study result obtained.

Living alone increases the risk of anxiety. The result of this study is supported by Cao, et al. (2020) and Sundarasen, et al. (2020).[8,17] Students who live alone tend to feel higher anxiety due to several factors, such as being away from their loved ones and the threat of personal safety during the pandemic that makes them feel lonely.

The pandemic imposed social restrictions on all levels of society. Housing and social relations are crucial points in the mental and social development of student life. This is the cause of increased anxiety.[17] The variable of alcohol/drugs use is not related to the incidence of anxiety. This is in line with the study results conducted by Walter, et al. (2018).[18]

5. CONCLUSIONS

Of all the anxiety risk factor variables studied, there was no statistically significant association with anxiety (p<0,05). However, in epidemiological association, there were two significant variables, i.e., the area of residence and respondents who have relatives with a history of being diagnosed with GAD.

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