



The Effect of Mental Health Status on the Quality of Life of Faculty of Medicine Students during the Pandemic Coronavirus Disease 2019 Period

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Abstract

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BACKGROUND: The spread of Coronavirus Disease 2019 (COVID-19) disease which has not been balanced with effective protocols can create mental health problems which could affect the quality of life; as of today, there is not any research that examines the influence of both factors.

AIM: This study purpose was to analyze the mental health status on the quality of life amongst medicine students during COVID-19 period.

METHODS: This is a cross-sectional survey on 361 students from Faculty of Medicine Tanjungpura University. This study was conducted from June 2019 to November 2020 by spreading Depression Anxiety Stress Scale questionnaire and a WHOQOL-BREF questionnaire through online. The data analysis was administered using Kruskal–Wallis statistics.

RESULT: The students' mental health status was dominantly on the normal category with depression domain by 323 students (89.5%), anxiety domain by 311 students (86.1%), and stress domain by 343 students (95%). The quality of life measurement was in category medium in all domains which are physical health (88.6%), psychological health (92.5%), social relationships (50.7%), and environment (78.7%). There was significant effect of mental health status of depression and anxiety toward the aspect of physical health, psychological health, and social relationships ($p < 0.05$). Stress significantly influenced all domains of quality of life, and there was no significant effect of mental health status domain depression ($p = 0.051$) and anxiety ($p = 0.881$) toward the environment aspect.

CONCLUSION: Students' mental health status in this research belongs to the category normal with moderate level in quality of life. To compare, there was a significant effect of mental health status toward the quality of life domains. The good application of self-coping mechanisms and the social encouragement from the environment is suitable intervention strategies during the pandemic COVID-19 period.

Introduction

Mental health becomes one of essential things to pay attention to, especially during the pandemic COVID-19 period. A good mental health condition is when the mind feels serene and peaceful so that an individual can enjoy daily life and appreciate other people, be able to use abilities and self-potency in facing the challenges of life [1]. Depression and anxiety are emotional mental illnesses, while stress is a psychological distress condition that can lead to severe psychological illness (*psychosis*), if it is late to be detected and treated [2]. Based on the prevalence of stress, anxiety, and depression occurrence, during pandemic COVID-19 period, people from Asian races are the most in number who suffer from anxiety (32.9%; CI: 28.2–37.9) and depression (35.3%; CI: 27.3–44.1) compared to people from other races. Stress occurred mostly on the population in Europe (31.9%; CI: 23.1–42.2) [3].

Coronavirus disease 2019 (COVID-19) is a contagious disease caused by a new type of *Coronavirus*. Up until now, the spread of COVID-19 is occurring in almost all parts of the world. It started by reported pneumonia cases whose etiology is unknown in Wuhan, China in the end of 2019. The disease outbreak made the World Health Organization (WHO) announce COVID-19 as PHEIC (Public Health Emergency of International Concern) on 30 January 2020. Indonesia reported its first case of COVID-19 on March 2, 2020, and later the number of cases kept increasing until today [4].

As of today, the researches on specific medicine as well as the effectiveness and efficiency of COVID-19 vaccines on public are still in progress and yet to get significant results [5]. However, it is actually the high risk of contamination, the death rate varied in different regions, and the absence of standard protocols that became the factors causing fear and mental health deterioration of people [6]. In the end, the

fear caused by COVID-19 could affect the ability of a person to survive from uncertainty, meaning of life, life satisfaction, expectations, and mental condition; this could cause an increase in anxiety or depression that are correlated with the quality of life [7], [8].

During the pandemic COVID-19 period, there have been a number of researches conducted to examine mental disorders such as depression, anxiety, and stress on medical students [9], [10], [11], [12], [13], [14], [15]. In Indonesia, 48.4% of Airlangga University medical students had depression linked to age, sex, and batch year [16]. On nursing students, around 12.2% of them suffered from severe depression and 25.7% had mild mood disorder [17]. This condition was also observed in nursing academy students in which 21.1% had light depression and 17% had moderate depression [18]. Eventually, that could lead to the fatigue and burnout syndrome during pandemic COVID-19 [19].

Research conducted in the Faculty of Medicine Tanjungpura University (FK UNTAN) showed that most of medical students there felt no anxiety at all, but there were some things they worried during the pandemic COVID-19 period [20]. The COVID-19 pandemic happened in an instant, causing students' mental health to deteriorate. As a result, it is worried that the students' quality of life could be affected. However, there is no research that correlates between mental health and the quality of life of medical students as of yet. Therefore, this study was to analyze the mental health status on the quality of life among medicine students during COVID-19 period.

Methods

This research utilized cross-sectional study design, conducted from June 2020 to November 2020 at FK UNTAN. 361 students gave consent to be the subjects of research with non-probability sampling method and voluntary design type. The data collection was carried out using questionnaires given out online. This research had received codes of conduct from FK UNTAN on June 18, 2020 no. 2961/UN22.9/TA/2020.

Depression Anxiety Stress Scale (DASS) questionnaire made up of 21 items in the Indonesian version [21]; it is used to score mental health status of the students. This questionnaire is comprised 21 items, using *Likert* scale. Depression status is classified into normal (0–9), mild (10–13), moderate (14–20), severe (21–27), and very severe (>28). Anxiety status is classified into normal (0–7), mild (8–9), moderate (10–14), severe (15–19), and very severe (>20). Stress is classified into normal (0–14), mild (15–18), moderate (19–25), severe (26–28), and very severe (>29).

Students' Quality of Life is scored using WHOQOL-BREF questionnaire [22]. This questionnaire

contained four domain scoring aspects of quality of life: Physical health, psychological health, social relationships, and environment domain (Table 1). The instruments of quality of life are scored using *Likert* scale; each domain is scored, then the scores are summed up; after that, the scores were transformed into a table with scale 0–100. Score 0 is for the lowest quality and 100 for the highest quality. The data were served in form of table, with dependent variable in form of ratio data (WHOQOL-BREF) and independent variable being categorical data (DASS). The data were analyzed using Kruskal–Wallis statistical analysis because the distribution of results is abnormal.

Results

In this research, out of 361 students willing to participate, 268 students (74.2%) are female students aged under 20 years old (57.6%). Undergraduate degree students made up the most respondents (80.6%) compared to professional degrees (19.4%), mostly coming from batch 2019 students (140 students), and batch 2018 came in second (80 students). This research was participated by six study programs in FK UNTAN; they are medicine study program with 133 students (36.8%), nursing study program with 81 students (22.4%), pharmacy study program with 77 students (21.3%), medicine professional degree with 20 students (5.5%), nurse professional degree with 38 students (10.5%), and pharmacist professional degree with 12 students (3.3%). These numbers were relatively representative as research samples from all study programs, making it representative to the desired population.

In general, the mental health status of FK UNTAN students belongs to the normal category, which is on the category depression by 323 students

Table 1: Aspects of quality of life measurement in WHOQOL-BREF domain

Domain	Aspects
Physical Health	Activities of Daily Living
	Dependence on Medicinal substances
	Energy and Fatigue
	Mobility
	Pain and discomfort
	Sleep and rest
	Work capacity
Psychological Health	Body image and Appearance
	Negative Feeling
	Positive Feeling
	Self-esteem
	Spirituality/Religion/Beliefs
Social Relationships	Thinking, learning, memory and concentration
	Personal relationships
	Social support
	Sexual activity
Environment	Financial resource
	Freedom, physical safety, and security
	Access to healthcare
	Home environment
	Opportunities for acquiring new information and skills
	Opportunities for recreation
	Physical environments
Transport	

affected if depression and stress occur, but not anxiety. In conclusion, the condition of depression, anxiety, and stress on moderate to severe will cause a decrease in the physical health domain of students without affecting environment domain. Based on the test to discover the influence between the variables of mental conditions and quality of life, there was a significant influence between depression and the quality of life on physical health domain ($p: 0.000$), psychological health domain ($p: 0.000$), and social relationships domain ($p: 0.000$). Anxiety also affected the physical health domain ($p: 0.043$), psychological health domain ($p: 0.000$), and social relationship domain ($p: 0.001$). In stress variable, there was a significant effect on all quality of life domains, but there was no significant effect of depression and anxiety status on environment domain ($p > 0.05$) (Table 3).

Discussion

The effect of pandemic on mental health and quality of life

Pandemic COVID-19 is deemed as a traumatic condition that could cause fear/paranoia against COVID-19, insecurities, anxiety exacerbation, and hyper-alerted condition [7], [23]. The tragic occurrence that caused panicking, while there were social demands and roles that must be maintained which can prompt an increase of depression in the society [24]. In the end, this pandemic condition will affect the quality of life of a person. The quality of life is a perception of values/ways of life viewed from cultural context, behavior, and valuing system of place for living; it correlates with standard of life, expectancy, happiness, and individual value toward their position in life [25]. The disorders that emerge are the feeling of anger, disappointment, irritability, and prolonged sadness could lead to the

decrease of function which affects people during the pandemic [23], [26].

For medical students, the pandemic would cause somatic symptoms such as the decrease of sleep quality, losing spirit, concentration problems, negative feelings on oneself, and the increase of depression, anxiety, and stress. The somatic symptoms also include worsened relationships with other people, such as less frequent interactions among family members/friends and the emergence of negative stigma toward COVID-19 patients [9], [14]. On medical students, contracting and transmitting the virus to family becomes the cause of anxiety, breach in relationships among family members and friends, and a delay in finishing studies. In addition, the effect on the academic performance and clinical skills became the basis of anxiety [27]. Those conditions will affect the scores of the students on the aspects of quality of physical health and psychological health domain, shown by the number of medical students who have a lower quality of life in both domains during the pandemic period.

Although the pandemic condition affected the students' quality of life, the mental health status (depression, anxiety, and stress) of medical students of UNTAN in this research was in the normal category. This is due to good knowledge/cognition and correct information regarding the transmission, treatment, prognosis, and prevention of COVID-19, which became positive ways to prevent anxiety during the pandemic period [13]. The desire of medical students of UNTAN to seek information is very high; social media are the main type of information source accessed, and the amount of information obtained did not cause anxiety for them [20].

In addition, living with parents, high social relationship in the society, and the economic stability of the family increased optimism and became factors that can hinder students from mental issues [17], [28], [29], [30]. These factors are positive conditions that affected the quality of life in the social

Table 3: Impact of mental health status toward quality of life domains

Variable	Physical health			Psychological health			Social relationships			Environment		
	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Depression												
Normal	21	290	12	24	297	2	17	162	144	3	252	68
Mild	3	17	1	0	20	1	6	12	3	0	18	3
Moderate	3	12	0	0	15	0	5	9	1	0	12	3
Severe	1	1	0	0	2	0	1	0	1	0	2	0
χ^2	20.598			24.963			29.808			7.769		
p-value	0.000*			0.000*			0.000*			0.0510		
Anxiety												
Normal	21	278	12	24	284	3	19	156	136	3	246	62
Mild	2	15	0	0	17	0	2	11	4	0	13	4
Moderate	3	23	1	0	27	0	8	12	7	0	21	6
Severe	2	4	0	0	6	0	0	4	2	0	4	2
χ^2	8.155			23.611			16.149			0.665		
p-value	0.043*			0.000*			0.001*			0.8810		
Stress												
Normal	24	306	13	24	316	3	23	173	147	2	268	73
Mild	2	12	0	0	14	0	4	8	2	1	13	0
Moderate	2	2	0	0	4	0	2	2	0	0	3	1
Severe	0	0	0	0	0	0	0	0	0	0	0	0
χ^2	8.395			13.302			18.243			7.673		
p-value	0.015*			0.001*			0.000*			0.022*		

*Kruskal-Wallis test, value of $p < 0.05$: significant effect.

relationships and environment domains. On the opposite, this factor was also a worrying thing for medical students of Tanjungpura University. The main concerns of medical students of Tanjungpura University were the possibility of transmission of COVID-19 to themselves and their families, an unstable economic condition of the family as an effect of the pandemic, and the switch to online learning method [20], despite the results of research on the quality of life of students in the social relationships and environment domain being unproblematic.

Being young in age could be both positive and negative factors for the students' mental health status. The over-restriction of social distancing protocols could affect the adherence to younger age groups. The implementation of quarantine during the pandemic COVID-19 created negative psychological effects. Confusion and anger were the symptoms of post-traumatic stress. Fear, frustration, boredom, inadequate supplies, insufficient information, financial losses, and stigmas were the effects of quarantine [31]. However, in the younger age group, the curiosity for multiple sources of information about COVID-19 is higher [28], and this would later promote the preventive behaviors and hinder the spread of the virus to other people [32].

Female group is prone to having mental health problems the most [11], [15], [29], [33], [34], especially those who live in urban areas, those who have chronic illnesses, and those who have a history of mental disorders [35]. This is because women are very vulnerable to stressors as well as changes that occur around them, and they possess poor coping skill [9], [36], [37]. The feelings of relating/being responsive to their social environment (pro-social) and the feeling of optimism and empathy are more relatable and important in the daily life of women compared to men [38]. If depression occurs in women, it will result in hormonal changes that trigger anxiety and also affect the quality of sleep, eating, and headaches [39], [40]. This condition also happened to medical students of Tanjungpura University during the pandemic COVID-19 period. Even though more female students had mental health problems, but it did not affect their clinical conditions. This could be due to the success of situation coping mechanisms and good rational thinking skills [11].

Stress status the aspect that affects the quality of life of students the most during the COVID-19 pandemic. Changes in the learning method into online lectures are the major factor causing stress for medical students, which is made worse by the struggles to learn, inadequate online course materials, inability in studying time management, and the difficulty in concentrating during online lectures [41]. The negative factors of online lectures are viewed to lead to extended length of study in university, resulting in academic performance and will eventually make them incompetent doctors [27]. Stress condition suffered by the students

will increase pessimism attitude in facing the pandemic condition that later will reduce their self-esteem towards their surroundings, affect the physical health, reduce motivation and ability to think and work, and affect their relationships with people around them [42], [43], [44].

Methods of improving mental health and quality of life during the pandemic period

Intervention strategies by implementing good self-coping mechanisms and good social-environmental support are considered to be able to reduce anxiety relating to a person's health status, especially during the COVID-19 pandemic [45], [46]. Improvement of self-resilience will reduce the effects of fear of the coronavirus in the conditions of depression, anxiety and stress [47]. A sense of optimism will help increase the life-acceptance of stress of someone with depressive symptoms [42]. For nurses, the resilience to the COVID-19 epidemic and the family that functions well will reduce stress, anxiety and depression by 2.4 times. In addition, the high spiritual support will reduce depression by 2 times [48].

Several actions have been attempted to reduce mental health problems in the general public and university students. Doing physical activity, attending online counseling services or training in stress-coping skills, and doing relaxation activities will help students build resistance to stressors [17], [49], [50], [51], [52]. Social support will have a greater effect on improving the quality of life than a person's mental well-being during the pandemic COVID-19 period [7]. In addition, doing fun activities such as playing games is considered helpful to relieve and reduce the stress caused by struggles of the students during the pandemic period [53].

Adapting to change, getting used to learning independently, looking for supportive learning locations, and doing other productive activities are the choices for nursing and midwifery students at Nahdlatul Ulama University Surabaya to deal with stress from academic matters that occurred during the COVID-19 pandemic [43]. The implementation of coping mechanisms considered the most effective in reducing stress in medical students is to get closer to God and do spiritual meditation [41].

A person's religiosity during the pandemic will reduce depression and stress. On the other hand, a negative attitude towards religiosity will cause mental health problems and fear of COVID-19 [54]. At the beginning of the pandemic period in Indonesia, people thought that the application of social restrictions had an effect on the opportunity to do religious activities. Religious leaders asked the public to implement health protocols, adjust the practice of worship without leaving the principles of their respective religions. The solution to the situation during the pandemic is thought as creating the feeling of security and comfort in the

community without causing bigger health problems [55]. Praying and carrying out religious practices were deemed able to reduce anxiety and to provide a sense of calm. This view rose due to the increased acceptance of the situation and the assumption that the COVID-19 pandemic occurred because of God's will [56].

The Students of Gunung Djati University deemed that *dzikir* practice is a spiritual exercise that made the students calm and be able to control themselves, to overcome anxiety, to think positively and to be optimistic about the future [57]. In a research conducted on the pharmacy students of UIN Malang, there was no change in religious practices during the pandemic, but an increase occurred in things that reflect human values such as giving alms and doing filial piety to their parents in order to get blessings and safety. Besides, the students also listened to more preaching and reading the *Koran* more frequently. These practices created a sense of peace, safety and calmness during the COVID-19 pandemic [58].

Conclusion

The depression, anxiety, and stress status medical students UNTAN were in the normal category with the degree of quality of life mostly in the moderate category. Female students from medicine study programs who are aged <20 years were more likely to experience depression, anxiety and stress in the mild-severe category. The quality of life assessment resulted in low category in the domain of physical health and psychological health, while the quality of life is high in social and environmental relationships domains. Most of the medical students UNTAN were in normal mental status with quality of life in moderate category. Depression and anxiety aspects had correlations with the quality of life in the domains of physical health, psychological health, and social relationships. Stress aspect affected all domains of quality of life, but there was no significant effect of depression and anxiety on the environment domain of quality of life. The pandemic period that would likely continue in a long term can create rooms for further evaluation of mental health conditions. The level changes in quality of life domains needs to be observed, and it is hoped that there would be further researches in depth regarding the effect strength of DASS toward QOL as well as other risk factors that may have effect on it.

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