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Comparison of Depression Levels in Early and End Preclinical Students at Pelita Harapan University

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ABSTRACT

Introduction: *Mental health is a crucial concern globally and in Indonesia, especially among medical students who face higher rates of depression than the general population due to academic pressure, high expectations, and social stress. Depression can negatively affect academic performance and future careers. Studies show varying results regarding depression levels between early and end preclinical students.* ***Purpose:*** *This study aims to compare the level of depression in early to end preclinical students at Pelita Harapan University and to see whether there is a relationship between gender and social support and the level of depression.* ***Methods:*** *This cross-sectional study was conducted among 333 preclinical students from the Faculty of Medicine, Pelita Harapan University, in January-March 2024. The data was collected using the Beck Depression Inventory-II and the Multidimensional Scale of Perceived Social Support Questionnaire. Data analysis was performed using SPSS version 26 (chi-square statistical test).* ***Results:*** *The study found no statistically significant difference in depression levels between early and end preclinical students (p-value 0.348). There is a relationship between social support and the level of depression in preclinical students of the UPH Medical Faculty, with a (p-value of 0.001). However, no significant relationship was found between gender and the level of depression in preclinical students, with a p-value of 0.093.* ***Conclusion:*** *Conducted outside major metropolitan areas like Jakarta, the study offers insights into how depression manifests in different geographic and socio-economic contexts. The findings can be used as a consideration for making a faculty or university policy to improve mental health management for medical students, ensuring an effective learning process.*

1. Introduction

Mental health is still a significant issue in the health sector, both globally and in Indonesia. Based on data from the World Health Organization (WHO) in 2017, it was recorded that around 322 million individuals worldwide suffer from depression, with almost half of them living in the Southeast Asia Region and the Western Pacific Region. The condition impacts all aspects of life, from productivity at work to personal relationships, and is a major contributor to global disease burdens. The serious impact of untreated depression is suicide, which occurs in almost 800,000 people each year.[1] Based on the data above, it can be concluded that mental health is one of the important aspects of life that needs to be considered, as the high prevalence of depression and its life-threatening consequences demonstrate the critical need for mental health awareness. The fact that untreated mental health issues like depression can lead to a significant number of deaths globally underscores the importance of prioritizing mental health care. Depression is a common type of mental disorder, characterized by feelings of deep sadness, loss of interest, guilt, sleep disturbances, decreased appetite, lack of energy or motivation, difficulty concentrating and

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making decisions, and withdrawal from social interactions.[2] The impact of depression can be seen in academic performance. Depression can lead to increased absenteeism and hinder students' ability to learn. This has the potential to disrupt the educational process of medical students and pose a threat to their future achievements as medical professionals.[3]

Depression is influenced by various factors, including genetic, biological, sociodemographic, psychological (such as personality traits), and sociocultural factors. Research indicates that women are twice as likely as men to suffer from depression.[4] This increased risk in women is partly attributed to hormonal systems that can trigger depressive episodes, particularly during periods of hormonal fluctuation such as menstruation, pregnancy, and menopause.[5] Additionally, women tend to score higher on neuroticism, a personality trait associated with negative emotionality, which increases their susceptibility to depression.[6,7] Socio-environmental stressors, such as low social support, family problems, or job loss, can further exacerbate depression. Gariépy et al.[8] emphasize that inadequate social support is a significant factor that heightens vulnerability to depressive symptoms.

Research conducted by Rotenstein et al.[9] showed that 27.2% of medical students experienced depression; this figure is higher than the prevalence of depression in the general population. This is also supported by research conducted by Pokhrel et al. ten, which showed that around one-third of medical students in the world suffer from depression; this number is much higher than the general population (around 3.9–6.6%). According to a study conducted by Guo et al.[11], medical students are under high academic pressure, heavy learning demands, high parental expectations, financial problems, extensive courses, and social pressure in carrying out their studies. This is also supported by Moir et al.[3], who assert that high academic pressure can affect their psychological well-being and cause stress. Continuous stress that is not immediately addressed can contribute significantly to the development of mental disorders, such as depression.[12,13]Research conducted by Achmad Ramadhan[14] at the Faculty of Medicine, University of Lampung showed that early-level preclinical students had higher levels of depression compared to end-level students. This is also supported by research conducted by Maulina et al.[15] which showed that the highest level of depressive symptoms was found in first-year preclinical students due to heavy study load, dense curriculum, stress of adapting to a new environment, loneliness, and difficulty in building social relationships. Research conducted by Raudhatul Jannah[16] showed that the highest level of moderate depression symptoms was found in preclinical students who were in their end year due to the high demands to complete their final assignment, namely a thesis as a mandatory requirement to obtain a bachelor's degree and the high learning pressure felt by end year preclinical students. In a study conducted by Kumar Besham et al.[17] on depression, anxiety, and stress in end-year preclinical students, it was found that the severe depression score reached 13.6% and the very severe level reached 31.8%. These results are also supported by research conducted by Hamdan et al.[18], which found that end-year students at the Faculty of Medicine, Alkhairaat University, Palu, experienced higher levels of depression.

Research indicates a concerning phenomenon in depression levels among preclinical medical students. Several studies show that early preclinical students often exhibit higher levels of depression compared to their peers in the end stages of preclinical education.[14,15] However, other studies suggest that end preclinical students experience even greater levels of depression than those in their early stages.[16–18] To explore this phenomenon further, the researcher, as a medical student, aims to compare the levels of depression in early and end preclinical students at Pelita Harapan University. The author also collected data on the student's gender and their level of social support to determine whether these factors are related to the levels of depression in preclinical students.

While many studies have explored depression among medical students, this study specifically focuses on comparing depression levels between early and end preclinical students at Pelita Harapan University, providing a new insight or a fresh angle by focusing on a particular group of medical students. In this study, an examination was also conducted to assess the relationship between depression-triggering factors among the respondents. Social support and gender as variables offer a more comprehensive analysis of how external factors contribute to depression among medical students. The study is conducted in a university setting outside major

metropolitan areas like Jakarta, offering insights into how depression manifests among students in a different geographic and socio-economic environment. This is particularly relevant as the experiences and challenges faced by students in different locations may vary, which could impact mental health outcomes. The sample size of 333 students strengthens the study, providing a solid basis for analysis and making the results more reliable and representative. The use of validated instruments like the Beck Depression Inventory-II (BDI II) and the Multidimensional Scale of Perceived Social Support also contributes to the study's strength, ensuring that the assessment of depression and social support is based on established, reliable measures.

This study aims to provide an overview of the prevalence of depression among medical students, as well as a comparison of depression levels between early and end preclinical students at Pelita Harapan University. These findings can assist students in recognizing signs of their own depression, encouraging them to engage in activities that enhance their mood, ensure they get adequate rest and maintain a healthy diet, and seek consultation if they experiencing depression. It is hoped that the information obtained from the results of this study can help medical faculty institutions in designing the management of medical students so that the learning process can run effectively and maintain the mental health of early and end preclinical students so that they can complete their studies on time.

2. Methods

This research uses an unpaired categorical comparative analytical study using a cross-sectional method conducted on preclinical students at the Faculty of Medicine, Pelita Harapan University class of 2021 and 2023, Lippo Village, Karawaci, Tangerang, Banten, Indonesia. Data collection was carried out via a Google form, which contained an informed consent sheet, a personal data questionnaire, the Beck Depression Inventory-II (BDI II) questionnaire, and the Multidimensional Scale of Perceived Social Support questionnaire. Participants were given an information sheet about the research being conducted attached to the form.

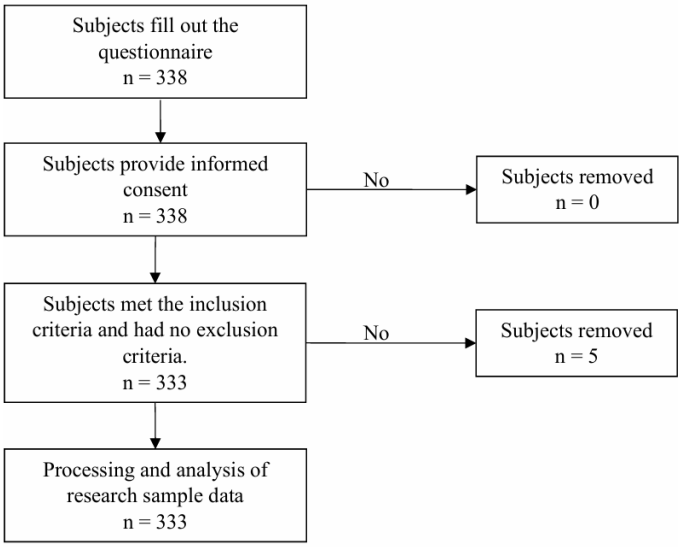
The Beck Depression Inventory (BDI) is one of the most well-known depression assessment instruments. In addition to being widely used to assess the severity of depression, the BDI is also frequently used as a screening tool to detect depressive symptoms both in clinical practice and in population surveys involving adolescents and adults. Since its initial development in 1961 in English, the BDI has been translated into many different languages with high levels of reliability and validity spanning across cultures. Nineteen respondents were asked to respond to questions based on their feelings over the past two weeks. The BDI II is used to evaluate 21 symptoms of depression, of which 15 reflect emotional and behavioral changes, while the other six symptoms are somatic. Each symptom is rated on a 0-3 point intensity scale, and these values are summed to give a total score ranging from 0 to 63. Higher levels of depression are indicated by higher scores. The 21 items describe feelings of sadness, pessimism or negative outlook, past experiences of failure, loss of interest in things previously enjoyed, feelings of guilt, feelings of punishment, lack of self-likeness, self-anxiety, suicidal thoughts or desires, crying, restlessness, loss of interest, feelings of doubt, feelings of worthlessness, loss of energy, changes in sleep patterns, irritability, changes in appetite, difficulty concentrating, fatigue, and loss of libido.[20] The total results of the BDI II are used to classify the level of depression, where a score of 0-10 indicates feelings of ups and downs that are still considered normal, a score of 11-16 indicates feelings of mild sadness, a score of 17-20 is the borderline depression, a score of 21-30 indicates mild depression, a score of 31-40 indicates moderate depression and a score of more than 40 can be interpreted as severe depression.[19,21,22]

The Multidimensional Scale of Perceived Social Support (MSPSS) is a widely used psychological tool designed to assess an individual's perceived social support from three sources: family, friends, and significant others. The scale consists of 12 items, each rated on a 7-point Likert scale, ranging from "very strongly disagree" to "very strongly agree." This allows for a detailed evaluation of the respondent's perceived support levels across different social domains. The MSPSS is particularly valued for its simplicity, reliability, and applicability across diverse populations and cultural contexts. Studies have demonstrated that higher scores on the MSPSS

are typically associated with better mental health outcomes, such as lower levels of depression and anxiety, while lower perceived social support has been linked to greater vulnerability to mental health issues.[8,23]

The research sample was preclinical students of the Faculty of Medicine, Pelita Harapan University, batch 2021 and 2023 who were willing to participate and agreed to the informed consent. Students who filled out the questionnaire incompletely and were undergoing treatment for mental illness were excluded from this study. Data collection was conducted over a period of three months, from January to March 2024. The estimated minimum sample size required was 266 people, calculated using an unpaired categorical comparative analytical design. The research sample was obtained using a non-probability sampling technique known as convenience sampling, in which participants are selected based on their availability and willingness to participate in the study. This method allows researchers to gather data from a readily accessible population, simplifying the recruitment process. The total population of students consists of 495 individuals (263 early preclinical students and 232 end-year preclinical students). The researcher distributed the questionnaire to the entire student population. The number of respondents obtained was 338 people. After being assessed using inclusion and exclusion criteria, 5 people had exclusion criteria, namely being treated for mental illness, so this sample was excluded from the study. The research sample that met the inclusion criteria and did not have exclusion criteria so that it was used in this study was 333 people (98.5%).

Figure 1.
Research sample selection stage



The data collected using the Google Form questionnaire was tabulated into the Microsoft Excel 2021 application and then analyzed using the Statistical Package for the Social Sciences (SPSS) version 26 program. The statistical test used to test the hypothesis in this study was the chi-square method. The hypothesis proposed was that there is a difference in the level of depression between early and end preclinical students at the Faculty of Medicine, Pelita Harapan University. The chi-square test is appropriate for this analysis as it assesses whether there is a significant association between categorical variables. By comparing observed and expected frequencies in each category, the test determines whether the differences are statistically significant. This study was ethically approved by the Medical Research and Ethics Committee of the Faculty of Medicine, Pelita Harapan University (No: 009/K-LKJ/ETIK/I/2024).

3. Results

The sample of this study is 333 students. Data regarding the characteristics of the research sample can be seen in Table 1.

Table 1.
Characteristics of Study Participants (n= 333)

Characteristics	n	Percentage (%)
Gender		
Man	91	27.33
Woman	242	72.67
Preclinical stage		
Early	145	43.54
End	188	56.46
Level of depression		
No depressed	269	80.78
Mild depression	43	12.91
Moderate depression	17	5.11
Severe depression	4	1.20
Level of social support		
High-level	185	55.56
Low-level	148	44.44

Table 2.
The Level of Depression of Preclinical Students

Study Participants Characteristics	The Level of Depression				p-value
	No	Mild	Moderate	Severe	
Gender					0.093
Man	79 (86.8%)	9 (9.9%)	1 (1.1%)	2 (2.2%)	
Woman	190 (78.5%)	34 (14.1%)	16 (6.6%)	2 (0.8%)	
Preclinical stage					0.348
Early	112 (77.2%)	23 (15.9%)	9 (6.2%)	1 (0.7%)	
End	157 (83.5%)	20 (10.6%)	8 (4.3%)	3 (1.6%)	
Level of social support					**0.001**
High-level	162 (87.6%)	18 (9.7%)	3 (1.6%)	2 (1.1%)	
Low-level	107 (72.3%)	25 (16.9%)	14 (9.5%)	2 (1.4%)	

In the bivariate analysis, as listed in Table 2., the p-value was calculated using the Pearson Chi-Square method. Statistically, there was no significant difference (p-value > 0.05) between the levels of depression in early and end preclinical students in the Faculty of Medicine, Pelita Harapan University (p-value = 0.348). There was no significant relationship (p-value = 0.093) between gender and the level of depression of preclinical students of the Faculty of Medicine, Pelita Harapan University. There was a significant relationship (p-value = 0.001) between social support and the level of depression of preclinical students of the Faculty of Medicine, Pelita Harapan University.

Table 3.
The Presence of Depression in Preclinical Students

	The Presence of Depression		p-value	OR	95% CI
	No	Yes			
Preclinical stage			0.194	0.67	0.388 - 1.158
Early	112 (77.2%)	33 (22.8%)			
End	157 (83.5%)	31 (16.5%)			

To find the Odd Ratio and 95% Confidence Interval values, a 2x2 table was created by combining mild, moderate, and severe depression groups into depression categories, as may be seen in Table 3. From the results of OR = 0.67, it was found that the risk of end-year preclinical students experiencing depression was 40.12% (protective) lower than that of early-level preclinical students

Table 4.
Comparison of Depression of Early and End Preclinical Students

Study Participants Characteristics	The Presence of Depression								p-value	OR	95% *CI*
	Early of Preclinical				End of Preclinical						
	Yes		No		Yes		No				
	n	%	n	%	n	%	n	%			
Gender									0.119	1.802	0.913 – 3.558
Man (n = 91)	6	6.60	33	36.26	6	6.60	46	50.54			
Woman (n = 242)	27	11.16	79	32.64	25	10.33	111	45.87			
Level of social support									**0.001**	2.699	1.532 – 4.753
High-level (n = 185)	13	7.03	62	33.51	10	5.41	100	54.05			
Low-level (n = 148)	20	13.51	50	33.79	21	14.19	57	38.51			

The risk of females experiencing depression was 64.31% (risk factor) higher than males (OR = 1.802). The risk of preclinical students who have low social support to experience depression is 72.97% (risk factor) higher than preclinical students who have high social support (OR = 2.699).

4. Discussion

Comparison of depression levels in early and end preclinical students was analyzed using statistical tests with the chi-square method so that a p-value of 0.348 was obtained, which can be interpreted that there is no statistically significant difference between depression levels in early and end preclinical students in the Faculty of Medicine, Pelita Harapan University. This can be caused by many other factors that influence depression. In their research, Saputri et al. assert that depression is influenced by many factors, such as health factors, life experiences, self-esteem, religiosity, and personality.[24] Risk factors such as lack of family support, ineffective coping strategies, and low resilience can influence levels of depressive symptoms regardless of preclinical year status.[25] Nearly one-fifth (19.22%) of the preclinical students surveyed (n = 333) experienced symptoms of depression. This is in accordance with the results of a study conducted by Nurrezki et al. in 2020 which stated there were 52 students (26.5%) who experienced depression out of 196 medical student respondents at Atma Jaya University.[26] According to Pokhrel et al., depression in preclinical students is usually due to academic and psychosocial stress, such as heavy workloads, lack of rest time, competition with peers, fear of failure in college, financial problems, and others.[10] Guo et al. also stated that depression in medical students is caused by high academic pressure, heavy learning demands, high expectations from parents, financial constraints, extensive courses, and social pressure during their studies.[11] The finding that 80.78% of the preclinical students did not experience depression is valuable and suggests several possible explanations. One potential factor is the presence of strong social support systems, which, as numerous studies have shown, can significantly reduce the risk of depression by providing emotional and practical assistance in coping with stressors.[8] In addition, students who possess effective coping strategies may be better equipped to handle the pressures of medical school.[27,28] Another possible explanation could be the presence of institutional support, such as mental health services, counseling, and peer support programs, which may help alleviate stress and prevent the onset of depressive symptoms. Moir et al. (2018) also emphasize that the academic environment plays a crucial role in students' mental health.[3] A positive, supportive learning environment that promotes work-life balance may contribute to lower rates of depression among students.

Depressive symptoms were found in both early and end preclinical students, highlighting the unique challenges at each academic stage. Depression symptoms were present in 22.8% of early preclinical student respondents. This is in accordance with the statement of Clairine et al. at the Faculty of Medicine, Udayana University, in 2020, who found the occurrence of depression in early preclinical students.[29] This result is supported by Maulina et al., who assert that depression in early-year students can occur due to difficulties in adapting to a new environment, differences in learning systems, and concerns in undergoing lectures.[15] In the end-year preclinical group, 16.5% of students showed signs of depression. Depression in end-year preclinical students was also

found in a study conducted by Hamdan et al. at the Faculty of Medicine, Alkhairaat University, Palu in 2021.[18] This is in accordance with the statement of Ramadhan and Laoli et al. who assert that depression in end year preclinical students can be caused by anxiety in entering the internship period or because of the final assignment, namely the thesis.[14,30] It was found that in terms of prevalence, depressive symptoms were more common in early preclinical students (33 students; 22.8%) compared to end students (31 students; 16.5%). However, severe depressive symptoms were more common in end preclinical students (3 students; 1.6%) compared to early students (1 student; 0.7%). The findings of this study are also consistent with the results of a study conducted by Singh et al. that the prevalence of depression in early preclinical students was higher compared to end preclinical students due to stress arising from adaptation to a new learning environment, feelings of homesickness in students who live far from home, high workload, and changes in sleep patterns.[31] The findings of this study are also in line with the results of research conducted by Puthran et al. that depression in early preclinical students (33.5%) is higher than in end-year students (20.5%).[32] The prevalence of depression in end-year students tends to be lower because their stress levels are also lower. After undergoing the first year of college, students have more controlled stress levels because they have successfully adapted to their environment, which supports their learning process.[31,33]

Social support significantly reduces depression levels among students, acting as a protective factor against mental health challenges. From 333 samples of this study, 185 students (55.56%) had high social support and 148 students (44.44%) had low social support. Of the 185 students with high social support, only 12.4% experienced any form of depression, most of which were mild cases. In contrast, 27.7% of the 148 students with low social support experienced depression, with a higher distribution of moderate and severe cases. The data indicates that social support is strongly associated with depression levels among students. This finding highlights the crucial role social support plays in mental health. The significantly lower rates of depression among students with strong social networks suggest that social support acts as a protective factor. This aligns with previous studies that have shown that emotional and practical support from family, friends, and peers can buffer against stress and reduce the likelihood of depression.[3,8] There is a statistically significant relationship (p-value <0.05) between social support and the level of depression in preclinical students of UPH Medical Faculty, with a significance level or p-value of 0.001. The higher incidence of depression among those with low social support underscores the vulnerability of students who lack these networks, as they may face academic and personal stressors without adequate coping mechanisms. The results of this study are supported by research conducted by Siti Zuhara Sari, which states that there is a negative relationship between social support and a person's level of depression; the lower a person's social support, the higher their level of depression. Social support can minimize feelings of helplessness and increase self-confidence, thereby reducing stress and depression.[34] This is also in accordance with what Apollo et al. assert that social support is useful in reducing levels of anxiety, depression, and symptoms of physical disorders for someone who experiences stress in the work environment.[35]

This study indicates that the lack of a significant relationship between gender and depression levels suggests that multiple factors influence depression across both genders, thus diminishing the importance of gender as a standalone variable. The majority of study participants were female (72.67%). Based on the prevalence of depression, 13.2% of males experienced symptoms of depression, whether mild, moderate, or severe depression and 21.5% of females experienced symptoms of depression. This shows that depression is more common in female respondents than in male respondents. The level of severe depression is more common in males (2.2%) than females (0.8%). The findings of this study align with existing literature, which often suggests that female medical students experience higher levels of depression compared to their male counterparts. For instance, Jadoon et al. highlight that social expectations and higher emotional burdens contribute to this disparity.[36] The lack of a significant relationship between gender and depression levels among preclinical students, as reflected by the p-value of 0.093 in this study, suggests that depression may be influenced by factors that transcend gender. Although previous research often shows women are more likely to experience depression due to biological and psychological reasons, other variables such as academic pressure, personal coping mechanisms, social support,

and environmental stressors may play a more dominant role in the medical student population. For medical students, stress factors like intense academic demands, competitive environments, and social stressors are common and affect both genders similarly. This aligns with findings from Yadav et al., who also reported no significant gender differences in depression among medical students, indicating that the shared stressors of medical education may level the playing field, overriding typical gender-based predispositions.[37] Research conducted by Mumang et al., showed that depression among medical students may be influenced by gender-transcendent factors such as academic pressure, personal coping strategies, social support, and environmental stressors.[38] These factors may influence depressive behavior regardless of gender.

This study has several strengths due to its use of a validated measure for depression, the Beck Depression Inventory-II (BDI-II). The BDI-II aligns with the depression criteria from the DSM V and includes additional statements that capture a broader range of depressive symptoms, providing a more accurate representation of depression levels. The questionnaire was also translated into Bahasa Indonesia, making it easier for respondents to understand and complete. Additionally, the study collected comprehensive information about the sample's characteristics, such as social support and gender, which adds to the reliability of the results. The relatively large sample size also enhances the representativeness of the findings. However, the study has limitations, such as the short timeframe, which prevented the analysis of all potential factors contributing to depression.

5. Conclusion

There was no statistically significant difference between the depression levels of early and end preclinical students of Pelita Harapan University (p-value 0.348). The prevalence of depression in early preclinical students (22.8%) was higher than in end preclinical students (16.5%). There was no statistically significant relationship between gender and depression levels of preclinical students of Pelita Harapan University (p-value = 0.093), but there was a statistically significant relationship between social support and depression levels of preclinical students of Pelita Harapan University (p-value = 0.001). The results of this study can provide information regarding the level of depression in preclinical students so that it can be used as a consideration for making a faculty or university policy. Future researchers are encouraged to investigate a wider range of depression risk factors across different medical student cohorts, as this could offer a more holistic understanding of depression in medical students.

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