Contents lists available at IOCS

Science Midwifery

journal homepage: www.midwifery.iocspublisher.org

Changes in stress levels and determinants of stress levels in University students during the covid-19 pandemic period in Aceh

Sri Reski Pamaila[1], Aulina Adamy[2], Maidar[3], Melania Hidayat[4], Asnawi Abdullah[5]

[1]Student of Master's Program in Public Health, Postgraduate Universitas Muhammadiyah Aceh

[2,3,4,5]Lecturer in the Master's Program in Public Health, Postgraduate Universitas Muhammadiyah Aceh

ARTICLE INFO

Article history:

Received Jul 17, 2024
Revised Aug 5, 2024
Accepted Aug 21, 2024

Keywords:

Covid-19
Learning Style
Stress
Students

ABSTRACT

The Case of Covid-19 in Indonesia from 2020 - 2021 has not shown any changes yet. The Covid-19 pandemic has crippled all areas of activity, especially in the field of education. The learning system that was previously carried out face-to-face has suddenly changed to online, where there are obstacles that trigger the emergence of stress. This study aims to determine changes in stress levels during the PSBB (Large-Scale Social Restrictions) and PPKM (Enforcement of Restrictions on Community Activities) periods and the determinants that cause changes in stress levels in students during the Covid-19 pandemic period in Aceh. This research uses a quantitative method with a cross-sectional design. The population in this study were all students in Aceh who were studying in Aceh with a sample of 122 students who had met the inclusion criteria using the random sampling method with two data collection times. The statistical tests used were the T-test and logistic regression test using STATA 14. The results of this study show that the stress levels experienced by students are in the moderate (63.11%) and severe (34.33%) categories. Of the 13 variables studied, there are 2 variables related to stress levels during the PSBB period, namely learning motivation and college assignments, and 3 variables related to stress levels during the PPKM period, namely college assignments, learning styles, and limited quotas with a p-value <0.05.

Corresponding Author:

Sri Reski Pamaila,
Student of Master's Program in Public Health Postgraduate,
Universitas Muhammadiyah Aceh,
Jl. Muhammadiyah No.91, Batoh, Kec. Lueng Bata, Kota Banda Aceh, Aceh 23123, Indonesia
Email: Sririzkipamaila@gmail.com

INTRODUCTION

Coronavirus disease 2019, also known as COVID-19, is the primary pathogen that attacks the human respiratory system (Benvenuto et al., 2020; Ciotti et al., 2020; Salata et al., 2020; Wu et al., 2020). COVID-19 first emerged in Wuhan, Hubei province, China, in December 2019, becoming a global health threat due to its rapid and deadly transmission (Ciotti et al., 2020; Susilawati et al., 2020). On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a pandemic affecting various countries worldwide. In Indonesia, the first reported COVID-19 case was on

March 2, 2020, with suspected transmission from a foreign visitor to Indonesia. In Aceh, the first reported COVID-19 case was on March 23, 2020 (Parikh et al., 2020; Susilawati et al., 2020).

COVID-19 cases in Indonesia from 2020 to 2021 have not yet shown significant change, with the current confirmed cases reaching 3,607,863 and 104,010 deaths(Khairulbahri, 2021). The COVID-19 outbreak has paralyzed all areas of activity, both work and education, from the basic to the higher education level. All activities have been conducted from home, referred to as "work from home(Olivia et al., 2020).

The government has implemented various regulations to suppress the spread of the COVID-19 outbreak, including the Large-Scale Social Restrictions (PSBB) policy and the Enforcement of Community Activity Restrictions (PPKM) policy(Setiadi et al., 2022). While the PSBB policy is almost equivalent to a lockdown, where all activities must be carried out from home, the PPKM policy allows some workers to perform activities outside the home to assist the economic sector (Miskari, 2024; Nurhayati & Saputri, 2023; Tenda et al., 2021). The PSBB policy was implemented starting in April 2021, and the PPKM policy in Aceh began on May 20, 2021 (BPBA, 2021). Although the PPKM policy allows for activities outside the home, the learning process is still conducted online. Online learning is a learning method conducted remotely through internet media and other supporting facilities such as phones and computers. (Firdaus et al., 2022)is policy cannot be immediately accepted by the public, especially for students, as it will burden them in terms of facilities and costs to purchase internet quotas(Parikh et al., 2020). The change in the learning system, which was previously done face-to-face, suddenly changed to online, causing stress for students(Okeahalam et al., 2020). According to Lazarus (in Lumonga, 2009), stress is a form of interaction between a person and the environment that is perceived as something that can burden and exceed the person's abilities and can disrupt their well-being. According to Wallace et al., (2021), stress can be in the form of demands from external factors faced by someone that can be dangerous and cause problems; stress can be interpreted as pressure, tension, or disturbance that comes from external sources and is felt to be unpleasant.

Family support plays a crucial role in moderating the stress levels experienced by students during challenging periods like the PPKM (Enforcement of Restrictions on Community Activities). Strong family support can act as a buffer against the stressors students face, helping them cope more effectively. Positive family support, such as emotional encouragement, practical assistance, and a nurturing home environment, can significantly alleviate the stress experienced by students. When students feel valued, listened to, and have access to a supportive network within their family, they are better equipped to navigate the demands of remote learning and adapt to the changes brought about by the PPKM. On the contrary, limited or dysfunctional family support can exacerbate the stress levels of students. Students who lack a supportive home environment or experience family-related stressors may find it more challenging to manage their academic responsibilities and mental well-being during the PPKM period.

During the Covid-19 period, all lecture learning activities were shifted from the campus to home, known as Distance Learning (PJJ). Various applications can be accessed to facilitate the learning process, both in completing assignments and participating in online lectures (Bashir et al., 2021). However, there are undeniably obstacles experienced by students when carrying out the online lecture process, such as no internet connection, unstable network, exhausted internet quota, household chores that must be done, limited IT mastery, and the accumulation of lecture assignments that must be completed by students, which can trigger stress (Dhawan, 2020; Sharin, 2021; Singh et al., 2021). During the Covid-19 pandemic, all activities were limited, including the learning process, which was conducted online. Various platforms to carry out the lecture process are very easily accessible, but many obstacles and challenges are felt by students, leading to the occurrence of stress. Students must make adjustments to the changes in learning during the Covid-19 pandemic. Therefore, the purpose of this study is to analyze changes in stress levels and the factors that cause stress levels in students during the Covid-19 pandemic in Aceh.

RESEARCH METHOD

This research is a survey research with a cross-sectional design and a quantitative approach. The research objective is to observe the changes in stress levels and the factors affecting them in students during the PSBB (Large-Scale Social Restrictions) and PPKM (Enforcement of Community Activity Restrictions) periods of the COVID-19 pandemic in Aceh. The research population is all students studying at private and public higher education institutions in Aceh Province. The sample was taken by random sampling with the following inclusion criteria: 1) residing in Aceh, 2) students at educational institutions in Aceh, 3) still have courses during the data collection, and 4) have filled out the first-stage questionnaire. Data collection was carried out twice, during the implementation of PSBB (December 22, 2020 - January 27, 2021) and during the implementation of PPKM (May 22, 2021 - July 2, 2021). The instrument used was the valid and reliable Perceived Stress Scale (PSS) questionnaire. The questionnaire was distributed online using Google Forms and shared through social media as well as with the assistance of lecturers and the academic community. In the first stage of data collection, there were 253 respondents, but after data cleaning, only 177 respondents met the inclusion criteria. Subsequently, the respondents who met the inclusion criteria in the first stage were contacted again to fill out the questionnaire in the second stage, and 122 out of the 177 respondents responded and filled out the questionnaire. The data analysis of this research was carried out on 122 student respondents in Aceh Province. Prior to the research, the researcher conducted a validity and reliability test on 34 midwifery students at the Aceh Ministry of Health Polytechnic in West Aceh Regency. Exclusion Criteria: Students who were on leave or on academic break, had pre-existing mental or physical health conditions, experienced significant life events unrelated to COVID-19, or had incomplete data, were excluded from the study to ensure a more homogeneous sample and improve the internal validity, allowing for a more accurate assessment of changes in stress levels and determinants among university students during the COVID-19 pandemic in Aceh. The validity test was carried out using the Pearson product moment correlation technique to determine the validity of the questionnaire. In the validity test, the calculated r-value was compared with the r-table value at a significance level of 5%, where r-table = 0.339. The analysis design in this research consists of: 1) Univariate analysis to describe the frequency distribution of the research variables in the form of proportions using STATA 14, 2) Bivariate analysis using T-test and logistic regression to test hypotheses and determine the relationship between independent and dependent variables, and 3) Multivariate analysis with multiple logistic regression to see the relationship and influence between variables simultaneously.

RESULTS AND DISCUSSIONS

Based on the research results conducted on students in Aceh using Google Forms, where the data collection was carried out twice since the date, a total of 122 respondents were obtained, regarding changes in stress levels and determinants of stress levels in students during the Covid-19 pandemic period in Aceh. The results can be presented in the form of a univariate and bivariate analysis table.

Table 1. Characteristics of respondent

Variable	Frequency	Percentage
Age		
20-25 years	77	63.11%
26-30 years	25	20.49%
31-35 years	12	9.84%
36-40 years	6	4.92%
>40 years	1	0.82%
Gender		
Male	32	26.23%

Variable	Frequency	Percentage
Female	90	73.77%
Education Level		
D-III (Associate)	4	3.28%
D-IV (Advanced Diploma)	3	2.46%
Bachelor's Degree (S1)	102	83.61%
Master's Degree (S2)	13	10.66%

Source: processed primary data

Based on Table 1, the majority of respondents are in the 20-25 year age group, comprising 63.11% of the sample, while the fewest respondents are over 40 years old, comprising only 0.82%. Female respondents make up 73.77% of the sample, compared to 26.23% male respondents. The majority of respondents have a Bachelor's Degree (S1), at 83.61%, compared to only 3.28% with an Associate Degree (D-III).

Table 2. Research variables

Variable	Pre-Test (PSBB)		Post-Test (PPKM)	
	F	%	F	%
Stress Level				
Mild Stress	2	1,64	3	2,46
Moderate Stress	74	60,66	77	63,11
Severe Stress	46	37,70	42	34,43
Learning Style				
Good	68	55,74	67	54,92
Poor	54	44,26	55	45,08
Facilities				
Good	68	55,74	90	73,77
Poor	54	44,26	32	26,23
Learning Motivation				
High	54	44,26	56	45,90
Low	68	55,74	66	54,10
Limited Quota				
Sufficient	63	51,64	66	54,10
Insufficient	59	48,36	56	45,90
Course Assignments				
Light	85	69,67	94	77,05
Heavy	37	30,33	28	61,48
IT Proficiency				
Good	80	65,57	75	61,48
Poor	42	34,43	47	22,95
Unstable Network				
Never	31	25,41	36	29,51
Often	91	74,59	86	70,49
Late for Classes				
Attending	76	62,30	81	66,39
Not Attending	46	37,70	41	33,61
Residence				
With Family	50	40,98	45	36,89
Dormitory	72	59,02	77	63,11
Employment				
Unemployed	78	63,93	81	66,39
Employed	44	36,07	41	33,69
Economic Status				
Good	110	90,16	113	92,62
Poor	12	9,84	9	7,38
Academic Performance				
Excellent	3	2,46	8	6,56
Good	112	91,80	95	77,87
Average	7	5.74	19	15,57

Based on Table 2, it can be seen that during the PSBB period, the stress level experienced by students was 60.66% moderate stress, and during the PPKM period, the moderate stress level increased to 63.11%. Poor learning styles during the PSBB period were 44.26%, which increased to 45.08% during the PPKM period. During the PSBB period, the percentage of students using good facilities was 55.74%, which was lower compared to the 73.77% during the PPKM period. Respondents with high motivation during the PSBB period were 44.26%, which increased to 45.90% during the PPKM period. Respondents with sufficient internet quota during the PSBB period were 51.64%, which was lower compared to the 54.10% during the PPKM period. Students with heavy coursework were 30.33% during the PSBB period, which increased to 61.48% during the PPKM period. Respondents with good IT proficiency during the PSBB period were 65.57%, which was higher compared to the 61.48% during the PPKM period. Respondents who often experienced unstable networks during the PSBB period were 74.59%, and during the PPKM period, this decreased to 70.49%. Respondents who were late or did not attend classes were 37.70% during the PSBB period and 33.61% during the PPKM period. Respondents living in boarding houses were 59.02% during the PSBB period and 63.11% during the PPKM period. Respondents who were not working during the PSBB period were 63.93%, and this increased to 66.39% during the PPKM period. Respondents with good economic conditions during the PSBB period were 92.62%, whereas the economic conditions of respondents during the PPKM period decreased to 90.16%.

Table 3. Results of univariate analysis for the PSBB and PPKM periods

Variable Stress Level	Frequency	Mean	95% CI	P value	T Test
PSBB	122	25.44262	24.53-26.34	0.6721	0.4243
PPKM	122	25.21311	24.34-26.08		
Learning Style					
PSBB	122	8.852459	8.53-9.17	0.4038	0.8378
PPKM	122	8.696721	8.33-9.05		
Facilities					
PSBB	122	20.35246	19.6-21.08	0.0217	-2.3255
PPKM	122	21.30328	20.68-21.92		
Learning Motivation					
PSBB	122	25.4098	24.35-26.46	0.5787	0.5568
PPKM	122	25.0819	24.12-26.04		
Internet Quota					
PSBB	122	5.147541	4.79-5.5	0.0829	-1.7488
PPKM	122	5.47541	5.11-5.83		
Coursework					
PSBB	122	5.877049	5.6-6.1	0.7205	0.3586
PPKM	122	5.827869	5.6-6		
IT Proficiency					
PSBB	122	2.9188033	2.6-3.1	0.9559	-0.0554
PPKM	122	2.92623	2.6-3.1		
Network					
PSBB	122	8.540984	8.2-8.87	0.2939	1.0541
PPKM	122	8.336066	8-8.6		
Late to Class					
PSBB	122	4.008197	3.8-4.2	0.3661	-0.9072
PPKM	122	4.131148	3.9-4.3		
Residence					
PSBB	122	1.409836	1.3-1.4	0.3553	0.9279
PPKM	122	1.368852	1.2-1.4		
Employment					
PSBB	122	0.3606557	0.27-0.44	0.5658	0.5758
PPKM	122	0.3360656	0.25-0.42		
Economy					
PSBB	122	1.114754	1-1.2	0.6267	-0.4187
PPKM	122	1.139344	1-1.2		

Variable Stress Level	Frequency	Mean	95% CI	P value	T Test
GPA					
PSBB	122	3.568689	3.5-3.6	0.00001	4.6557
PPKM	122	3.454016	3.3-3.5		
Zone					
Orange Zone	73	25.71233	24.6-26.7	0.1665	1.3920
Red Zone	49	24.46939	22.9-26.0		

Based on the findings from Table 3, the results of the T-tests indicate that there are generally no substantial differences in various aspects between the PSBB and PPKM periods. Specifically, the analysis reveals minimal mean differences in several factors: living conditions (0.0409836), stress levels (0.2295082), learning styles (0.1557377), motivation (0.3278689), internet quota (0.1557377), coursework (0.0491803), IT proficiency (-0.0081967), unstable network experiences (0.204918), late attendance (-0.1229508), employment (0.0409836), and economic conditions (-0.0245902). Across these variables, the T-test results show non-significant p-values ranging from 0.0217 to 0.9559, suggesting no statistically significant changes during the PSBB and PPKM periods. Notably, the analysis did reveal a significant mean difference in facilities (-0.9508197), with a T-test result of -2.3255 and a p-value of 0.0217, indicating a statistically significant change in facilities between the two periods. These findings collectively suggest that while most aspects remained stable, there was a notable shift in facilities provision during the transition from PSBB to PPKM.

Table 4. Bivariate analysis results pre-test (PSBB period)

Variable		Stress Level PSBB								
		Heavy		Moderate		Heavy		Total	OR (95% CI)	P value
Learning Style	Good	0	0,00	44	64,71	24	35,29	68	1,13 (0,5-2,3)	0,0001
	Poor	2	3,70	30	55,56	22	40,74	54		
Facilities	Good	0	0,00	42	61,76	26	38,24	68	0,86 (0,4-1,7)	0,632
	Poor	2	3,70	32	59,26	20	37,04	54		
Motivation	High	1	1,85	25	46,30	28	51,85	54	0,35 (0,16 0,74)	0,148
	Low	1	1,47	49	72,06	18	26,47	68		
Internet Quota	Adequate	0	0,00	37	58,73	26	41,27	63	0,67 (0,3-1,4)	0,012
	Insufficient	2	3,39	37	62,71	20	33,90	59		
Coursework	Light	1	1,18	59	69,41	25	29,41	85	2,94 (1,3-6,5)	0,014
	Heavy	1	2,70	15	40,54	21	56,76	37		
IT Proficiency	Good	2	2,50	47	58,75	31	38,75	80	0,94 (0,44-2)	0,144
	Poor	0	0,00	27	64,29	15	35,71	42		
Network	Never	0	0,00	20	64,52	11	35,48	31	1,06 (0,4-2)	0,100
	Often	2	2,20	54	59,34	35	38,46	91		
Attendance	Followed	2	2,63	42	55,26	32	42,11	76	0,66 (0,3-1,4)	0,234
	Not Followed	0	0,00	32	69,57	14	30,43	46		
Employment	Unemployed	0	0,00	48	61,54	30	38,46	78	0,77 (0,37-1,6)	0,390
	Employed	2	4,55	26	59,09	16	36,36	44		
Economic Status	Good	1	0,91	69	62,73	40	36,36	110	1,4 (0,4-5)	0,972
	Poor	1	8,33	5	41,67	6	50	12		
Age	18-19 Years	2	5,41	19	51,35	16	43,24	37	0,98 (04-2,1)	0,963
	20-25 Years	0	0,00	50	64,94	27	35,06	77	0,8 (0,36-1,83)	0,188
	26-30 Years	0	0,00	3	60,00	2	40,00	5	1 (0,15-6,5)	0,337
	36-40 Years	0	0,00	1	50,00	1	50,00	2	1,4 (0,08-24)	0,490
	>40 Years	0	0,00	1	100,00	0	0,00	1	0,1 (0,0-19)	0,963
Gender	Male	2	6,25	18	56,25	12	37,50	32	1,19 (0,5-2,7)	0,303
	Female	0	0,00	56	62,22	34	37,78	90		
Residence	With Family	0	0,00	32	64,00	18	36,00	50		
	Boarding	2	2,78	42	58,33	28	38,89	72	1,04 (0,5-2,1)	0,295
Academic Index	Excellent	1	12,5 0	5	62,50	2	25,50	8		
	Good	2	2,11	66	69,47	27	28,42	95	1,8 (0,3-10)	0,512

Variable	Stress Level PSBB								
	Heavy		Moderate		Heavy		Total	OR (95% CI)	P value
Satisfactory	0	0,00	6	31,58	13	68,42	19	9,7 (1,3-70)	0,024

Source: Data processed from primary data (2021)

The data in Table 4 indicates that students with good learning styles have a 74.63% rate of moderate stress, while those with poor learning styles have a higher 50.91% rate of severe stress, with an odds ratio of 4.15 showing that students with poor learning styles are 4.15 times more likely to experience stress, and a highly significant p-value of 0.0001. In contrast, students with good facilities have 62.22% moderate stress and 35.56% severe stress, compared to 65.63% moderate stress for those with poor facilities, indicating no significant relationship between facilities and stress levels (OR 0.81, p-value 0.632). Highly motivated students have a 57.81% moderate stress rate, lower than the 68.97% for low-motivation students, but the relationship between motivation and stress is not statistically significant (OR 0.54, p-value 0.115). However, students with sufficient internet quotas have a significantly lower severe stress rate of 24.24% compared to 46.43% for those with insufficient quotas (OR 2.6, p-value 0.012). The analysis found no other significant relationships between factors like coursework load, IT proficiency, network stability, class attendance, employment status, economic status, age, or gender with students' stress levels.

A study conducted by PH et al.,(2020)on students in 22 provinces in Indonesia found that one of the causes of stress in students during the Covid-19 pandemic was the heavy workload of lecture assignments (70%), 55.8% felt stressed due to the online learning process becoming boring, and 40.2% stated that stress was caused by the inability to meet with fellow students. Meanwhile, a study conducted at STIKES Karya Husada Kediri by Sari (2020) found that during the Covid-19 pandemic, many students experienced moderate (38.57%) and severe (28.57%) levels of stress. The factors influencing the stress levels of students include fear of being infected with Covid-19, worries when going out, boring lectures, and difficulty in understanding the material presented during online lectures. These studies provide an overview and magnitude of the stress problems experienced by students during the Covid-19 pandemic, but do not identify the dominant factors influencing stress levels during this period. During the Covid-19 pandemic era, each student needs to adapt to the changed learning environment(Anggraini, 2021; Laksmini et al., 2021; Nugrahati Carsita et al., 2022). During the Covid-19 pandemic, the learning style has changed from previously being conducted in-person to now being conducted online. Online learning has its advantages, such as flexibility in terms of time, students can be more independent in their learning, and it encourages students to delve deeper into technology(Agustini et al., 2022; Kridarso et al., 2021). However, the disadvantages of online learning include students having difficulty understanding the lessons well, and a decrease in student motivation and interest(Warfvinge et al., 2022). The online learning process burdens students financially and mentally, due to the limited funds to purchase internet data packages. This situation is exacerbated by the financial condition of the students' families, which in some cases have also been problematic due to the pandemic.

CONCLUSION

The study findings provide a comprehensive understanding of the factors contributing to the stress levels experienced by students during the PPKM (Enforcement of Restrictions on Community Activities) period. The research highlighted that learning style and internet data quota are the two primary factors significantly impacting the stress levels of students in this challenging period. The analysis revealed that students with a poor learning style are 4.15 times more at risk of experiencing stress compared to those with a more effective learning style. This suggests that the ability to adapt to the online learning environment and the personal preference for certain learning modalities play a crucial role in mitigating the stress experienced by students during the PPKM

period. Furthermore, the study found that students with an insufficient internet data quota are 2.6 times more at risk of experiencing stress than those with adequate data access. The limited availability of reliable and stable internet connectivity can significantly hinder a student's ability to engage effectively in remote learning, leading to heightened stress levels. On the other hand, the study did not find a significant relationship between other factors, such as facilities, motivation, and others, with the stress levels of students during the PPKM period. This indicates that learning style and internet data quota are the two key determinants that must be addressed to effectively manage and mitigate the stress experienced by students in such challenging times. These findings hold important implications for educational stakeholders, policymakers, and support systems. By focusing on strengthening learning style adaptability and ensuring equitable access to reliable internet connectivity, interventions can be tailored to address the specific needs of students and alleviate the stress they face during periods of restricted community activities. This holistic approach can contribute to the overall well-being and academic success of students, particularly in navigating the challenges posed by the PPKM period.

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