

Stress Level of University Students in West Java Indonesia During Early Covid-19 Pandemic

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Abstract

The Covid-19 pandemic forces policy changes to move learning activities from school to home and change the learning model. It is implied students are burdened with homework assignments, both from family and school, which make them experience stress. The purpose of this study is to analyze the stress level of university students during the early Covid-19 pandemic in West Java, Indonesia. This study used quantitative with cross-sectional design. The study took place in March-April 2020, 1 to 2 months after the first case of Covid-19 in Indonesia. A total of 330 students were taken as subjects in this study purposively. The instrument used was a Perceived Stress Scale (PSS) questionnaire with the Google form spread by social media. Data were analyzed using the chi-square test. Most of the students had moderate stress levels (78.8%) and there were 16.7% had severe stress.

Keywords: Covid-19, stress level, university student.

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Introduction

The SARS-CoV-2 virus that causes Covid-19 (Coronavirus Disease) was first reported in December 2019 in Wuhan, China. The reported symptoms of COVID-19 were likely pneumonia respiratory with acute respiratory distress syndrome ultimately leading to death in the most severe cases. Other reports had also been shown to affect other organs, including the brain, and recent reports on neurological symptoms.

The spread of the virus swiftly became a global health threat, on 11 Mar 2020, the WHO declared the outbreak a global pandemic (Anand, Karade, Sen, & Gupta, 2020). Many countries have implemented lockdowns and restrictions on activities outside the home. These conditions give rise to psychological disorders at the individual, community, national, and even international.

Covid-19 was first reported in Indonesia on March 2, 2020, with two cases. Two weeks later, the school was closed and community activities were restricted. The government promotes activities restriction campaigns through the taglines 'Social distancing', 'physical distancing', 'work from home, and 'school from home' (Tjahjana, Dwidienawati, Manurung, & Gandasari, 2021)

COVID-19 not only causes physical health concerns but also results in several psychological disorders. The spread of the disease impacts the mental health of people in different communities (Salari et al., 2020). Such psychological changes are instigated by fear, anxiety, depression, or insecurity (Zhang et al., 2020). People are more likely to fear getting sick or dying, feeling helpless, and being stereotyped by others (Hall, Hall, & Chapman, 2008). In the early stages of the pandemic, severe symptoms of anxiety, stress, and depression were found. Younger people, people spending too much time thinking about the outbreak, and healthcare workers were at high risk of mental illness (Huang & Zhao, 2020). Higher levels of depression and loneliness have been reported among adolescents and young adults, which has been attributable to the increased stress associated with the pandemic (Brazendale et al., 2017; Casagrande, Favieri, Tambelli, & Forte, 2020). This might be due, to young individuals' educational, economic, and social lives being highly disturbed by the public health crisis (Cao et al., 2020).

A few-day period of isolation causes severe consequences to society, such as post-traumatic stress symptoms, anger, and the fear of infection (Brooks et al., 2020). The other consequences were boredom, frustration, and separation from others. Students seem to be particularly sensitive to the effects of a pandemic. They do not have experience in self-organizing their days and are active in institutional structures, such as schools (Brazendale et al., 2017).

School closures have been widely used as a risk mitigation practice during the COVID-19 pandemic. The policy of transferring learning activities from school to home has implications for changing the learning model, from face to face to online (Pajarianto, Kadir, Galugu, Sari, & Februanti, 2020). Studies in China conclude that students aged 9 to 16 years showed an increase in depressive symptoms and suicidal thoughts and behaviors compared with before the implementation of COVID-19 home isolation restrictions (Zhang et al., 2020). Potential pathways through which remote schooling could negatively affect mental health include loss of social connection disrupted routines, and stress-related to online learning (Lee, 2020). Older students, who are forming more complex social relationships and high stakes academic outcomes, may be at heightened risk (Hawrilenko, Kroshus, Tandon, & Christakis, 2021). With the quick closures of universities, students face uncertainty and concern about their academic future, as well as social isolation and a lack of support (Elmer, Mepham, & Stadtfeld, 2020). High levels of stress, anxiety, and depression are partly due to the academic, social, and personal demands of navigating through higher education (Ribeiro et al., 2018).

The impact of remote learning may have negative consequences on student well-being. The study reported higher levels of stress and isolation as well as negative mood during the asynchronous online learning experience, compared to a traditional face-to-face learning environment (Besser, Flett, & Zeigler-Hill, 2020). Difficulty accessing and engaging with distance learning due to technological limitations is most likely for youth from families with the lowest income, which may contribute to inequitable distress during remote learning. The problem may be heightened among families with low income who lack financial resources, while the families are struggling to support their child's at-home learning (Armitage & Nellums, 2020; Garbe, Ogurlu, Logan, & Cook, 2020).

Stress at home has a significant effect on the relationship with students' academic performance. It is implied that when students are burdened with homework assignments – both from family and school, make they experience stress, and this can affect their academic performance (Cornelius-Ukpepi & Ndifon, 2015). Previous studies explored stress of university students during normal situation, while

current study examine whether social isolation cause by covid 19 increase stress level among student (Ribeiro et al., 2018; Lee, 2020). Students are accustomed to activities outside the home, both for studying, organizing, socializing, and doing their activities. It is feared that activity restrictions during the pandemic could increase student stress levels. The purpose of this study was to analyze the stress level of university students during the early Covid-19 pandemic in West Java, Indonesia.

Methods

Design and Participants

This study used quantitative with cross-sectional design. The study took place from March to April 2020, 1 to 2 months after the first case of Covid-19 in Indonesia. Participants were recruited from the student of universities, colleges, and polytechnics in West Java. Respondents were recruited through WhatsApp, email, and messenger. A total of 330 students were taken as subjects using snowball sampling. The inclusion criteria were participants still have been enrolled as undergraduate students at the time of the study.

Instrument

The instrument used was a questionnaire. The characteristics of the respondents contain data on age, gender, university/ college, city of residence, study program, physical activity, and stress level. Physical activity using IPAQ (International Physical Activity Questionnaire). Physical activity was categorized into light, moderate, and vigorous. The stress level used the Perceived Stress Scale (PSS)-10 questionnaire with Cronbach's alpha was 0.78. PSS consists of 10 questions (1). *upset because of something that happened unexpectedly*; (2). *felt unable to control the important things in life*; (3). *felt nervous and stressed*; (4). *felt confident about the ability to handle personal problems*; (5). *felt that things were going the way*; (6). *could not cope with all the things that had to do*; (7). *able to control irritations in the life*; (8). *felt on top of things*; (9). *angered because of things that happened that were out of control*; (10). *felt difficulties were piling up so high and could not overcome them*. For each question choose from the following alternatives: 0 (never), 1 (rarely), 2 (sometimes), 3 (fairly often), and 4 (very often). A total PSS score per participant was calculated by first

reversing the scores of the positive items (4 and 7) and then adding all the ten scores. Stress levels are categorized into three, normal/low (0-13), moderate (14-26), and severe (27-40)(Vallejo, Vallejo-Slocker, Fernández-Abascal, & Mañanes, 2018).

Data procedures and collection

The data was collected through an online survey using Google Forms that was conducted by the authors. Before filling out the questionnaire, participants were provided information about the study and asked for their consent to be involved in this study. There was no coercion in this study and participants have the right to withdraw before the study was complete. The ethical approval was issued from STIKes Kuningan Number 37/EP/STIKKU/2020. Participation was voluntary and participants were not compensated.

Data analysis

First, descriptive statistics were compiled to describe participants' demographics (eg, age, gender, city, study program, physical activity) and the distribution of the ratings on PSS-10 survey items. A total PSS score per participant was calculated by first reversing the scores of the positive items (4 and 7) and then adding all the ten scores. A mean (SD) PSS score was computed to evaluate the overall level of stress and anxiety among the participants during the COVID-19 pandemic. *Second*, all variables associated with stress level using the chi-square test. Data analysis was using the software Statistical Product and Service Solution (SPSS) 22.0 for a windows computer program.

Results

This study was conducted with 330 students from two universities, eight colleges, and one Polytechnique in West Java, Indonesia. Most of the respondents were students under 21 years old (92.1%), female (68.2%), living in Bandung/ capital City (59.1%), non-sport study program (60.9%), high physical activity (40.6%), and had moderate stress (78.8%) (table I).

Table 1.
Characteristics of participants

Variable	Amount	Percentage
Ages		
- Teen (< 21 y.o)	304	92,1
- adult	26	7,9
Sex		
- male	105	31,8
- female	225	68,2
Cities		
- Capital city	195	59,1
- Rural city	135	40,9
Study program		
- sport	129	39,1
- non-sport	201	60,9
Physical activity		
- light	108	32,7
- moderate	88	26,7
- vigorous	134	40,6
Stress level		
- low/normal	15	4,5
- moderate	260	78,8
- severe	55	16,7

A bivariate analysis was conducted to see the relationship between ages, gender, city residence, study program, physical activity, and stress levels. Sex ($p=0.046$), cities of residence ($p=0.037$) and major of study ($p=0.007$) associated with stress level ($p < 0.05$) as described in table 2.

Table 2.
Stress level according to characteristics of respondents

Variables	Stress level			P-value
	Low	moderate	severe	
Ages				
- Teen	13 (4.3)	243 (79.9)	48 (15.8)	0.291
- Adult	2 (7.7)	17 (65.4)	7 (26.9)	
Sex				
- Boys	2 (1.9)	79 (75.2)	24 (22.9)	0.046
- Girls	13 (5.8)	181 (80.4)	31 (13.8)	
Cities				
- Capital city	8 (4.1)	146 (74.9)	41 (21)	0.037
- rural cities	7 (5.2)	114 (84.4)	14 (10.4)	
Study program				
- sport	2 (2.3)	95 (73.6)	31 (24)	0.007
- non-sport	12 (6.0)	165 (82.1)	24 (11.9)	
Physical activity				
- light	6 (5.6)	89 (82.4)	13 (12)	0.057
- moderate	5 (5.7)	73 (83)	10 (11.4)	
- vigorous	4 (3.0)	98 (73.1)	32 (23.9)	

In table 2 it can be seen that the proportion of male students is more likely to experience severe stress when compared to female students. Also, more proportion of female students experienced light stress (5.8%). When compared from the place of residence, students in capital cities experience more severe stress than students in rural cities. Some of the respondents in this study were sports students, university students were divided into sport and non-sport students. The proportion of sports students who experience severe stress is greater than that of non-sport students. In addition, low stress/ normal is more experienced by non-sport students. When viewed from physical activity, the results showed that students who had vigorous activity had more severe stress (23.9%) compared to the other two physical activities. Although, the proportion is almost the same in every physical activity category for the low stress/normal.

Discussion

The COVID-19 pandemic constitutes a pervasive source of potential stress on a global scale. Many countries – including Indonesia, swiftly instituted strict control measures, normal routines were drastically disrupted with the closing of businesses, industries, and schools – and the requirement that individuals remain at home. Such behavioral changes can be expected to negatively impact individuals' mental health and/or emotional well-being (Yan et al., 2021). Higher rates of symptoms of anxiety, depression, post-traumatic stress disorder, psychological distress, and stress were reported in several countries of the world during the current COVID-19 pandemic (Xiong et al., 2020).

College students were considered particularly vulnerable to mental health concerns. Our finding shows that most students in west Java had moderate and severe stress levels during the early Covid-19 pandemic. Before the COVID-19 pandemic suggested that university students are vulnerable to stressors related to academic and relational life characteristics, likely to cause psychological distress (Graner & Cerqueira, 2019). The COVID-19 pandemic has forced leaders of the nation to take drastic measures that affect how citizens and students interact and socialize with each other. In many countries around the world, individuals are required to reduce physical contact with others (social distancing)(Anderson, Heesterbeek, Klinkenberg, & Hollingsworth, 2020). According to UNESCO, from April 2020 schools have been suspended nationwide in 188 countries. Over 90% of enrolled learners (1.5 billion young people) worldwide are now out of education and have to study at home (Lee, 2020).

The rising concern about the current COVID-19 pandemic, several universities around the world have postponed or canceled all scheduled events and changed the teaching courses from face-to-face to online teaching platforms with a potential impact on the education and mental health of students (Gewin, 2020; Lau, Yang, & Dasgupta, 2020). This study used a perceived stress scale due to Perceived stress is a predictor of greater vulnerability with consequent learning difficulties (Taylor, Agho, Stevens, & Raphael, 2008). Most of the students experienced moderate and severe stress during their studies. Although the students' social networks and mental health trajectories cannot be understood independently of each other (Elmer,

2019), the university lockdown and social distancing measures negatively affect the social integration of some individuals, partly leaving them isolated, while more social support might be needed to cope with the additional stress factors (Elmer et al., 2020).

Social interaction is a fundamental need for many people (Baumeister & Leary, 1995). A reduction of it, as is likely to be caused by the crisis and distancing measures, can lead to lower mental health (Kawachi & Berkman, 2001). Several COVID-19-specific stressors among those are worried about one's physical health, the health of others, the economic impact, a changing educational environment on the progress of their studies, and also future job opportunities (Elmer et al., 2020).

The study of Ye, et.al showed that COVID-19 correlates with perceived stress among non-infected university students in China. Covid-19-related stressful events were directly associated with higher levels of ASD symptoms, but such a link could be indirectly mitigated by intrapersonal (resilience, adaptive coping strategy) and interpersonal factors (social support), although maladaptive coping strategies did not show similar results (Ye et al., 2020).

This study correlates with Lade, Chib, Karangutkar, & Jha, (2021) stated that covid-19 affects the mental health of management program students. The study used Exploratory Factor Analysis and converged on five factors named Academic Performance, Self-Management, Family Expectation, Future Anxiety, and Online Class Compatibility. Derived five factors together explained 73.29 % of students' mental health (Lade et al., 2021).

Sex correlates with perceived stress. The males have greater percentages of severe stress than females. This finding is inappropriate with Timon's study stating that female students appeared to be at higher risk of facing negative mental health consequences such as the students who live by themselves, have less direct contact to close family members and friends, receive less social support, and have a weaker integration in the social networks of students (Elmer et al., 2020).

In this study, male students indicated higher levels of stress might be caused by activity restrictions that forced them to stay at home. Male students had higher values for Parental Expectations and Anger, as a reaction to the imposed isolation (Iancheva, Rogaleva, García-Mas, & Olmedilla, 2020). Male students react more strongly to isolation and restriction. In addition, female students tend to be better socially integrated and report more sources of support than male students. They could rely on denser support networks potentially helping them to buffer the negative effects of the crisis (Fuhrer, Stansfeld, Chemali, & Shipley, 1999).

There is a significant correlation between the place of residence and stress levels. Students living in the capital city (Bandung) experience more severe stress than students in urban villages. The previously high mobility should be lowered in line with restrictions on outdoor activities. In general, urban residents are also accustomed to doing recreation during holidays and weekends. They believe those who participate in outdoor recreation more frequently are likely to be in better health (Thomsen, Powell, & Allen, 2014). In response to the COVID-19 pandemic, those from urban areas are significantly more impacted than those from rural areas. Travel and physical distancing restrictions are impacting the recreation patterns of urban populations, who are generally bound by the tightest restrictions (Tufan & Kayaaslan, 2020). Loss of access to outdoor recreation opportunities inhibits individuals' abilities to engage with restorative natural environments and escape the pressures of the crisis (stress relief, socialization, nature appreciation) (Rice et al., 2020).

Major/ study program of students divided into sport and non-sport students. The study program significantly correlates with stress levels. Sport students experience severe stress compared to non-sport students. The influence of sport and physical activity during the pandemic among students must be regarded as dependent on the study subject. Students of sport science felt more restricted in their sporting exercises than other students (Pietsch, Linder, & Jansen, 2022). From a life full of high physical activity, extensive traveling, competitions, and strong emotions arising from sports-competitive activities, sport students had to adapt to living in an isolated environment without

being able to practice their usual activities, having unclear prospects, and experiencing fear of getting diseased (lancheva et al., 2020).

Physical activity does not correlate with stress levels. It can be understood that most students in West Java have vigorous physical activity, but their stress level is moderate and severe. Although, the students do physical activity, social restrictions and reduced of their freedom increase the stress. This finding is not appropriate to the study of Zhai et.al, which stated that compared with students who showed sufficient physical activity, the prevalence of high levels of perceived stress among students with insufficient physical activity was greater (Zhai et al., 2020).

Another study stated that physical activity could influence physiological and psychological stress resilience in young adults. Vigorous Physical Activity has a high stress-protective potential among undergraduate students with high-stress levels (Gerber et al., 2017). Active people tend to view problems as controllable and challenging, stay committed to problems that arise, and feel valuable and competent in overcoming general and interpersonal problems(Clough, Earle, & Sewell, 2002).

In contrast to physical activity, student study programs are correlated with stress levels. Sports students have a higher percentage of stress levels compared to non-sport programs. This may be caused by changes in learning which are usually directly in the field, changing to remote learning through online media (zoom).

This finding also showed that students in West Java had vigorous physical activity during an early pandemic. This finding is different from other studies that stated that pandemics decrease physical activity (Katewongsa, Widyastaria, Saonuam, Haematulin, & Wongsingha, 2020; Maugeri et al., 2020). Quarantine in Italy causes a significant reduction of total weekly physical activity energy expenditure in all age groups, especially in men, and negatively affects their psychological well-being. While, physical activity has a positive impact on psychological health, by enhancing self-esteem and resilience to stress and decreasing depression and anxiety(Maugeri et al., 2020). Physical activity also did play an important role in the

handling of the pandemic. It was shown that patients with COVID-19 and inactive, had a greater risk for hospitalization, intensive care unit admission, and death (Sallis et al., 2021).

Indonesia does not apply lockdown or quarantine. People have more time for activities, including students. Online learning gives you more time to do physical activity. maintaining regular physical activity during self-isolation is important for the prevention of chronic health conditions in the future. All physical activity is beneficial and doing something is better than doing nothing, reducing long sitting time and reducing it with short active breaks during the day (Jakobsson, Malm, Furberg, Ekelund, & Svensson, 2020).

In comparison with stress and anxiety in college students' general life, it appears that countermeasures put in place against COVID-19, such as shelter-in-place orders and social distancing practices, may have underpinned significant changes in students' lives. For example, a vast majority of the participants noted changes in social relationships, largely due to limited physical interactions with their families and friends.

The limitation of this study is that participants were taken using snowball sampling so that the proportion of students concentrated on large campuses in West Java. In addition, the level of stress is assessed by perceived stress, not through an expert examination (psychologist). Additionally, a majority of our participants were from sports majors. We categorize them into the sport and non-sport programs. Therefore, future work is needed to use a stratified nationwide sample across wider disciplines to verify and amend these findings. Also, we need to examine how coping strategies and student resilience are after the two-year pandemic. Psychological resilience is the dynamic process to adapt positively to conditions, protecting against stress, and predictive of well-being (Connor & Davidson, 2003; Galatzer-Levy & Bonanno, 2013; Sisto et al., 2019).

Conclusion

Most of the students in West Java had moderate stress levels during the early Covid19 pandemic. Sex, cities of residence, and program/ major of study correlate with stress levels significantly. Future studies

could focus on the effects of the pandemic on students' mental health in later phases of the peak period. Further study is also needed to determine more deeply probing the relationships between various coping mechanisms and stressors.

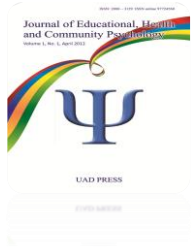
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