Prevalence, Symptoms, and Associated Risk Factors for Depression Among Undergraduate Students of Non-Medical Universities in Mwanza, Tanzania

Stanley Mwita *, Mathew Ouma , Warren Edwin , Deogratias Katabalo , Karol Marwa

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Communication

Prevalence, Symptoms, and Associated Risk Factors for Depression Among Undergraduate Students of Non-Medical Universities in Mwanza, Tanzania

Stanley Mwita [1,*], Mathew Ouma [1], Warren Edwin [1], Deogratias Katabalo [1] and Karol Marwa [2]

[1] Department of Pharmaceutics and Pharmacy Practice, Catholic University of Health and Allied Sciences, Mwanza 33102, Tanzania

[2] Department of Pharmacology, Catholic University of Health and Allied Sciences, Mwanza 33102, Tanzania

* Correspondence: stanleymwita@gmail.com

Abstract: Background: University students are vulnerable to depression due to the transitional nature of their life stage, which often involves increased academic pressures and social changes. This study aims to examine the prevalence, symptoms, and associated risk factors for depression among undergraduate students of non-medical universities. Methods: This cross-sectional study was conducted at non-medical universities in Mwanza Region, Tanzania. A self-administered, structured questionnaire was used to collect the data. The presence and severity of depression symptoms were assessed using the Beck Depression Inventory (BDI-II). Results: A total of 768 students participated in the study. The prevalence of depression was 35.7%. A significant proportion experienced loss of interest and pleasure (n=516; 67.2%), felt easily tired (n=373; 48.6%), and had difficulty making decisions (n=303; 39.4%). A significant relationship was observed between age and depression, with participants aged 25 and above reporting higher rates of depression (53.2%) compared to those aged 18–24 (28.8%) ($p < 0.001$). Similarly, the year of study was significantly associated with depression; fourth-year students had the highest proportion of depression (64.3%), while first-year students had the lowest (26.2%) ($p < 0.001$). Conclusion: This study found that over one-third of undergraduate students in non-medical universities suffer from depression. Campus counseling services should prioritize screening for key symptoms while developing stress-management programs tailored to academic progression challenges.

Keywords: prevalence; symptoms; risk factors; depression; students

1. Introduction

Depression, also known as depressive disorder, is characterized by persistent psychological experiences of loss, sadness, and hopelessness in an individual's life [1]. Depression is a significant public health concern globally, particularly among young adults and students. An estimated 3.8% of the population experiences depression, and about 280 million people in the world have depression [2]. In low- and middle-income countries (LMICs), including Tanzania, depression among university students is often underdiagnosed and undertreated due to limited mental health services, stigma, and lack of awareness [3,4]. The university students are particularly vulnerable due to the transitional nature of their life stage, which often involves increased academic pressures, social changes, and the need for greater [5,6].

The prevalence of depression among university students varies widely across different regions and cultures. A previous systematic review reported that the pooled prevalence of depression among college students was 33.6%. The highest prevalence of depression symptoms was found in the African region, 40.1%, in LMICs, and among medical college students [7]. During a depressive episode, a person experiences a depressed mood (feeling sad, irritable, or empty). They may feel a loss of pleasure or interest in activities. Other symptoms may include: poor concentration, feelings of

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excessive guilt or low self-worth, hopelessness about the future, thoughts about dying or suicide, disrupted sleep, changes in appetite or weight, and feeling very tired or low in energy [2,8].

Research has shown that various risk factors contribute to the development of depression among university students. These factors may include academic stress, personality traits, and prior mental health history. Social factors, such as peer relationships and family support, also play a significant role in students' mental health [9]. Environmental factors, such as financial stress and living conditions, further complicate the mental health of students [10]. In Tanzania, previous studies have highlighted the mental health challenges faced by university students. Factors independently associated with depression included year of study, substance abuse, unhappy interpersonal relationships, and chronic psychological or physical illness. Protective factors identified included residing off-campus and perceived availability of social support, while risk factors encompassed a family history of mental illness and decreased academic performance [11,12].

Despite these insights, a paucity of research focuses on non-medical universities in Tanzania, particularly in regions like Mwanza. This study aims to fill this gap by examining the prevalence, symptoms, and associated risk factors for depression among undergraduate students of non-medical universities in Mwanza, Tanzania.

2. Materials and Methods

2.1. Study Design and Setting

This cross-sectional study was conducted from April to May 2022 at Saint Augustine University (SAUT) and the College of Business Education (CBE) in Mwanza Region, Tanzania. SAUT is a prominent private university affiliated with the Tanzania Episcopal Conference, offering various humanities, social sciences, business, and law academic programs. It has a diverse student population and is known for its emphasis on ethical leadership and social responsibility. Conversely, CBE is a public institution under the Ministry of Industry and Trade, specializing in business-related disciplines such as marketing, procurement, accounting, and information technology. Both institutions serve a large number of undergraduate students from various socio-economic backgrounds and regions across Tanzania.

2.2. Study Population and Sample Size

The study population was undergraduate students. Students who were academically active and present on the campus during the data collection period were included in the study, whereas students who were severely ill were excluded. The sample size was calculated using the Kish and Leslie formula, incorporating a 95% confidence level (corresponding to a standard normal value of 1.96), a 5% margin of error, and an estimated prevalence of mental distress among undergraduate students at the University of Gondar, Ethiopia (40.9%) [13]. This resulted in an initial sample size of 277 participants. Given that the study was conducted across two universities, this figure was doubled to ensure adequate representation, resulting in a final minimum sample size of 742.

For participant recruitment, the study employed a snowball sampling technique, a non-probability method particularly effective for reaching populations that may otherwise be difficult to access. This approach involved enlisting the assistance of initial participants to identify and refer other eligible individuals, thereby expanding the sample in a cascading manner

2.3. Data Collection

A self-administered, structured questionnaire was used to collect the information. Social, economic, and sociodemographic factors were included in the questionnaire. The presence and severity of depression symptoms were assessed using the Beck Depression Inventory (BDI-II). The 21 items, which consisted of four statements concerning a specific depressive symptom grouped in increasing severity, were rated on a scale of 0 to 3 [14]. The overall score falls from 0 to 63. BDI scores of 14 or higher were categorized as the presence of depression [15,16]. According to BDI-II, a score of

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0 to 4 is (normal), 5 to 13 is (borderline clinical depression), 14 to 19 is (mild depression), 20 to 28 is (moderate depression), and 29 to 63 is (severe depression) [14].

2.4. Data Analysis

The collected data were cleaned, coded, and entered into STATA Version 15 for analysis. Descriptive statistics (median, interquartile range (IQR), percentage, frequencies, and standard deviation) were used to summarize the continuous and categorical variables as appropriate. Chi-square tests were conducted to determine the relationship between categorical variables. To examine factors associated with depression, a logistic regression analysis was performed. All factors in the bivariate analysis were included in the final model. Data are presented as crude odds ratio (COR) and adjusted odds ratio (AOR) with 95% confidence intervals as appropriate. Factors with a p-value of less than 0.05 were considered statistically significant.

2.5. Ethical Considerations

Ethical clearance was obtained from the joint CUHAS/BMC Ethics and Review Committee (2310/2022 & 2263/2022). The permission to conduct the study was sought from the vice chancellor of SAUT and CBE. Written informed consent was requested from all study participants. To ensure confidentiality, unique identification numbers instead of names were used.

3. Results

3.1. Socio-Demographic Characteristics

A total of 768 students participated in the study. The majority were female, comprising 423 respondents (55.1%). The median age was 23 years, with an interquartile range of 21 to 25 years; the majority were aged between 18 and 24 (552; 71.9%). Most participants were in their third year of study, accounting for 329 individuals (42.8%). Additionally, a significant proportion reported having a good relationship with their parents (480; 62.5%), and nearly half described their family's economic status as moderate (360; 46.9%).

Table 1. Demographic characteristics of the participants (N=768).

Variable		Frequency	Percentage
Age (Years)	(Median ± IQR)	23 (21 - 25)	
	18 - 24	552	71.9
	25+	216	28.1
Sex	Male	345	44.9
	Female	423	55.1
Year of study	1	164	21.4
	2	233	30.3
	3	329	42.8
	4	42	5.5
Parent's Relationship	Good	480	62.5
	Moderate	201	26.2
	Poor	87	11.3
Family Economic Status	Good	264	34.4
	Moderate	360	46.9
	Poor	144	18.7

3.2. Prevalence and Common Symptoms of Depression

The prevalence of depression among 768 students was 35.7%. Table 2 presents various symptoms of clinical depression among 768 study participants. A significant proportion experienced loss of interest and pleasure (n=516; 67.2%), felt easily tired (n=373; 48.6%), had difficulty making decisions (n=303; 39.4%), had decreased appetite (n=302; 39.3%), had sleep disturbances (n=296; 38.5%), and had low mood (n=299; 38.0%).

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Table 2. Prevalence and common symptoms of depression among the study participants (N =768).

Symptom	Frequency	Percentage
Low mood	299	38.0
Loss of interest and pleasure	516	67.2
Reduced self-esteem and confidence	225	29.3
Guilt feelings and a sense of worthlessness	172	22.4
Pessimistic thoughts about the future	228	29.7
Sleep disturbances	296	38.5
Decreased appetite	302	39.3
Thought of ending life	168	21.9
Crying more than usual	252	32.8
Easily tired	373	48.6
Difficult to make decisions	303	39.4
Other symptoms	182	23.7
Depression		
Yes	274	35.7
No	494	64.3

3.3. Factors Associated with Depression

Table 3 presents the influence of demographic and socio-economic factors on depression among the study participants. A significant relationship was observed between age and depression, with participants aged 25 and above reporting higher rates of depression (53.2%) compared to those aged 18–24 (28.8%) ($p < 0.001$). Similarly, the year of study was significantly associated with depression; fourth-year students had the highest proportion of depression (64.3%), while first-year students had the lowest (26.2%) ($p < 0.001$). No significant associations were found between depression and gender ($p = 0.472$), parents' relationship status ($p = 0.201$), or family economic status ($p = 0.586$).

Table 3. Factors influencing depression among the study participants (N=768).

Variables		Depression		P -value
		Yes, n (%)	No, n (%)	
Age (Years)	**18 - 24**	159 (28.8)	393 (71.2)	<0.001
	25+	115 (53.2)	101 (46.8)	
Gender	Male	128 (37.1)	217 (62.9)	0.472
	Female	146 (34.6)	277 (65.4)	
Year of study	1	43 (26.2)	121 (73.8)	<0.001
	2	66 (28.3)	167 (71.7)	
	3	138 (41.9)	191 (58.1)	
	4	27 (64.3)	15 (35.7)	
Parent's relationship	Good	160 (33.3)	320 (66.7)	0.201
	Moderate	79 (39.3)	122 (60.7)	
	Poor	35 (40.2)	52 (59.8)	
Family economic status	Good	88 (33.3)	176 (66.7)	0.586
	Moderate	134 (37.2)	226 (62.8)	
	Poor	52 (36.1)	92 (63.9)	

Table 4 outlines both bivariate (COR) and multivariate (AOR) logistic regression analyses, identifying factors associated with depression. Age and year of study were significantly associated with depression in both analyses. Participants aged 25 and above had over twice the odds of experiencing depression compared to those aged 18–24 (AOR = 2.54, 95% CI: 1.79–3.62, $p < 0.001$). Regarding academic year, fourth-year students showed a markedly increased risk (AOR = 4.06, 95% CI: 1.90–8.67, $p < 0.001$), and third-year students also had significantly higher odds (AOR = 1.55, 95% CI: 1.01–2.39, $p = 0.047$) compared to first-year students. Gender, parents' relationship quality, and family economic status were not significantly associated with depression in multivariate analysis.

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Table 4. Bivariate and Multivariate analysis of factors associated with depression among participants.

Variables	COR	P-Value	AOR	P-Value
Age (Years)				
18 - 24	1		1	
25+	2.81 (2.03- 3.89)	<0.001	2.54 (1.79- 3.62)	<0.001
Gender				
Female	1		1	
Male	1.11 (0.83- 1.51)	0.457	1.29 (0.94- 1.76)	0.116
Year of study				
1	1		1	
2	2.54 (1.79- 3.62)	0.643	0.95 (0.60- 1.51)	0.837
3	2.01 (1.33- 3.03)	0.001	1.55 (1.01- 2.39)	0.047
4	5.42 (2.61- 11.29)	<0.001	4.06 (1.90- 8.67)	<0.001
Parent's relationship				
Good	1			
Moderate	1.29 (0.92- 1.82)	0.137	1.15 (0.79- 1.68)	0.467
Poor	1.35 (0.84- 2.15)	0.214	1.27 (0.76- 2.14)	0.360
Family economic status				
Good	1			
Moderate	1.18 (0.85- 1.65)	0.316	0.93 (0.65- 1.34)	0.704
Poor	1.13 (0.74- 1.73)	0.572	0.79 (0.48- 1.28)	0.335

4. Discussion

Depression among university students has become an increasingly recognized public health concern globally, with young adults experiencing a disproportionate burden due to academic, social, and economic pressures. The findings of this study reveal a substantial prevalence of depression (35.7%) among undergraduate students from non-medical universities in Mwanza, Tanzania. In contrast, previous studies conducted in Tanzania and Ethiopia reported lower prevalence rates, ranging from 14.0% to 28.2%.[11,12,17] Conversely, research from Ethiopia and India has highlighted even more alarming figures, with prevalence rates soaring to 45.9% [18] and 59.8% [19], respectively. The substantial prevalence of depression among undergraduate students indicates a need for increased awareness and understanding of mental health issues within university settings. Differences in the reported prevalences might be due to variations in cultural attitudes towards mental health in different regions; differences in sample size, demographic characteristics, and academic disciplines among studies; and variations in research methodologies, including the tools used for diagnosing depression and the definitions of depression employed, and the timing of data collection.

The most commonly reported symptoms were loss of interest and pleasure (67.2%), fatigue (48.6%), difficulty making decisions (39.4%), and sleep disturbances (38.5%). The findings are in line with results reported in previous studies [12,20–22]. There is a need for customized counseling and therapy programs to address these symptoms. For example, cognitive-behavioral therapy (CBT) can be tailored to address anhedonia (loss of interest) and indecisiveness, while interventions for fatigue and sleep disturbances might include behavioral activation and sleep hygiene education [23–25]. The presence of thoughts of ending life in 21.9% of participants is particularly alarming and highlights the urgent need for mental health initiatives and suicide prevention strategies in Tanzanian universities.

In this study, age emerged as a significant predictor of depression, with students aged 25 years and older showing markedly higher rates (53.2%) compared to those aged 18–24 (28.8%). Logistic regression analysis confirmed that older students were more than twice as likely to experience depression. This is inconsistent with findings from a similar study conducted in northern Tanzania [12], where age was not associated with depression. The year of study also demonstrated a strong association with depressive symptoms. Fourth-year students had the highest odds of depression, followed by third-year students, relative to first-year students. Similar patterns have been observed in a study conducted in the Kilimanjaro region, Tanzania. The increasing burden of academic workload, career uncertainties, and thesis requirements may contribute to this trend [26].

This study did not observe a statistically significant difference between male and female students. This is in agreement with a previous study conducted among undergraduate medical

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students [12]. While females reported slightly lower rates (34.6%) than males (37.1%), the adjusted analysis suggested gender was not an independent predictor of depression. Students with good parental and family economic status reported slightly lower rates of depression, however, in line with previous studies conducted in Ethiopia and Tanzania [11,17]. Neither the quality of the parental relationship nor perceived family economic status showed a significant association with depression in the multivariate model. This result may indicate that gender, parental relationship, and perceived family economic status do not independently predict depression, reinforcing the idea that socio-environmental, academic stress, peer relationships, or psychological factors may be more influential in determining depression risk among students [27,28].

This study provides valuable data on a relatively understudied population, non-medical university students in Mwanza, using a robust sample size and standardized diagnostic criteria. However, it is not without limitations. The use of self-reported data raises the risk of social desirability and recollection biases, and the cross-sectional design prevents causal inference. Additionally, the study did not assess potential confounders such as substance use, romantic relationships, or exposure to trauma, which could influence depression risk.

Future studies should adopt longitudinal designs to explore the trajectory of depressive symptoms over time and the long-term outcomes of affected students. Qualitative research may also provide richer insights into the lived experiences and coping mechanisms of depressed students. Furthermore, expanding research to include medical students, private universities, and postgraduates would help provide a more comprehensive picture of student mental health across educational sectors.

5. Conclusion

This study found that over one-third of undergraduate students in non-medical universities suffer from depression, with symptoms such as loss of interest and pleasure, fatigue, difficulty making decisions, and sleep disturbances being particularly common. Age and year of study were significantly associated with depression. Campus counseling services should prioritize screening for key symptoms while developing stress-management programs tailored to academic progression challenges. Additionally, university-wide mental health awareness campaigns could encourage early help-seeking behavior.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available upon request from the corresponding author.

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Conflicts of Interest: The authors declare no conflicts of interest.

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