



RELATIONSHIP BETWEEN STRESS AND ACADEMIC PERFORMANCE AMONG STUDENTS IN FKIK UKRIDA CLASS OF 2017-2019 DURING COVID-19 PANDEMIC

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Abstract: Stress is very common among medical students especially during the Covid-19 pandemic, this may reduce academic performance and cause harm to the patient's care in the future. The purpose of this study was to determine the relationship between stress and academic performance. This type of research is non-experimental analytic observational with a cross-sectional approach. The sample of this research was 146 students of Krida Wacana Christian University Faculty of Medicine and Health Sciences (FKIK Ukrida) class 2017-2019. The sampling technique is probability sampling with a stratified random sampling type. The instrument used in this study was perceived stress scale-10 (PSS-10) questionnaire. The data analysis was carried out using spearman rank test. The results showed that the value of $p = 0.001$ (<0.005) with a correlation value of 0.260, which means that there is a relationship between stress and academic performance of FKIK Ukrida students class 2017-2019 during the Covid-19 pandemic.

Keywords: stress, academic performance, covid-19 pandemic

INTRODUCTION

The results of the efforts of all learning activities carried out by students during their studies can be seen from their academic performance. The success of this learning process is influenced by two factors, namely internal factors and external factors. These external factors include family support, environmental barriers, and socio-economic facilities. Meanwhile, internal factors include physical, psychological and emotional conditions, including stress (Suhartana, 2013).

Everyday humans will continue to face various problems in their lives. If the problem is not resolved properly, a person's psychological condition can be depressed and eventually cause stress. Stress may occur in various environments, including on campus, especially in medical students. Students can experience stress at every academic level. In the first year as a student, stress can arise due to the many changes that occur from school to university, including learning styles, lecture assignments, as well as personal factors such as financial conditions, adaptation to new environments, and other problems. At a later stage, stress levels tend to increase due to increasingly difficult learning levels, higher frequency of exams, and less time for relaxation (Rahmayani, 2019). Based on several studies conducted on medical students in Bangladesh, Jizan University, Lampung University Medical School, and North Sumatra University Medical Faculty, the prevalence of stress is all above 50%. If this stress continues, it can reduce student academic performance (Sani, 2012).

Currently, the Covid-19 pandemic is one of the causes of stress. The Covid-19 pandemic is a multidimensional problem facing the world, one of which is in the field of education where there has been a decline in the quality of learning in students because face to face learning is replaced by online learning. This clearly changes the pattern of learning that requires teachers to provide direct learning and teaching materials for students via digital remote tools (Firman, 2020).

The decline in academic performance can affect the psychological aspects of students, reduce self-confidence due to low self-esteem, fear, and anxiety. This can cause students to drop out of university or graduate with unsatisfactory results. In other words, there will be a decline in the quality of students who graduate, which will endanger the patient's care in the future. Based on the above background, the researcher wants to find out further whether there is a relationship between stress and academic performance of Faculty of Medicine and Health Sciences (FKIK) Krida Wacana Christian University students during the Covid-19 Pandemic.

LITERATURE REVIEW

Stress

Stress is a very common problem felt by every human being. Many experts define stress, including stress is a subjective experience based on perceptions of situations that are not visible in the environment, stress is the number of demands placed on a person resulting in damage, and there is also an understanding that stress is a demand or any problems adjusting, which in the end disturbs the balance of his life (Lyon. 2012).

Academic Performance

Academic performance is an understanding of knowledge and skills developed through learning, which is often assessed through the test scores obtained. There are several main factors that affect academic performance, such as physiology, psychology, and environment (Syah, 2013).

Covid-19 Pandemic

A pandemic is an outbreak of a disease that has a very wide scope, namely the whole world. Therefore this disease has become a problem for the whole world. This problem is caused by the Covid-19 coronavirus which was originally found in Wuhan Province, China, and has now spread very quickly throughout the world.

March 2020 was the time when this virus was detected in Indonesia, to follow up, social distancing was carried out, the impact of which was the decline in the Indonesian economy, the rupiah exchange rate fell, and the prices of health goods became expensive. This also affects the field of education where online learning must be carried out with various weaknesses, namely unstable internet conditions, additional costs, and lack of interaction and discipline (Firman, 2020).

Stress and Academic Performance

Stress may cause increase in glucocorticoid and noradrenaline hormone. Hippocampus has the receptor of glucocorticoid and amigdala has the receptor of noradrenaline. Continuous high concentration of glucocorticoid and noradrenaline leading to structural changes in hippocampus and amigdala such as atrophy and impaired neurogenesis, reduced dendritic branches, reduced number of neurons and disrupted synaptic terminals, reduced hippocampal volume, modification of long-term potentiation or functional changes such as impaired declarative memory, reduced spatial memory, weakened verbal memory (Yaribeygi, 2017).

RESEARCH METHODS

This study is a non-experimental, observational analytic study with a cross-sectional approach. This research was conducted online at the Faculty of Medicine and Health Sciences, Krida Wacana Christian University (FKIK Ukrida). This research process take place from November 2020 to January 2021 and the subjects of this research are students of FKIK Ukrida class of 2017 to 2019 who are actively studying until the start of the research process. The sampling technique used is probability sampling. The type used of this technique is stratified random sampling, with the minimum sample size required is 125 students consisting of 52 students of class 2017, 35 students of class 2018 and 38 students of class 2019. Then the participants of this study were re-selected based on the criteria.

There are inclusion criteria, such as FKIK Ukrida students class 2017-2019 who are willing to be research respondents, students who are not on academic leave, students who take all exams during the pandemic period, students who fill out the questionnaire completely. Exclusion criteria are students who routinely or in the past month consume drugs with side effects of depression such as proton pump inhibitors, beta-blockers, anticonvulsants, and corticosteroids. The research data was collected by filling out a questionnaire via google form include socio-demographic data and perceived stress scale-10 that had passed the validation and reliability test, then the data was processed to obtain data analysis in this study.

FINDINGS AND DISCUSSION

Validity and Reliability Test

The validity test of the perceived stress scale-10 questionnaire was carried out by correlating each item with the total score. In this study, all items from the perceived stress scale-10 questionnaire used can be declared valid because the calculated r value is greater than the table r value as in table 1.

Table 1. Validity Test Perceived Stress Scale-10 Questionnaire

Question Number	Calculated r	Table r	Description
1.	0,704	0,361	Valid
2.	0,790	0,361	Valid
3.	0,796	0,361	Valid
4.	0,639	0,361	Valid
5.	0,591	0,361	Valid
6.	0,725	0,361	Valid
7.	0,369	0,361	Valid
8.	0,740	0,361	Valid
9.	0,698	0,361	Valid
10.	0,727	0,361	Valid

Source: Data of Research, 2021

Reliability test was performed using the cronbach's alpha test. In this study, the questionnaire for the perceived stress scale-10 and all of its questions can be declared reliable as in table 2.

Table 2. Reliability Test Perceived Stress Scale-10 Questionnaire

Question Number	<i>Cronbach's Alpha Value</i>	Description
1.	0,859	Reliable
2.	0,842	Reliable
3.	0,840	Reliable
4.	0,862	Reliable
5.	0,858	Reliable
6.	0,847	Reliable
7.	0,875	Reliable
8.	0,848	Reliable
9.	0,851	Reliable
10.	0,838	Reliable

Source: Data of Research, 2021

Univariate Analysis

Respondents of this study were students of FKIK Ukrida class 2017 to 2019. Characteristics of respondents will be divided based on gender, age, class, score during the pandemic, internet conditions, conditions of online learning facilities and infrastructure, media

access, lecture schedules, adaptability, and whether online learning is effective or not as in table 3.

Table 3. Respondents Characteristics

Respondents Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	46	31,5
Female	100	68,5
Age		
<20	26	17,8
≥ 20	120	82,2
Class		
2017	54	37
2018	45	30,8
2019	47	32,2
Score during Pandemic		
Increased	95	65,1
No changes	33	22,6
Decreased	18	12,3
Internet Conditions		
Adequate	122	83,6
Inadequate	24	16,4
Learning Facility Conditions		
Adequate	128	87,7
Inadequate	18	12,3
Learning Media Access		
Accessible	136	93,2
Difficult to access	10	6,8
Learning Schedules		
Effective	84	57,5
Ineffective	62	42,5
Learning Adaptation		
Difficult	80	54,8
Not difficult	66	45,2
Online Learning Effectiveness		
Effective	32	21,9
Ineffective	114	78,1

Source: Data of Research, 2021

Based on the table above, it can be seen that more women than men participated in this study. The number of female respondents in this study was 100 (68.5%) people. The largest respondent's age was more than 20 with 120 (82.2%) people. Based on class, the largest number of respondents came from class 2017 54 (37%) and the least coming from class 2018 45 people (30.8%).

The score of respondents during the Covid-19 pandemic compared to before the Covid-19 pandemic, it is known that 95 (65.1%) people had an increase in score and 18 (12.3%) people decreased. Judging from the condition of the internet for online learning facilities, the number of respondents who had adequate internet was 122 (83.6%) and those who had adequate facilities were 128 (87.7%).

From the table above, it is also known that the majority of research respondents stated that online learning media was easily accessible, namely 136 (93.2%) people. Furthermore, as many as 84 (57.5%) of the research respondents stated that the online learning schedule was effective. In addition, during the Covid-19 pandemic there were 80 (54.8%) research respondents who stated it was difficult to adapt to new learning styles and as many as 114 (78.1%) research respondents stated that online learning was no more effective than learning face to face.

Distribution of Stress Levels on FKIK Ukrida Students

The data of FKIK Ukrida students stress levels were obtained through a questionnaire perceived stress scale (PSS-10), research respondents had various stress level as in table 4.

Table 4. Distribution of Mild, Moderate, and Severe Stress Levels in FKIK Ukrida Class 2017-2019 Students

Stress Levels	Frequency (n)	Percentage (%)
Mild	29	19,9
Moderate	87	59,6
Severe	30	20,5

Source: Data of Research, 2021

Based on the table above, it can be seen that the most respondents in the study experienced moderate stress as many as 87 (59.6%) people and the least experienced mild stress as many as 29 (19.9%) people.

Cross-tabulation of Stress Level with Respondent Characteristics

Cross tabulation was carried out between the characteristics of respondents in the form of gender, age, respondent class, score during the Covid-19 pandemic, internet conditions, conditions of online learning facilities, online learning media, online learning schedules, adaptability, and the effectiveness of online learning with stress levels as in table 5.

Table 5. Distribution of Stress Levels Based on Respondent Characteristics

Respondent Characteristics	Stress Levels					
	Mild		Moderate		Berat	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Gender						
Male	14	9,6	27	18,5	5	3,4
Female	15	10,3	60	41,1	25	17,1
Age						
<20	7	4,8	12	8,2	7	4,8
≥ 20	22	15,1	75	51,4	23	15,8
Class						
2017	11	7,5	34	23,3	9	6,2
2018	8	5,5	28	19,2	9	6,2
2019	10	6,8	25	17,1	12	8,2
Score during Pandemic						
Increased	22	15,1	63	43,2	10	6,8
No changes	6	4,1	20	13,7	7	4,8
Decreased	1	0,7	4	2,7	13	8,9
Internet Conditions						
Adequate	28	19,2	79	54,1	15	10,3
Inadequate	1	0,7	8	5,5	15	10,3
Learning Facility Conditions						
Adequate	29	19,9	84	57,5	15	10,3
Inadequate	0	0	3	2,1	15	10,3
Learning Media Access						
Accessible	29	19,9	84	57,5	23	15,8
Difficult to access	0	0	3	2,1	7	4,8
Learning Schedules						
Effective	23	15,8	51	34,9	10	6,8
Ineffective	6	4,1	36	24,7	20	13,7
Learning Adaptation						
Difficult	7	4,8	49	33,6	24	16,4
Not difficult	22	15,1	38	26,0	6	4,1
Online Learning Effectiveness						
Effective	12	8,2	16	11,0	4	2,7
Ineffective	17	11,6	71	48,6	26	17,8

Source: Data of Research, 2021

Based on the table above, it can be seen that based on gender, the highest number of women who experience moderate stress is 60 (41.1%) people. Based on age, it was found that the highest number was found at age ≥ 20 who experienced moderate stress, namely 75 (51.4%)

people. It is also known that the 2017 class experienced moderate stress, namely 34 (23.3%) people and the least was the 2018 class who experienced mild stress, namely 8 (5.5%) people).

In addition, it can be seen that the score during the Covid-19 pandemic increased the most in moderate stress, namely 63 (43.2%) people and the least was decreased in mild stress as many as 1 (0.7%) people. Based on the conditions of the internet and the conditions of the facilities, it is known that adequate internet conditions are under moderate stress the most with 79 (54.1%) people and the most adequate conditions are under moderate stress as many as 84 (57.5%) people.

When viewed based on learning media, it was found that most of the media were easily accessible under moderate stress as many as 84 (57.5%) people. Most online learning schedules are known to be effective in moderate stress as many as 51 (34.9%) people, and most learning style adaptations are difficult to adapt to moderate stress as many as 49 (33.6%) people.

Distribution of Academic Performance on FKIK Ukrida Students

The academic performance of research respondents were obtained through the final block score (NAB) in each block in 2nd semester for class 2019, 4th semester for class 2018, and 6th semester for class 2017 during the Covid-19 pandemic as in table 6.

Table 6. Distribution of Academic Performance Excellent, Good, Moderate, Low on FKIK Ukrida Students

Academic Performance	Frequency (n)	Percentage (%)
Excellent	70	47,9
Good	57	39,0
Moderate	12	8,2
Low	7	4,8

Source: Data of Research, 2021

Based on the table above, most research respondents have excellent academic performance totaling 70 (47.9%) people and low academic performance as many as 7 (4.8%) people.

Bivariate Analysis

Bivariate analysis was conducted to answer the problem formulation in this study, namely whether there was a relationship between stress and academic performance. In this study, the two dependent and independent variables studied were categorical ordinal data and the hypothesis used was a correlative hypothesis, so the bivariate analysis was carried out using the rank spearman test as in table 7.

Table 7. Relationship Between Stress and Academic Performance with Rank Spearman Test

Stress Levels	Academic Performance							
	Excellent		Good		Moderate		Low	
	Freque	Percenta	Freque	Percenta	Frequenc	Percenta	Freque	Percentag

	ncy (n)	ge (%)	ncy (n)	ge (%)	y (n)	ge (%)	ncy (n)	e (%)
Mild	17	11,6	11	7,5	0	0	1	0,7
Moderate	45	30,8	34	23,3	5	3,4	3	2,1
Severe	8	5,5	12	8,2	7	4,8	3	2,1
P Value	0,001							
Correlation Coefficient	0,260							

Source: Data of Research, 2021

Based on table 7, it is known that out of 29 (19.9%) people who experienced mild stress, only 1 (0.7%) had low achievement scores and none received moderate grades. Meanwhile, out of 30 (20.5%) people who experienced severe stress, there were 3 (2.1%) people who got low scores and 7 (4.8%) got sufficient scores. In addition, it is known that after testing the hypothesis with the rank spearman test, the p value is 0.001. Therefore, the p value (0.001) <0.05 means that there is a relationship between stress and academic performance. It is also known that the correlation coefficient value is 0.260, which means that the strength of the correlation is sufficient between academic performance and stress levels, a positive correlation value means there is a unidirectional relationship, which when viewed according to coding, it means that the more severe stress experienced by a person, the lower the academic performance he got.

Respondent Characteristic

Based on the results of research on the characteristics of the respondents in table 3, it is known that women are the most respondents, amounting to 100 (68.5%) people. This supports this study because based on the research of Lusia regarding the difference in stress levels between men and women, they found that higher stress was often found in women (Lusia, 2015). Furthermore, for the age of most respondents, 20 years and over, 120 (82.2%) people, this also supports research where from the results of Gunarsa's research, a person will be prone to experiencing stress at the age of 21-40 years (Gunarsa, 2008), and according to Faris's research, respondents aged 21-40 years experience more high stress when compared to respondents aged 41 -60 years (Faris, 2015). The largest number of research respondents based on the class came from 2017 students who were final year students and amounted to 54 (37%) people. According to Putri et al, final year students have higher stress levels because they are not only doing their course assignments but also because they have to complete final assignments (Putri, 2017).

Another characteristic that can be seen is that the score of research respondents mostly increased during the Covid-19 pandemic, which was 95 (65.3%), this result is different from that obtained from Muh.Yazid et al research who examined student learning outcomes during the Covid-19 pandemic where 55% of students received low scores, this depends on the readiness of students and teachers to learn with new learning styles and supporting infrastructure. Almost all of the internet respondents in this study were adequate with 122 (83.6%) people, adequate online learning facilities were 128 (87.7%) people, online learning

media was easily accessible according to 136 (93.2%) people and schedules (Muh, 2020). Online learning has been effective according to 84 (57.5%) people, where based on the research of Dindin et al, obstacles in the form of internet conditions, conditions of facilities, media and online learning schedules are known to be quite influential on a person's psychological condition (Dindin, 2020).

Adaptation of new learning styles to online learning found it difficult for 80 (54.8%) people. According to Niken, online learning still confuses students and online lectures do require adaptation and effort to run smoothly, failure to adapt can have an impact on various things, one of which is that students can experience stress (Niken, 2020). Most of the research respondents stated that online learning does not more effective than face-to-face learning, as many as 114 (78.1%) people. This is consistent with research from Yoice et al, where face-to-face learning improves the quality of education more than the video conferencing method. Online learning depend on the quality of the network, impaired eye health and bone health due to too long in front of the laptop, as well as the lack of interaction between students and lecturers, as well as among students (Yoice, 2012).

Stress Levels

Based on the results of the research regarding the stress level of respondents in tables 4 and 5, it is known that the most research respondents experienced moderate stress, namely as many as 87 (59.6%) people with an average score on the perceived stress scale (PSS-10) questionnaire of 19.95. The results of this study are the same as those of Metta et al., Which examined the relationship between stress levels and learning outcomes at FK Untar, where respondents who experienced moderate stress were 78.4% (Metta, 2019). Stress can arise due to exam stress, limited learning time, too much material studied, and differences in learning curricula in medicine and at school. moderate as much as 71%. The cause of this stress can be caused by many factors including lack of time for recreation, parental guidance on academic achievement, frequency of exams, excessive study load, and the adaptability of students during the Covid-19 pandemic (Diana, 2015).

From the cross tabulation results, it was found that severe stress was mostly experienced by women, as many as 25 (17.1%) people. This result is in accordance with Naoulaung's research which states that women experience more stress than men. Determination of susceptibility to experience stress due to a lot of considerations and tend to experience various fears (Nuallaong, 2011). In addition, it was also found that those over 20 years of age experienced more severe stress, namely 23 (15.8%) people, this is in accordance with research from Gunarsa and Faris where 21-40 years are easier to experience stress. This may be because in the young adult age range, problems are often found such as changes in duties and responsibilities as well as various role changes that must be undertaken by each student, it is possible that the 2019 class will not be able to adjust or adapt to the lecture conditions.

Furthermore, internet conditions and inadequate facilities tend to have a high level of severe stress, namely 15 people (10.3%). The same can be seen in the ineffective schedule of 20 (13.7%) people. This is in accordance with the research of Dindin et al, which states that

obstacles in the form of internet conditions, facility conditions, and online learning schedules are known to be quite influential on psychological conditions. Learning media that are easy to access show high results of severe stress, namely 23 (15, 8%) people, this can be caused by other factors that affect stress, such as internet conditions, facilities, and students' adaptability. Respondents who have difficulty adapting and experiencing severe stress are 24 (16.4%), this is in accordance with the results of Niken's research which shows that students' difficulties in adapting make students confused in online learning and the impact is a triggering factor for stress. Online learning that does not effective tends to show severe stress as much as 26 (17.8%), this is in accordance with the results of Yoice's research where online learning is no better than face to face.

Academic Performance

Based on the results of research on academic achievement in table 6, it is known that during the Covid-19 pandemic most of the respondents received excellent academic performance, amounting to 70 (47.9%) people. The same results were also found in Erika's research, during the Covid-19 pandemic, STIKES William Surabaya students got good academic performance. This can be due to the fact that in this study, the respondents' network conditions were mostly adequate, respondents had laptops or computers, had the ability to search for various sources of information on the internet, and had the ability to use various applications on computers to complete tasks (Erika, 2020). In addition, this also supports Hans and Selye's theory regarding eustres, where eustres is a stress that makes the body and mind ready to face many challenges, even without realizing it. In this case, stressors experienced by students can make students more serious in learning and get good academic performance scores.

Relationship Between Stress and Academic Performance

In table 7, cross tabulation and rank spearman test are performed, the p value is 0.001. Therefore, the p value <0.05 means that the null hypothesis is rejected. So, in this study it is known that there is a relationship between stress and student achievement of the Faculty of Medicine and Health Sciences at Krida Wacana Christian University class of 2017 to 2019 during the Covid-19 pandemic. The results of this study are in line with research conducted by Mishelia on FKIK Bengkulu University students, Nuni's research on nursing students at UIN Alauddin Makassar, research conducted by Ryan et al at the FK Mataram University, where the study showed a relationship between stress levels and student achievement (Mishelia, 2017).

The results of this study reinforce previous studies where stress can be caused by various factors and affect academic performance. Where one of the factors that played here, especially during the Covid-19 pandemic, was the condition of the internet, the facilities owned, access to online learning, and the ability to adapt to new learning styles. Persistent stress interferes with the functioning of memory, cognition, and learning that is regulated in the hippocampus and amygdala. This can result in structural changes such as atrophy and neurogenetic disorders, reduced dendritic branches, reduced hippocampal volume and also

functional changes such as declarative memory disorders, reduced spatial memory and others (Yaribeygi, 2017).

The results of this study are different from the research conducted by Metta et al, where there is no relationship between stress levels and learning outcomes at FK Untar (Metta, 2019). This can be due to different coping strategies for each student. A good coping strategy can maintain student achievement even in stressful situations. In this case, students can plan and make positive decisions to relieve stressors, study harder, do good study time management, discuss with friends and actively ask lecturers.

CONCLUSION AND RECOMMENDATION

Based on the results of the univariate and bivariate analyzes carried out, it can be concluded from this study that most of FKIK Ukrida students class of 2017 to 2019 experience moderate stress and has excellent academic performance. From the results of the spearman rank test, it is known that there is a relationship between stress and student achievement of the Faculty of Medicine and Health Sciences, Krida Wacana Christian University, class 2017 to 2019 during the Covid-19 pandemic. This findings may help institutions to be more aware of students psychological conditions during covid-19 pandemic. It is hoped that through the results of this research, the institutions, whether through lecturers, academic supervisors, or other educators, can also play a role in managing the stress experienced by students, through the provision of materials and counseling services. Students need to be given knowledge and insight about how to deal with stress since the beginning of entering the university environment.

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