

# An Overview the Levels of Depression, Anxiety and Stress in Pharmacy Students Post Covid-19 Pandemic

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## ABSTRACT

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*Depression, anxiety and stress are psychological disorders that affect mental conditions. these conditions in students can cause a decrease in learning performance and can ultimately affect the cumulative grade point average. With Covid-19 under control, there has been a change in the learning system, which during the Covid-19 pandemic was carried out online has changed to offline again. This certainly affects the psychological condition of students. This study aimed to reveal the description of the levels of depression, anxiety, and stress after engaging in offline learning. This research was conducted with a cross-sectional design, the subjects of this study were all students of the pharmacy department who met the inclusion and exclusion criteria and the variables used in this study were gender, semester and levels of depression, anxiety and stress. The instrument used in this study was the Indonesian DASS-42 questionnaire and the analysis used in this study was descriptive analysis. The result is that female students experience the most severe levels of depression, anxiety and stress. whereas based on the semester students with very severe depression were most in the 3<sup>rd</sup> semester group, very severe anxiety was mostly experienced by students in 5<sup>th</sup> semester and very severe stress was experienced by students in 7<sup>th</sup> semester. The conclusion of this study showed that pharmacy students had a moderate level of depression, for anxiety levels and stress are at normal levels.*

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## ABSTRAK

Depresi, kecemasan dan stress merupakan gangguan psikologis yang mempengaruhi kondisi mental. kondisi tersebut dapat menyebabkan penurunan prestasi belajar dan pada akhirnya dapat mempengaruhi indeks prestasi kumulatif. Dengan terkendalinya Covid-19, maka terjadi perubahan sistem pembelajaran yang selama pandemi Covid-19 dilakukan secara daring berubah menjadi luring kembali. Hal ini tentu berpengaruh pada kondisi psikologis mahasiswa. Penelitian ini ingin mengungkap bagaimana gambaran tingkat depresi, kecemasan dan stres setelah melakukan pembelajaran secara luring. Penelitian ini dilakukan dengan desain cross sectional, subjek penelitian ini adalah seluruh mahasiswa jurusan farmasi yang memenuhi kriteria inklusi dan eksklusi dan variabel yang digunakan dalam penelitian ini adalah jenis kelamin, semester dan tingkat depresi, kecemasan dan stres. Instrumen yang digunakan dalam penelitian ini adalah kuesioner DASS-42 Indonesia dan analisis yang digunakan dalam penelitian ini adalah analisis deskriptif. Hasil penelitian menunjukkan bahwa mahasiswa perempuan mengalami tingkat depresi, kecemasan dan stres yang paling berat. Sedangkan berdasarkan semester mahasiswa dengan depresi sangat berat paling banyak terdapat pada kelompok semester 3, kecemasan sangat berat paling banyak dialami oleh mahasiswa semester 5 dan stres sangat berat paling banyak dialami oleh mahasiswa semester 7. Kesimpulan dari penelitian ini menunjukkan bahwa mahasiswa farmasi memiliki tingkat depresi yang sedang, untuk tingkat kecemasan dan stres berada pada tingkat normal



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According to WHO, depression is a frequent psychological disorder. In accordance with estimates, the condition affects 5% of individuals worldwide. According to Indonesia's Basic Health Research (Riset Kesehatan Dasara/RISKESDAS) 2018 prevalence depression among Indonesian citizen estimated around 6,1%. (Kementrian kesehatan RI, 2018). In East Java prevalence of depression during COVID-19 pandemic was 3,6%. (Pradipta Lusida et al., 2022) Depression caused consistent sorrow and a loss of interest in formerly fulfilling or joyful activities are its defining traits. Additionally, it may impair appetite and sleep. Concentration problems and fatigue are frequent. The largest cause of disability in the world today is depression, which also significantly increases the burden of sickness on the planet.(Association, 2023)

in line with the American Psychological Association A sensation of tension, anxious thoughts, and bodily changes are the hallmarks of anxiety. Typically, disruptive ideas or concerns repeat throughout the lives of those with anxiety disorders. They could stay away from specific circumstances out of worry. They could also have physical consequences such as sweating, shaking, nausea, or an accelerated pulse.(Association, 2022)

Stress is a normal reaction to life's stress, but it can become unhealthy when it interferes with your daily life functions. Stress involves changes in both one's mind and body as well as one's behavior. By causing mental and physical changes, stress contributes directly to psychological and physiological disorders and illnesses and affects mental and physical health, thereby reducing quality of life.(Association, 2022)

Students with moderate to severe depression are 2,5 times more likely to worry about their Grade Point Average (GPA) compared to students with mild or moderate depression(Othman et al., 2019). In a research showed that students with anxiety had a lower baseline GPA compared to students who did not have anxiety and then GPA did not differ significantly after follow-up which means it remained low(Awadalla et al., 2020). Uncontrolled stress can have an impact on the student's learning process which in turn can reduce the student's cumulative grade point average(Awadalla et al., 2020; Frazier et al., 2019).

The covid-19 pandemic changed the way of studying in universities from offline to online, but as the covid-19 pandemic was controlled, the lecture pattern became offline again. This requires adaptation again by students. Changes in the way of studying after the covid-19 pandemic from online to offline can have an impact on the learning process, including Students in the health sector, especially pharmacy. In a study conducted in 2022, which is still classified as a pandemic period in Yogyakarta, pharmaceutical students showed a moderate level of anxiety, for depression and stress were normal.(Herawati et al., 2022) Another study on nursing professional students during the pandemic showed a similar thing where anxiety was relatively high compared to depression and stress.(Ariviana et al., 2021) Based on the aforementioned, it is necessary to perform a post-19 learning evaluation to assess the levels of depression, anxiety, and stress among pharmacy student.

## A. METHODS

This research is an observational study using a cross-sectional design that was carried out from February to June 2023, the population of this research is all pharmacy students, while the sample in this study is pharmacy students who fill out the questionnaire completely. inclusion criteria is pharmacy student in malang, willing to take part in this study by filling out the questionnaire completely and This study had no exclusion criteria

The dependent variables in this study were gender and semester while the dependent variables of this study were the level of depression, anxiety and stress. Data collection was carried out prospectively and digitally via email. The inclusion criteria used in this research are pharmacy students, and the exclusion criteria are not completing the questionnaire entirely and students fill more than one questionnaire.

The instrument used in this study is using the DASS-42 questionnaire where there are 3 domains, namely the level of depression, anxiety and stress. The assessment and categorization of depression, anxiety and stress levels used in this study can be seen in the table below. The questionnaire used in this research has been tested for validity and reliability and can be used for research. The data obtained were analyzed descriptively and displayed in the form of table and cross tabulation.

The DASS-42 questionnaire contains 42 questions/statements. 14 questions/statements in the depression domain, 14 questions/statements in the anxiety domain and 14 questions/statements in the stress domain. The DASS-42 questionnaire used ordinal scales. Each question/statement has 4 scores, namely 0, 1, 2, and 3. Score 0 if the question/statement does not match the respondent at all or has never experienced. Score 1 if the question/statement matches the respondent to a certain degree or sometimes experienced by the respondent. Score 2 if the question/statement matches the respondent to the limit that can be considered or quite often occurs in the respondent. Score 3 if the question/statement matches the respondent or very often occurs in the respondent. (Ashari & Hartati, 2017; Marsidi, 2021)

Then the scores are totalled. if on the stress domain questionnaire the total score of the respondent is 0-14 then the respondent is normal, if the total score is 15-18 then the respondent is experiencing mild stress, if the total score is 19 to 25 then the respondent is experiencing moderate stress, if the total score is 26-33 then the respondent is experiencing severe stress and if it is more than equal to 34 then the respondent is experiencing severe stress. (Ashari & Hartati, 2017; Marsidi, 2021)

for the anxiety domain is similar. the total value is summed up if the value is 0-7 then the respondent is normal. if the value is 8-9 the respondent has mild anxiety. if 10-14 then the respondent has moderate anxiety. if 15-19 then the respondent has severe anxiety and more than equal to 20 then the respondent experiences very severe anxiety. (Ashari & Hartati, 2017; Marsidi, 2021)

for the depression domain, if the respondent's total score is 0-9 then the respondent is categorised as normal. if the total score is 10-13 the respondent is categorised as mild depression, if the total score is 14-20 then it is categorised as moderate depression. if the total score is 21-27 then it is categorised as severe depression and more than or equal to 28 is in the very severe category. (Ashari & Hartati, 2017; Marsidi, 2021)

## B. RESULT AND DISCUSSION

### 1. Result

This research was conducted from February to June 2023, the number of questionnaires filled in completely was 150 questionnaires out of 155 questionnaires filled in. The 150 filled questionnaires were then analyzed descriptively to see the patterns and levels of depression, anxiety and stress of pharmacy students

**Table 1.** Students Characteristics

Variable	N	Percentage (%)
Sex		
Male	22	14,67%
Female	128	85,33%
Semesters		
1	6	4,00%
3	60	40,00%
5	47	31,33%
7	30	20,00%
>7	7	4,67%
Depression		
Normal	39	26,00%
Mild	16	10,67%
Moderate	41	27,33%
Severe	32	21,33%
Very Severe	22	14,67%
Anxiety		
Normal	73	48,67%
Mild	23	15,33%
Moderate	30	20,00%
Severe	18	12,00%
Very Severe	6	4,00%
Stress		
Normal	73	48,67%
Mild	34	22,67%
Moderate	28	18,67%
Severe	11	7,33%
Very Severe	4	2,67%

According to Table 3 above. the majority of students are female at 85.33% while the 3 semester students are 40% who are involved in this study by filling out the questionnaire completely. the results of the analysis using the DASS-42 questionnaire shows the results that 27.33% of students experience moderate depression and 26.00% are normal and 21.33% of students experience severe depression. based on these results, students who experience moderate and severe depression are relatively large. 48.67% of students have normal levels of anxiety but there are 12.00% of students who have severe levels of anxiety and 4.00% of students have very severe levels of anxiety. while for stress levels 48.67% of students have normal stress levels, while 7.33% of students have severe stress and 2.67% have very severe stress levels.

Based on the results of cross tabulation between gender and level of depression. showed that 36 (24.0%) female students had moderate depression, while 15 (6.7%) male students

had normal depression. the level of severe depression for female is also higher, namely as many as 19 (12.7%) students compared to male who are 3 (2.0%) students. According to the data in Table 5, 12 male students (8.0%) and 61 female students (40.7%) have a normal level of anxiety. 5 male students (3.3%) and 25 female students (16.7%) have a moderate level of anxiety. No male students have a very severe level of anxiety while there are 6 female student (4.0%) have a very severe level of anxiety.

**Table 2.** Cross Tabulation Gender And Depression Level

		Depression Level					Total	
		Normal	Mild	Moderate	Severe	Very severe		
Gender	Male	Count	10	0	5	4	3	22
		%	6,7%	0,0%	3,3%	2,7%	2,0%	14,7%
	Female	Count	29	16	36	28	19	128
		%	19,3%	10,7%	24,0%	18,7%	12,7%	85,3%
Total	Count	39	16	41	32	22	150	
	%	26,0%	10,7%	27,3%	21,3%	14,7%	100,0%	

**Table 3.** Cross Tabulation Gender And Anxiety Level

		Anxiety Level					Total	
		Normal	Mild	Moderate	Severe	Very severe		
Gender	Male	Count	12	3	5	2	0	22
		%	8,0%	2,0%	3,3%	1,3%	0,0%	14,7%
	Female	Count	61	20	25	16	6	128
		%	40,7%	13,3%	16,7%	10,7%	4,0%	85,3%
Total	Count	73	23	30	18	6	150	
	%	48,7%	15,3%	20,0%	12,0%	4,0%	100,0%	

**Table 4.** Cross Tabulation Gender And Stress Level

		Stress Level					Total	
		Normal	Mild	Moderate	Severe	Very severe		
Gender	Male	Count	15	4	1	2	0	22
		%	10,0%	2,7%	0,7%	1,3%	0,0%	14,7%
	Female	Count	58	30	27	9	4	128
		%	38,7%	20,0%	18,0%	6,0%	2,7%	85,3%
Total	Count	73	34	28	11	4	150	
	%	48,7%	22,7%	18,7%	7,3%	2,7%	100,0%	

**Table 5.** Cross Tabulation Semester And Depression Level

		Depression Level					Total	
		Normal	Mild	Moderate	Severe	Very severe		
Semester	1	Count	1	1	1	3	0	6
		%	0,7%	0,7%	0,7%	2,0%	0,0%	4,0%
	3	Count	15	5	21	10	9	60
		%	10,0%	3,3%	14,0%	6,7%	6,0%	40,0%
	5	Count	15	4	9	12	7	47
	%	10,0%	2,7%	6,0%	8,0%	4,7%	31,3%	
	7	Count	6	4	9	5	6	30
	%	4,0%	2,7%	6,0%	3,3%	4,0%	20,0%	
	> 7	Count	2	2	1	2	0	7
	%	1,3%	1,3%	0,7%	1,3%	0,0%	4,7%	

Total	Count	39	16	41	32	22	150
	%	26,0%	10,7%	27,3%	21,3%	14,7%	100,0%

**Table 6.** Cross Tabulation Semester And Anxiety Level

		Anxiety Level					Total	
		Normal	Mild	Moderate	Severe	Very severe		
Semester	1	Count	3	2	1	0	0	6
		%	2,0%	1,3%	0,7%	0,0%	0,0%	4,0%
	3	Count	32	8	14	5	1	60
		%	21,3%	5,3%	9,3%	3,3%	0,7%	40,0%
	5	Count	21	5	13	5	3	47
		%	14,0%	3,3%	8,7%	3,3%	2,0%	31,3%
7	Count	14	4	2	8	2	30	
	%	9,3%	2,7%	1,3%	5,3%	1,3%	20,0%	
>	Count	3	4	0	0	0	7	
7	%	2,0%	2,7%	0,0%	0,0%	0,0%	4,7%	
Total	Count	73	23	30	18	6	150	
	%	48,7%	15,3%	20,0%	12,0%	4,0%	100,0%	

**Table 7.** Cross Tabulation Semester And Stress Level

		Stress Level					Total	
		Normal	Mild	Moderate	Severe	Very severe		
Semester	1	Count	1	3	2	0	0	6
		%	0,7%	2,0%	1,3%	0,0%	0,0%	4,0%
	3	Count	35	10	10	4	1	60
		%	23,3%	6,7%	6,7%	2,7%	0,7%	40,0%
	5	Count	21	12	10	3	1	47
		%	14,0%	8,0%	6,7%	2,0%	0,7%	31,3%
7	Count	10	8	6	4	2	30	
	%	6,7%	5,3%	4,0%	2,7%	1,3%	20,0%	
>	Count	6	1	0	0	0	7	
7	%	4,0%	0,7%	0,0%	0,0%	0,0%	4,7%	
Total	Count	73	34	28	11	4	150	
	%	48,7%	22,7%	18,7%	7,3%	2,7%	100,0%	

Based on table 6, 15 male students (10%) and 50 female students (38.7%) demonstrated normal stress levels. for mild stress levels male students were 4 students (2.7%) and for female students were 30 students (20.0%) And interestingly, there were no male students who had very severe stress levels, but in female students, 4 students (2.7%) showed very severe stress levels.

Table 7 shows the cross-tabulation between semesters and depression level in students. Semester 1 students at most have a severe level of depression as many as 3 students (2.0%). Meanwhile, most of the 3 semester students had a moderate level of depression with 21 students (14.0%). Most of the 5 semester students have a normal level of depression, as many as 15 students (10%). while in semester 7 students had the highest moderate depression level, as many as 9 students (6.0%). What's interesting is students with more than 7 semesters where the level of depression is evenly distributed. no students in semester 1 and students over 7 who have a very severe level of depression, but students in semester 3, 5 and 7 there are students with very severe depression levels as many as 9 students (6.0%), 7 students (4.7 %) and 6 students (4.0%) respectively.

Based on the results of cross-tabulation in table 7. The majority of semester 1, 3, 5 and 7 students have a normal level of anxiety with a respectively number of 3 students (2.0%), 32 students (21.3%), 21 students (14.0%) and 14 students (9.3%). However, students over semester 7 showed 4 students (2.7%) with a mild level of anxiety. For semester 1 students also showed mild anxiety levels from 2 students (1.3%). While for students in semesters 3 and 5 with moderate levels of anxiety there were 14 students (9.3%) and 13 students (8.7%) respectively. 7 semester students with severe depression level were 8 students (5.3%) and for students with more than 7 semester showed normal depression level as many as 3 students (2.0%). None of the students in semester 1 and more than semester 7 showed a very severe level of anxiety. 3, 5 and 7 semester students respectively 1 student (0.7%), 3 students (2.0%) and 2 students (1.3%) have a very severe level of anxiety.

According to table 9. The majority of semester 1 students have a mild level of stress as many as 3 students (2.0%). While students in semesters 3, 5, 7 and more than 7 showed normal levels of depression, respectively 35 students (23.3%), 21 students (14.0%), 10 students (6.7%) and 6 students (4.0%). The next interesting thing is that semester 1 has a moderate level of depression in 1 student (1.4%) and a similar pattern is found in students in semesters 3, 5, 7 and more than 7 showing a level of mild depression in a row of 10 students (6, 7%), 12 students (8.0%), 8 students (5.3%) and 1 student (0.7%). Besides that it also needs to be observed that there are other interesting things where students in semester 1 and semester more than 7 show that no student has a very severe level of stress. Very severe stress level is mostly found in students in semesters 3, 5 and 7 with the number of students being 1 student (0.7%), 1 student (0.7%) and 2 students (1.3%) respectively.

## 2. Discussion

This research wants to see the impact of changing the lecture process from previously online during Covid-19 to offline on the level of depression, anxiety and stress pharmacy students. The results of this study were 150 students who filled out a complete questionnaire out of 155 students who filled out the questionnaire.

Overall, this study's findings show that 41 students (27.33%) suffer moderate depression. This contrasts slightly with a research from Yogyakarta that was released in 2022 and found that depression among pharmacy students is at a normal level. (Herawati et al., 2022) Another research revealed that just 23% of students who were enrolled in online courses during the Covid-19 epidemic had significant depression. (Yanti & Nurwulan, 2021) in a literature review shows several factors that can affect the incidence of depression in college students, some of the factors include gender, where female students are more prone to depression than male students. semester, this is not too significant where early semester students have a higher level of depression than the final semester. student lifestyle, where students with less physical activity increase the risk of depression among college students. internet use, students with internet addiction and dependence show higher levels of depression compared to students who are not addicted to the internet. but interestingly the use of social media actually reduces the incidence of depression in students because it is one of the supports for the incidence of depression however, excessive use of social media is also not good for the condition of student depression. (Liu et al., 2022) In other studies, in addition to the above factors, there are several other factors that can affect the incidence and severity of depression at the student level such as financial factors, the number of assignments and exams, eating disorders and

lack of sleep are also factors that affect the incidence of depression in students.(Mofatteh, 2021) There is an interesting study after 20 months of the covid-19 outbreak in Germany where there was an increase from 19% to 29% and factors associated with depression in students one of which is financial problems(Heumann et al., 2023).

Overall, the results of this study showed that 73 students (48.67%) had a normal level of anxiety. this is different from a study in Yogyakarta in the year involving undergraduate pharmacy students showed a fairly high level of moderate anxiety.(Herawati et al., 2022) Another study showed that the online learning process during the covid-19 pandemic showed a very severe level of anxiety in students.(Yanti & Nurwulan, 2021) Many factors that contribute to the incidence of anxiety in college students in a literature review show psychological factors, academic factors, biological, lifestyle and social factors can affect the incidence of anxiety.(Al-Qerem et al., 2021; Mao et al., 2019; Mofatteh, 2021)

Overall, the result of this study showed that 73 students (48.67%) had a normal level of stress level. This is the same as research that was conducted in Yogyakarta on bachelor of pharmacy students, it was found that the majority of students had normal stress levels.(Herawati et al., 2022) Similar things also appear in research measuring stress levels in nursing students during the Covid-19 pandemic, which shows that the majority of students have normal stress levels.(Adrian et al., 2021) Another study comparing the stress levels of Indonesian and outside indonesia students towards online learning during covid-19 showed that the stress levels of Indonesian students were relatively lower than those of outside indonesia students. (Fauziyyah et al., 2021) Research abroad is also different from the research conducted, where pharmacy students at Khartoum University have high levels of stress during online learning during the Covid-19 pandemic period.(Yousif et al., 2022) the results of this study also show that female students experience more severe stress than male students. there is some literature that shows that women do tend to experience stress compared to men in the covid-19 pandemic. other factors that influence the stress condition of students during online learning in the covid-19 pandemic include difficulty remembering material, worrying about final exams and students with below average family income and having acquaintances infected with covid-19. (Browning et al., 2021; Yousif et al., 2022)

Overall the results of this study indicate that pharmacy students have different levels of depression depending on the semester undertaken. in a study showing the level of depression in medical students at the Institute of Medical Sciences at Bhubaneswar, india showed that 5 semester students had the highest level of depression compared to other semester students.(Iqbal et al., 2015) Another study that used pharmacy students as research subjects showed that second-year pharmacy students had the highest level of depression compared to others. (Shangra et al., 2021) Another study in Yogyakarta also showed that students in semester 3 and semester 5 also had a higher level of moderate depression than students in semester 1 and semester 7.(Herawati et al., 2022) the results showed that students in semesters 3, 5 and 7 experienced the most depression with a very severe level compared to students in semester 1 and semester more than 7. this could have happened due to the very high course load factor in these semesters which increased the risk of depression in these students. in addition, the shift in learning patterns from

online during the pandemic to offline is also thought to play a role in the level of depression of pharmacy students.

the results of this study indicate that the increasing semester the higher the level of anxiety in students. this is inversely proportional to a study that shows the higher the semester the lower the anxiety score. the highest anxiety score is experienced by 5 semester students and decreases in semesters 7 and 9.(Iqbal et al., 2015) Research in yogyakarta shows a similar thing where pharmacy students in semester 3, 5 and 7 are relatively higher than students in semester 1 and the anxiety level is mostly in moderate anxiety.(Herawati et al., 2022) there is a significant difference between the incidence of anxiety with semester students, this is evidenced by a study that has a p-value of 0.05(Yadav et al., 2016).

Majority of stress levels of pharmacy students in semesters 3,5 and 7 are at normal levels. however, Majority of 1st semester students are at mild stress. There are students in semesters 3,5 and 7 who have very severe stress levels when compared to students in semesters 1 and 9. Similar things were also found in pharmacy students in Yogyakarta where the majority of students in semesters 1, 3, 5 and 7 had normal stress levels, but many students in semesters 5 and 7 also had moderate stress levels.(Herawati et al., 2022)

Almost similar things also appear in research involving medical students. where, 3rd and 5th semester students have relatively higher stress values compared to the stress values of 1st, 7th and 9th semester students (Iqbal et al., 2015). This is likely because students with semesters 3, 5 and 7 have high pressure on the lecture process especially after the change from online to offline after the passage of the covid-19 pandemic. besides that, academic satisfaction also affects student stress levels.(Silva & Figueiredo-Braga, 2018).

The strength of using the questionnaire used has been valid and reliable so that it can describe the conditions of stress, depression and anxiety in pharmacy students in Malang. however, the limitations of this study only provide an overview of stress, depression and anxiety of students in Malang after the covid-19 pandemic is over but and do not follow the progress of respondents to see the cumulative grade point average during the current semester.

### **C. CONCLUSION AND SUGGESTIONS**

Conclusion of this study showed that pharmacy students in pharmacy department had a moderate level of depression, for anxiety levels and stress are at normal levels. For future research it can be suggested to look at the relationship between depression, anxiety and stress with the cumulative grade point average in the current semester. In addition, if students have a level of depression, anxiety and stress, it is advisable for the university authorities to be able to help these students both psychologically and medically in order to improve the quality of life of these students so that they can learn well and understand lecture material.

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