ORIGINAL ARTICLE

Gender, Self-Control and Self-Development Affect Academic Stress During Online Learning Among Undergraduate Students Program

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ABSTRACT

Introduction: Online learning during the Covid-19 pandemic escalates the risk of academic stress experienced by undergraduate students. Self-management and students' characteristics (gender, age, semester and program study type) can reduce the risk of academic stress. This study examines predictors of academic stress among undergraduate students in Yogyakarta Province during online learning period. **Methods:** This study used a cross-sectional design, which included 847 randomly selected students from various academic programs at six universities in Yogyakarta Province. The study utilized a modified academic stress questionnaire based on the Scale for Assessing Academic Stress (SAAS) instrument and self-management questionnaire made by researchers based on theory. Multivariate logistic regression used for analyzing results. **Results:** A total of 84.7% of respondents experienced academic stress. The multivariate analysis concludes that gender, self-control and self-development are predictors of academic stress during online learning period. The probability model indicates that females with poor self-management on both components are 93.55% more likely to suffer academic stress. **Conclusion:** Female students require greater attention from their academic supervisors. Lecturers are expected to improve students' motivation and engagement. They also need to provide ample tasks to enhance understanding, allow sufficient time for assignment completion, and provide psychosocial support during online learning period.

Keywords: Academic stress, Self-control, Self-development, Online learning

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INTRODUCTION

There have been challenges faced by Indonesia's education sector since Covid-19 hit in March 2020 (1). The virus's rapid spread leads to rising anxiety, disrupting the learning process, and impacting students and lecturer's academic lives (2,3). Thus, potentially impacting students' academic performance and completion degrees (4). These challenges call the need for significantly adapting university teaching and learning practices (5).

The application of remote learning has forced students to adapt to new study habits and different life styles that may cause academic stress (4). Students are required to be more creative, active, and independent, alongside greater workloads than face-to-face learning. This is more challenging when students lack support from peers and lecturers due to to prolonged physical and social distancing policies (6). Students report problems with online study include material misunderstanding, poor learning outcomes, limited student-instructor engagement, and lack of online learning tools (3,6). These stressors eventually trigger academic stress among students during online learning period (5).

Academic stress students experience during the Covid-19 outbreak can cause depression and negatively impacting students' physical and mental well-being (7,8). Perceived stress varies by sociodemographic category. Younger females students without higher degree qualifications who were dissatisfied with their decision to study in medical sciences, were substantially more likely to report perceived stress levels than their counterparts (9). Previous research suggests that female students are at risk of experiencing higher stress levels than male students (8). Studies have shown that gender, age, specialization types in study programs and how far along the study impact academic stress (4,6,10).

However, there is limited simultaneous investigation on these characteristics and their impact on academic stress during remote learning amid the Covid-19 pandemic.

Previous research demonstrates adapting self-regulation and self-control in stress management to reduce academic stress in students (11). However, research on self-management and academic stress has been limited. Research on academic stress self-management is urgently needed to mitigate stress in students, particularly in the Covid-19 pandemic. Such research could provide more detailed mental health management guidelines for students learning remotely. This study contributes to a limited literature by evaluating several components of self-management and respondent characteristics on students' academic stress during the Covid-19 pandemic. Our study posits that students' academic stress can be reduced by self-management. The findings of this study could provide insight for education administrators to help avoid and manage students' academic stress.

MATERIALS AND METHODS

Study design
This study employs a cross-sectional design to focus on the sample's characteristic differences' impact on academic stress during a time period.

Participant and setting
The study involved six well accredited universities in Yogyakarta with a nursing profession programme (two state universities and four private universities). The sample size is 847 respondents gathered using the convenience sampling technique, exceeding the minimal sample size determined by Slovin (95% confidence level). This sampling technique allows us to collect as many samples as possible to depict the academic stress situation in the pandemic. Researchers sent online questionnaires to each faculty coordinator and gave them a set amount of time to complete. Respondents are active students currently enrolled in online classes and complete the questionnaire within the timeframe specified.

This study measures self-management components: self-drive, self-arrangement, self-control and self-development. Self-drive is an inner impulse arising from within individuals to achieve predetermined goals. Self-regulation is the arrangement of thoughts, energy, time, place, objects and other resources to achieve goals efficiently. Self-control is the individual's act of fostering determination to discipline desires, spur enthusiasm, erode reluctance, and mobilise energy; while self-development is the act of perfecting or improving oneself in various ways (12).

Ethical considerations
Participants are provided information sheets prior to signing informed consent, and the study compiled the data using google forms. Research information is displayed at the beginning so respondents can read it first. Respondents who consented to participate in the study could select "willing", and those who selected "not willing" would be unable to complete the questionnaire. Respondents' confidentiality was preserved throughout the data collection process. The Health Research Ethics Committee at Respati Yogyakarta University approved the study with the ethical letter-number 105.3/FIKES/PL/IV/2020.

Data collection
Data was collected between July and October 2020. The academic stress questionnaire was created based on the Scale for Assessing Academic Stress (SAAS) instrument (13) modified by the researcher. All questions were modified by adding clauses corresponding to online learning conditions. The study applied back-translation to ensure that respondents truly understood the questionnaire. The research uses a self-designed questionnaire on self-management questionnaire from various self-management theories (12,14). Favorable and unfavorable statements on self-management components are presented in the questionnaire. Validity and reliability tests were performed on 80 respondents. The academic stress questionnaire has adequate discriminatory power (0.199 to 0.592) and a reliability of 0.892. The self-management scale trial resulted in 26 items with adequate discriminatory power (0.189 to 0.707) and a reliability of 0.912

Kobo Toolbox tool was used to create the questionnaire. The link to the Kobo toolbox questionnaire is shared through WhatsApp groups of students from each faculty and respondents are asked to complete it within the stipulated time. Participants were prompted to log in using their personal email addresses prior to beginning the survey to avoid repetition.

Data Analysis
This study utilized frequency distribution to provide descriptive analysis, and chi square and logistic regression, at 95 percent confidence level, for empirical anaylsis. Logistic regression is chosen as the dependent variable is dichotomous (only has two categories). The logistic regression provides probability modeling that can forecast the likelihood of the respondent's academic stress arising using previously selected independent factors.

RESULTS

Our sample shows a balance of male and female, with the majority in the adolescent group and are still in semester four and below. Respondents are mostly from the social science programme, such as philosophy, education and others (Table I).

Our research suggests that respondents experienced academic stress (Table I). We found that respondents

Table I: Baseline characteristics, academic stress and self-management of respondents (n=847)

	Categories	n	%
Gender	Male	424	50.1
	Female	423	49.9
Age Group	Adolescent	502	59.3
	Adult	345	40.7
Type of Faculty	Science and Technology	332	39.2
	Social Science	515	60.8
Semester	≤ 4	453	53.5
	≥ 5	394	46.5
Academic Stress	No Stress	130	15.3
	Stress	717	84.7
Self Management Component			
Self Drive	Poor	425	50.2
	Good	422	49.8
Self Arrangement	Poor	503	59.4
	Good	344	40.6
Self Control	Poor	469	55.4
	Good	378	44.6
Self Development	Poor	461	54.4
	Good	386	45.6

have poor self-management as shown in the self-management component (Table I).

The Chi-square test findings show that all components of self-management have a significant relationship with academic stress (p-value < 0.05). Gender, age group, faculty type, and semester indicate no statistically significant relationship (p-value>0.05). Students with a high level of self-management are less likely to experience academic stress (OR < 1.0) (Table II).

Gender, age group, and all self-management

components are included in the multivariate analysis (p-value 0.25). Only three variables (gender, self-control, and self-development) can predict academic stress from the logistic regression. With an odds ratio (95 % CI) ranging from less than one to more than one, gender indicates influence on reducing or raising academic stress likelihood. The other two variables (self-control and self-development) have odds ratios less than one, suggesting that they both reduce the likelihood of academic stress (Table III).

Table III: Multivariate analysis (n=847)

Predictor variable	B	Sig	Exp (B)	CI 95%	
				lower	upper
Gender	.360	.071	1.433	0.970	2.118
Self-Control	-.892	.000	.410	0.263	0.639
Self development	-.567	.012	.567	0.365	0.882
Constant	3.431	.000	30.904		

The final model for predicting factors of academic stress:
$y = 3.431 + 0.360 \text{ (gender)} - 0.892 \text{ (self-control)} - 0.567 \text{ (self-development)}$
note: "y" is academic stress score

The formula calculates the Students' academic stress likelihood during a pandemic. Gender includes male (1) and female (2) and the self-control and self-development categories are poor (1) and good (2). We can estimate the stress likelihood of female students with poor self-control and self-development as follow:
$y = 3.431 + 0.360 (2) - 0.892 (1) - 0.567 (1)$
$y = 2.692$

While the probability formula used is:
$P = 1/(1 + e^{-y})$
$P = 1/(1 + 2.7^{-2.692})$
$P = 93.55\%$

Table II: Relationship between predictor variables and the academic stress (n=847)

Predictor Variables		Academic Stress				OR (95% CI)	p-value
		No Stress		Stress			
		n	%	n	%		
Gender	Male	75	8.9	349	41.2	1.438	.059
	Female	55	6.5	368	43.4		
Age Group	Adolescent	67	7.9	435	51.4	.689	.051
	Adult	63	7.4	282	33.3		
Type of Faculty	Science and Technology	46	5.4	286	33.8	.825	.333
	Social Science	84	9.9	431	50.9		
Semester	≤ 4	63	7.4	390	46.0	.788	.212
	≥ 5	67	7.9	327	38.6		
Self Drive	Poor	42	5.0	383	45.2	.416	.000
	Good	88	10.4	334	39.4		
Self Arrangement	Poor	52	6.1	451	53.2	.393	.000
	Good	78	9.2	266	31.4		
Self-Control	Poor	42	5.0	427	50.4	.324	.000
	Good	88	10.4	290	34.2		
Self Development	Poor	44	5.2	417	49.2	.368	.000
	Good	86	10.2	300	35.4		

The calculations find these students are 95.55% likely to experience academic stress when participating in online learning.

DISCUSSION

This study finds that students experience academic stress during online learning in the COVID-19 pandemic. Online learning has significantly changed student learning behaviors. Academic stress in this new environment is a specific source of anxiety for students in higher education. While the number of students enrolled in online courses has expanded in recent years, the majority of them are inexperienced with remote learning (15). The distance created by online learning limits student-lecturer engagements.

Students may have restricted access to learning resources because not all students have access to online learning facilities such as stable internet connections and a computer device (16). Consequently, students may feel that their learning objectives are not achieved. These stressors trigger student's academic stress during online learning in a pandemic (4,6,17).

Students must manage their time well to prevent the occurrence of academic stress. The degree of student's self-management has an impact on their resilience. Self-resilience is characterized by the psychological ability to understand the meaning and purpose of life to face any challenge (18). Students who have good self-management can better adapt to learning process changes during the pandemic, so they are more resistant to academic stress. This study shows concerning findings by suggesting that most students have poor self-management levels (table I), and academic stress is unavoidable.

Previous studies study show that older females studying the health sector, reaching the end of their study are more likely to experience academic stress (19). This study simultaneously analyses these factors combined with a self-management component to determine their impact on triggering academic stress. The bivariate analysis results show that only four components of self-management have a significant relationship with academic stress (table II). The multivariate analysis shows that gender, self-control and self-development are determinants of student's academic stress during online learning (table III).

Females are perceived to be more vulnerable to certain mental health disorders, including stress (20). Women are more prone to demonstrating negative emotions in a stressful situation; for example female college students have a greater fear of failure (20,21). Our study supports this notion by showing that female students are 1.4 times more likely to suffer from academic stress than male students (table II).

Self-control is a form of self-management strategy. Self-control is a person's actions in disciplining him/her-self, moderating enthusiasm, fighting learning inertia, and making active efforts to achieving life goals (14,18). Self-control allows students to control themselves, including managing their perception on online learning during a pandemic. Students with a broad perception might identify different possible solutions to challenges caused by learning process changes, lowering the probability academic stress.

Another self-management strategy is self-development. Self-development encourages a person to develop his intelligence, character/personality, and physical and psychological health (14). Even with the switch to online learning, students may consider these changes as a challenge to develop themselves and manage academic stress well.

The study's novelty is the academic stress probability estimation. Our finding is especially relevant for female students with inadequate self-control and self-development as they are 93% likely to experience academic stress. Earlier study have investigated that higher levels of neuroticism and external locus of control are associated with greater academic concerns and lower emotional well-being. That study suggests that some students are more likely to experience poor emotional well-being during the pandemic, and female students report higher stress levels and are coping worse with the Covid-19 disruption (16). Female students are more likely to face additional stressors during the pandemic, contributing to poor mental health. Female students may be more inclined to take on additional household or caregiving obligations during quarantine than males.

This research was conducted only in one province in Indonesia. Respondent characteristics can be more varied if this study examines various provinces in Indonesia, as well as variations in academic stress and self-management data.

CONCLUSION

Female students require greater attention and compassion from faculty members. To mitigate negative effects of online learning, lecturers and institution policymakers must develop fun, creative, and non-repetitive interactive learning methods. Such support from educators can help avoid overburdening students with the task of self-management and self-development. Students should also be encouraged to seek mental health support. Lecturers should make efforts to increase students' motivation and engagement. They also need to provide ample tasks to enhance understanding, allow sufficient time for assignment completion, and provide psychosocial support during online learning period.

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