Perception of Online Learning with Anxiety and Stress Level Among Medical Students

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Abstrak

Tujuan: Penelitian ini bertujuan untuk mengetahui hubungan persepsi pembelajaran daring dengan tingkat kecemasan dan stres pada mahasiswa kedokteran. **Metode:** Penelitian ini merupakan penelitian observasional analitik dengan pendekatan *cross-sectional*. Sampel terdiri dari 213 mahasiswa S1 Fakultas Kedokteran Universitas Sebelas Maret (UNS) dan pengambilan data menggunakan total sampling. Penelitian dilakukan dengan menggunakan *Taylor Manifest Anxiety Scale* (TMAS), *Perceived Stress Scale* (PSS), dan kuesioner persepsi pembelajaran daring. Data dianalisis menggunakan uji *Chi-square, Cramer's V*, dan *Kendall tau b.* **Hasil:** Penelitian ini menunjukkan ada hubungan yang signifikan antara persepsi pembelajaran daring dengan kecemasan (p=0.049) dan tingkat stres (p=0,007). Jenis kelamin juga memiliki hubungan dengan kecemasan (p=0,010) dan tingkat stres (p=0,004). Selain itu, perempuan lebih tinggi pada tingkat kecemasan dan stres dibandingkan dengan laki-laki. **Kesimpulan:** Persepsi terhadap pembelajaran daring berhubungan dengan tingkat kecemasan dan stres pada mahasiswa kedokteran.
Kata kunci: *Kecemasan; Mahasiswa kedokteran; Pembelajaran daring; Stres*

Abstract

*Objective: This study aimed to find out the association between the perception of online learning and anxiety as well as stress levels among medical students. **Methods:** This is an observational analytic study with a cross-sectional approach. The sample was comprised of 213 undergraduate medical studentsept at Medical Faculty Universitas Sebelas Maret (UNS) and data were collected using total sampling. The study was conducted using the Taylor Manifest Anxiety Scale (TMAS), Perceived Stress Scale (PSS), and perception of online learning questionnaires. Data were analyzed using Chi-square, Cramer's V, and Kendall tau b test. **Results:** This study shows a significant correlation between the perception of online learning and anxiety (p=0.049) as well as stress level (p=0.007). Sex also has an association with anxiety (p=0.010) and stress level (p=0.004). Furthermore, female has higher anxiety and stress levels compared to male. **Conclusions:** Perception of online learning is related to the anxiety and stress level among medical students.*
Keywords: Anxiety; Medical student; Online learning; Stress

INTRODUCTION

COVID-19 pandemic has impacts on various aspects such as health care, social-economic, tourism, and also education. Due to this pandemic, the government started to implement online learning both at school and universities. Online learning is a new thing for college students so they have to adapt to this new system. Online learning creates a new environment and curriculum for students, making them susceptible to anxiety and stress.[1]

Anxiety is a negative emotion that is characterized by a premonition and a somatic sign of stress. Anxiety is similar to fear but with a non-specific focus.[2] Anxiety can be divided into several degrees, such as mild anxiety, moderate anxiety, severe anxiety, and panic.[3] Stress is psychological distress that occurs when the body faces certain stressor.[4] Stress can be caused by a situation that the individuals couldn't control and then it stimulates them to do some assessments of the situation they are facing.[5]

The prevalence of anxiety among college students during this COVID-19 pandemic was about 7.7% and it was affected by certain factors such as health conditions, epidemic factors and also educational factors.[6] Besides that, about 71.26% of college students experienced increased stress levels during the pandemic, 23.26% of students with the same stress level as before the pandemic, and 5.48% with decreasing stress levels. Stress among students can be caused by some conditions including academic problems, uncertainty in the pandemic condition, family and personal health problems, and also financial problems.[7]

Medical students are more susceptible to anxiety and stress compared to other students because they experienced higher stressors such as long study hours, a lot of study load as well as considerable financial pressures.[8] Learning activities including clinical skills learning that switched to online learning makes it more difficult for students to learn clinical skills.

During online learning, students are required to actively learn independently besides many tasks to do. All of these lead to dissatisfaction among students during the online learning process and in the end, cause difficulty for students to understand the materials.[1] Students' perception of online learning indicates how well the process of online learning is going. Perception of online learning is associated with psychological distress, especially anxiety caused by ineffective online learning as well as the fear of academic failure experienced by the students.[9]

There were limited studies that found the correlation between online learning and psychological conditions in college students. Based on research by Andiarna and Kusumawati (2020), there was a significant correlation between online learning and academic stress in college students.[1] Based on research by Yanti and Nurwulan (2021), there was no significant correlation between online learning and anxiety, stress, and depression.[10] Due to differences in results and uncertainty, in conclusion, further study needs to be done. This study aimed to find out the correlation between the perception of online learning and the anxiety as well as stress level in medical students at Universitas Sebelas Maret (UNS).

METHODS

This is an observational analytic study with a cross-sectional approach. The study was conducted in May 2021 and took place at the Faculty of Medicine, UNS. The independent variable was the perception of online learning, while the dependent variables were anxiety and stress levels. The subjects of this study were 216 undergraduate medical students in the year 2019 and 2020. A total of 213 respondents met the inclusion criteria and were willing to take part in this study and complete all the questionnaires used in this study. This research got an ethical clearance given by the Ethics Committee of Dr. Moewardi Hospital with the number 487/IV/HREC/2021 on April 21, 2021.

The Taylor Manifest Anxiety Scale (TMAS) questionnaire was used to measure the level of anxiety and The Perceived Stress Scale (PSS) questionnaire was used to measure the level of stress. The TMAS questionnaire and PSS questionnaire have been proven valid and reliable. The TMAS questionnaire with a validity test showed a value of 0.86 and a reliability test with a Cronbach alpha value of 0.708.[11,12] The PSS questionnaire with a validity test obtained a value of 0.84 and Cronbach's alpha value of 0.78.[13,14] Meanwhile, the perception of online learning questionnaire was an instrument used to measure the student's perception of online learning and this questionnaire had been validated by the author.

In this study, a validity and reliability test was carried out for the perception of the online learning questionnaire. This questionnaire was adapted and modified from the questionnaire used by Maulana and Hamidi (2020) and Saragih, et. al (2020).[15,16] Perception of online learning questionnaire consists of 16 question items. Based on the validity test, 3 question items were invalid and the author decided to eliminate those items so there were only 13 valid questions left. Based on the reliability test, the instrument has a Cronbach alpha value of 0.881 so we can conclude that this instrument was reliable.

Respondent characteristic data, anxiety level, stress level, and perception of online learning were analyzed using univariate analysis. Furthermore, a bivariate analysis was performed using Chi-square, Cramer's V, and Kendall tau b test with a significance limit of p-value ≤ 0.05. The statistical analysis was done by using IBM SPSS 25.0 for Windows.

RESULT AND DISCUSSION
Study Characteristic

Table 1. Characteristic Distribution of the Sample

Characteristic	Frequency (n=213)	Precentage (%)
Sex		
Male	67	31,5%
Female	146	68,5%
Age (years)	19.17 (± 0.87)	
Perception of Online Learning	50.18 (± 6.65)	
Bad	12	5.6%
Neutral	77	36.2%
Good	124	58.2%

Anxiety Level	23.11 (± 9.19)	
No Anxiety	126	59.2%
Mild	35	16.4%
Moderate	33	15.5%
Severe	19	8.9%
Stress Level	18.98 (± 4.46)	
Very Low	0	0.0%
Low	11	5.2%
Average	38	17.8%
High	89	41.8%
Very High	75	35.2%

Data with numeric scale were described with mean (± standard deviation).

This study was conducted in May 2021 at UNS using a total of 213 research samples. 68.5 percent of responders were female. The mean age was 19.17 (±0.87) years, with minimum and maximum ages of 18 and 22 years, respectively. And then, the majority have good perception of online learning (58.2%), no anxiety (59.2%) on anxiety level, and high stress level (41.8%). The characteristic of all respondents is stated in Table 1. In this study, there were medical students experiencing anxiety and stress with age between 18-22 years old. The age of 18-25 years old was categorized as late adolescent which means that all of the respondents in this study were in the same group of age. Distribution of sex with perception of online learning, anxiety, and stress level was visualized in Table 2 and showed an association between sex with anxiety (p=0.010) and stress level (p=0.004).

Table 2. Distribution of Sex with Perception of Online Learning, Anxiety and Stress Level

	Sex		p
	Male	Female	
Perception of Online Learning			
Bad	2 (3.0%)	10 (6.8%)	0.430
Neutral	24 (35.8%)	53 (36.3%)	
Good	41 (61.2%)	83 (56.8%)	
Anxiety Level			
No	47 (70.1%)	79 (54.1%)	0.010
Mild	10 (14.9%)	25 (17.1%)	
Moderate	7 (10.4%)	26 (17.8%)	
Severe	3 (4.5%)	16 (11.0%)	
Stress Level			
Very Low	0 (0.0%)	0 (0.0%)	0.004
Low	5 (7.5%)	6 (4.1%)	
Average	13 (19.4%)	25 (17.1%)	
High	36 (53.7%)	53 (36.3%)	
Very High	13 (19.4%)	62 (42.5%)	

Description: Chi-square and Cramer's V test was used.

According to Table 2, approximately 45.9% of female medical students suffer anxiety, compared to 29.1% of male medical students. As we can see from Table 2, the anxiety level among female medical students was higher than male medical students. The same results were shown in some previous studies before. Based on the study conducted by Febriyanti and Mellu (2020), the anxiety level among female nursing students was higher than male nursing students.[17] According to the study conducted by Wahed and Hassan (2016) among medical students at Fayoum University, the anxiety score among female medical students was higher than male students.[18] The anxiety level in females was higher than in males due to the excessive reaction of the autonomic nervous system with increasing sympathetic nerve activity, increasing norepinephrine, secretion of catecholamine as well as the abnormal regulation of serotonergic system.[17]

The stress level among female students was higher than male students. Percentage of very high-stress level among female medical students was 42.5% and among male students was 19.4%. The same result was also presented by Andiarna and Kusumawati (2020), stating that the stress level among female students was higher than male students.[1] The hypothalamus pituitary adrenal (HPA) axis and autonomy response in males was higher than females so it affects the response to a stressor. The effect of the sexual hormone in females induced the decrease of HPA axis and sympathoadrenal response, causing a reduced cortisol negative feedback to the brain. Therefore, the female was more susceptible to stress.[19]

According to this study, most of the respondents, both male and female, have good perceptions of online learning with the percentage of 61.2% in male students and 56.8% in female students. Only a few students have the bad perception of online learning with a percentage of 3.0% in male and 6.8% in female students. The perception of online learning assessment scale consisted of 3 aspects, they are students' perception of the teaching and learning process, perception of the lecturer's capabilities, and perception of the availability of the supporting infrastructures for the online learning process. Based on research conducted by Saragih, et. al (2020), it was found that average respondents in his study had positive perceptions of the learning experience and capability of the lecturers but they had negative perceptions of the availability of the learning support infrastructures. The limitations of the internet connection and inadequate devices for the online learning process leads to negative perception of online learning for the aspect of the availability of the learning support infrastructures.[16]

Perception of online learning with anxiety and stress level

Table 3. Distribution of Perception of Online Learning with Anxiety and Stress Level

	Perception of Online Learning			p
	Bad	Neutral	Good	
Anxiety Level				
No	6 (50.0%)	41 (53.2%)	79 (63.7%)	
Mild	3 (25.0%)	9 (11.7%)	23 (18.5%)	0.049
Moderate	2 (16.7%)	18 (23.4%)	13 (10.5%)	
Severe	1 (8.3%)	9 (11.7%)	9 (7.3%)	
Stress Level				
Very Low	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Low	0 (0.0%)	4 (5.2%)	7 (5.6%)	
Average	2 (16.7%)	11 (14.3%)	25 (20.2%)	0.007
High	4 (33.3%)	26 (33.8%)	59 (47.6%)	
Very High	6 (50.0%)	36 (46.8%)	33 (26.6%)	

Description: Kendal tau b test was used.

The result of data analysis between the perception of online learning and anxiety as well as stress level was shown in Table 3. It proved that there is a significant association between perception of online learning and anxiety level (p=0.049) as well as stress level (p=0.007). The Spearman correlation test conducted also showed the significant correlation between perception of online learning score and anxiety level (TMAS score) with the result of p=0.009; r=-0.178 as well as stress level (PSS score) with the result of p=0.004; r=-0.198.

This study found there was significant correlation between perception of online learning and anxiety level among medical students. Based on similar research conducted by NurCita and Susantiningsih (2020), who examined the impact of online learning and physical distancing on anxiety levels among students, it was found that during the online learning process, there were 88% of respondents who experienced severe anxiety and 12% respondents experiencing moderate anxiety. Online learning is a new learning experience for students so they need to adapt to this learning process.[20]

Based on the study conducted by Yanti and Nurwulan (2021), the limited leisure time the students had was the main factor that caused anxiety among students. The online learning process required the students to stay at home to take part in lecture activities. Some problems during the online learning process also affect the student's perception of online learning.[10] The student's good perception of online learning indicates that during the online learning process, they experienced the effectiveness and convenience of the learning experience, the ease of understanding the materials due to the good capabilities of the lecturers and also the availability of the supporting infrastructures for the online learning process. Based on this study, it shows that perception of online learning was a significant factor in the occurrence of anxiety among students. Anxiety experienced by students can be affected by internal factors such as genetic

background and bad experiences in the past.[2]

According to this study, it was found that there was also significant correlation between perception of online learning and stress level among students. The result was similar to the study conducted by Andiarna and Kusumawati (2020). Their study was to find out the correlation between online learning and academic stress among students. Based on their study, there was a significant correlation between online learning and academic stress among students.[1]

Based on the study conducted by Yanti and Nurwulan (2021), stated that the student's difficulty to understand the materials during the online learning process was one of the factors that caused stress, anxiety, and depression but the effects were not significant. However, the difficulties and obstacles during the online learning process were positively correlated with stress, anxiety, and depression.[10] Perception of online learning indicates how well the online learning activity was implemented, but it was a significant factor that affected the incidence of stress among students. Stress experienced by students can also be caused by various factors such

as a lot of academic loads as well as internal factors such as student's motivation and personality type.

CONCLUSION

Perception of online learning have significant correlation with anxiety and stress level in medical students. Furthermore, there is a higher prevalence of stress and anxiety among female medical students than male medical students. Internal and external factors that influence anxiety and stress among medical students can be investigated in greater depth for future research growth.

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