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Prevalence and Socio-demographic Correlates of Depression among Students at the Kenya Methodist University

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Abstract: ***The aim of this study was to determine the prevalence and socio-demographic correlates of depression among students at the university. Designed as a cross-sectional study, using the standardized Center for Epidemiologic Studies Depression Scale Revised (CESD-R). Results: Prevalence of depression was 24.26%, majority having mild to moderate depression. Factors associated with depression were drug use, frequent alcohol and tobacco use, poor academic performance, financial difficulties, mode and level of study. The study recommends need for increased awareness of depressive symptoms among students, mechanisms to identify depression early and clear channels of intervention, and further research on the consequences of depression.***

Keywords: Depression, University students, prevalence, correlates

1. Introduction

Depression is a mood disorder in which a person feels very sad, hopeless, unimportant and is often unable to live in a normal way. It is characterized by a lack of interest in one's daily activities, significant changes in weight, either loss or gain that is often associated with a decrease or increase in appetite, insomnia (lack of sleep) or hypersomnia (excessive sleeping), decreased/ lack of energy, inability to concentrate, feelings of worthlessness or excessive guilt and recurrent thoughts of death or suicidal ideation, and/ or attempts.

The burden is estimated to be 50% higher among the female population [1] Onset may be at any age, but is more likely to be during early adolescence up to the mid-20s. Individuals 18 to 29 years old have a three-fold higher prevalence. [2]

University students are more vulnerable to depression as they are undergoing a major life transition period. Many of them are away from the safety of their homes for the first time, with no adult supervision and support, and have to make their own decisions. For others, it is the first time they will experience financial difficulties. There are also other major life stressors, such as exploration of new identities, striving to master new skills and increased time demands Depression among university students is associated with higher drop out and failure rates, and involvement in risky sexual behaviour, drug and alcohol abuse, increased risk of suicide, and a failure to "launch" their post university adult lives successfully.[3]

Understanding the factors leading to depression are important so as to identify mechanisms of decreasing the disease burden and reducing its negative impact on the lives of these young individuals.

2. Literature Review

2.1 Prevalence of depression

In a systematic review of studies on depression among university students published between 1990 and 2010, a wide range of 10-85% was reported [4], while a study conducted among university students in 23 high, low and middle income countries gave a prevalence ranging from 4.2 to 19% for the male students, and a range of 4.9% to 22% among female students [5]. Other global studies had similar rates, ranging from 21% to 52.3%. [5,6,7,8,9,10]. Among studies conducted in Africa, the prevalence of depression ranged between 16.2% to 62.6% [11,12,13,14,15,16,]. In Kenya, a prevalence rate of 35.7% of mild to moderate depression was reported at the university of Nairobi. 5.6% had severe depressive symptomatology. [16]

2.2 Socio-demographic Factors associated with depression

Age: Some literature showed higher depression with increasing age [6,7,11,16] while others showed no correlation of depression with age [7,12,14]

Sex: Studies reported either more female students having depression [4, 7, 10, 13, 17] or there being no difference between them and their male peers [5,6,8,9,12,14,16]

Year of study: The year of study was found to have no implication on depression in some studies (6,8,9,13) while others showed that first year students were more likely to be depressed (12,15)

Alcohol, drug and other substance use: Tobacco use was shown to have an increase in the rates of depression [9,10,12,13,16,17,18,19]. Increased alcohol intake was also shown to have a correlation with the development of depression among this cohort. [10,12,15]. Studies also showed increased depression with the use of illicit drugs [20] and more specifically khat [13]

Academic performance:
Low academic performance, low grades and failure have been shown to contribute to higher depression rates. [10,11,15,20,21]

Socio-economic factors: Several studies have shown increased depression among students with a lower socio-economic background [4,6,9,13,16,21] but some have shown that socio-economic factors have no influence on depression [12,14]

3. Methodology

This study was conducted at the university's Nairobi campus over a period of 4 weeks. It was a cross-sectional study. The study participants were selected using a stratified systematic sampling method. The students were divided into two strata, postgraduate and undergraduate students, and the undergraduate students were further subdivided into strata, representing the four schools in the campus (Business, Education and Social Sciences, Medicine and Health Sciences, and Science and Technology). The total sample size was 408. The tools used in the study were a researcher developed socio-demographic questionnaire and the Center for Epidemiologic Depression Scale, Revised version (CESD-R).

Inclusion Criteria:
1) All students enrolled for undergraduate or postgraduate study at the University's Nairobi Campus
2) Those who gave consent for the study

Exclusion Criteria
1) Those who did not consent for the study
2) Students in the Open and Distance Learning programmes
3) Pre-university and diploma students

4. Results

4.1 Socio-Demographic Characteristics

Table 1: Socio-Demographic characteristics

Characteristic	Frequency	Percentage
Age group(years)		
<20	60	15
20-29	258	63.7
30-39	57	14.1
40-49	20	5
≥50	9	2.2
Sex		
Male	170	42.1
Female	234	57.9
Year of study		
First year	161	50.5
Second year	58	17.8
Third year	61	18.8
Fourth year	42	12.9
Mode of study		
Full time	244	60.4
Part time	160	39.6
Level of Study		
Undergraduate	322	79.7
Postgraduate	82	20.3
School of Study		
Business	127	31.4
Education and Social Sciences	93	23.1
Medicine and Health Sciences	104	25.7
Science and Technology	80	19.8
Religion		
Christian	310	77.7
Moslem	84	21
Atheist	3	0.8
African Traditional Religion	1	0.25
Buddhist	1	0.25
Marital Status		
Single	321	79.4
Married	79	19.6
Divorced	4	1

From the above table, 63.7% of the students were between 20 and 29 years of age and were female (57.9%), and 60.6% o were full time students. Of the undergraduate students, 50.5% were in their first year. 77.7% of the students were Christians and 79.4% were single.

4.2 Individual Characteristics

Table 2: Individual Characteristics

Individual Characteristic	Frequency	Percentage
Drug use		`
General	155	39.2
Alcohol use	151	38.2
Rare	121	80.1
Frequent	29	19.2
Everyday	1	0.7
Tobacco use	33	8.4
Rare	26	78.8
Frequent	6	18.2
Everyday	1	3
Other substance use	34	8.7
Rare	20	58.8
Frequent	12	35.3
Everyday	2	5.9
Specific drug use		
Bhang (Cannabis)	17	4.3
Khat	11	2.8
Cocaine	3	0.76
Codeine	1	0.3
Academic Performance (GPA)	n = 289	
<2.0	15	5.2
2.0-2.74	137	47.4
2.75-3.24	102	35.3
3.25-3.74	29	10
>3.75	6	2.1

39.2% of the students reported to use alcohol, tobacco or other substances. 38.2% used alcohol, and among these, the majority (80.1%) used it on rare occasions. 8.4% consumed tobacco, with 78.8% being rare users. 8.7% of the students consumed other substances, with 58.8% being rare users. The substances commonly used were cannabis, khat, cocaine and codeine.

Majority of the students had a grade point average of between 2.0 to 3.24.

4.3 Prevalence of Depression

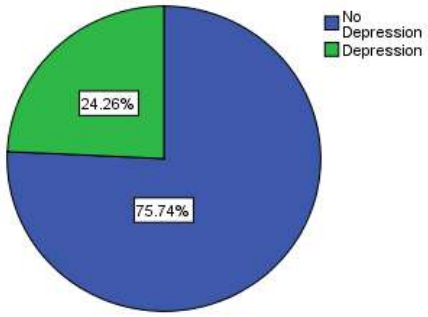

Figure 1: Prevalence of Depression

Majority of the students (75.74%) had no depression. 16.3 % of these had mild or sub threshold depression, 5.4% moderate depression, while 2.5% met the criteria for a Major Depressive Episode.

4.4 Distribution of depression as per the Socio-Demographic Characteristics

Age

Table 3: Distribution of Depression by age

Age group categories	Frequency	Percentage
< 20	15	15.3
20-29	67	68.4
30-39	11	11.2
40-49	1	1
≥ 50	4	4.1
Total	98	100

Majority of the students who screened positive for depression were of the ages 20-29 years, and the least were 40 to 49 years old.

Sex

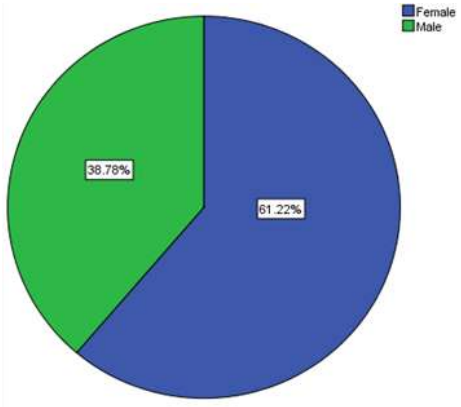

Figure 2: Distribution of Depression by sex.

Majority of the students (61.22% were female, while 38.78% were male.

Year of Study

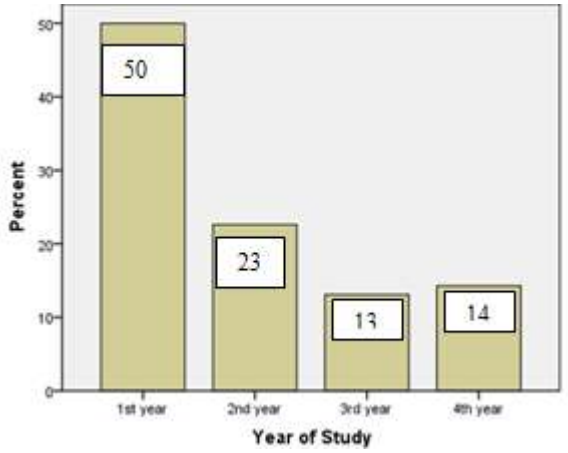

Figure 3: Distribution of Depression by Year of Study

Majority of the students (50%) were in their first year of study, while the least (13%) in their third.

Level of Study

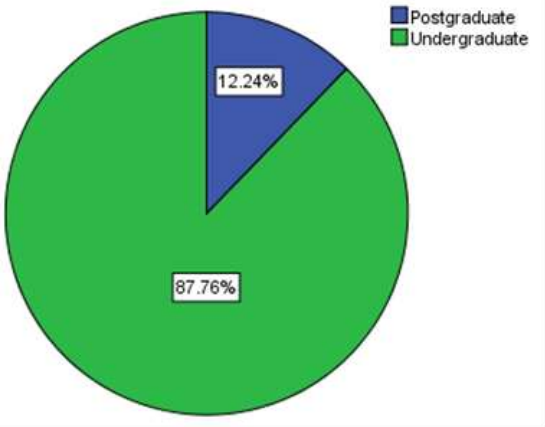

Figure 4: Distribution of Depression by level of study

Of the students who screened positive for depression, 87.7% were undergraduates while 12.24% were postgraduates. Of the undergraduate students, 67.4% had subthreshold symptoms, 24.4% symptoms of moderate depression and 8.2% had severe depression, while among the postgraduate students, 67% had subthreshold symptoms and 33% had moderate depression. No postgraduate student had severe depression.

Alcohol, Tobacco and Substance Use

Table 4: Distribution of Depression by Alcohol, Tobacco and Substance use

	Yes (%)	No (%)
General alcohol, tobacco and other substance use.	38 (24.5)	117 (75.5)
Use of alcohol	36 (23.8)	115 (76.2)
Alcohol use frequency Frequent Rare	 11 (37.9) 25 (20.5)	 18 (62.1) 97 (79.5)
Tobacco (n = 33)	11 (33.3)	22 (66.7)
Tobacco use frequency Frequent Rare	 4 (57.1) 7 (26.9)	 3 (42.9) 19 (73.1)
Other drugs (n = 34)	15 (44.1)	19 (55.9)
Other drugs use frequency (n = 33) Frequent	 10 (71.4)	 4 (28.6)

Rare	5 (25.0)	15 (75.0)
Bhang use (n = 17)	9 (52.9)	8 (47.1)
Cocaine use (n = 3)	3 (100.0)	0
Khat Use (n = 11)	4 (36.4)	7 (63.6)
Codeine Use (n = 1)	1 (100.0)	0

38% of the students who reported to be using alcohol, tobacco and other substances screened positive for depression. For the students who were using alcohol, 36% had depression, with 37.9% of those who drink alcohol frequently and 20.5% of those who drink rarely screening positive for depression.

33.3% of the students who reported that they smoked tobacco screened positive for depression, with 57.1% of the frequent users and 26.9% of the rare users having depression. Among the students using other substances apart from alcohol and tobacco there was a 44.1% prevalence of depression, with 71.4% of the frequent users and 25% of the rare users screening positive. The prevalence of depression among students using bhang was 52.9%, while those using khat had a prevalence of 36.4%. All the students who reported the use of cocaine and codeine met the CESD-R threshold for depression.

Academic Performance

Table 5: Distribution of Depression by Academic Performance

GPA	Depression (Percentage)		Total (%)
	Yes	No	
>3.75	6.7	93.3	100
3.25-3.74	12.7	87.3	100
2.75-3.24	28.5	71.5	100
2.0-2.74	41.4	58.6	100
<2.0	66.7	33.3	100

66.7% of the students in the category with the lowest academic performance screened positive for depression, while those with the highest grades had the least percentage of depressed students (6.7%).

Socio-Economic Factors

Table 6: Distribution of depression by Social Class

Social class	Percentage
Lower	5.2
Middle lower	43.2
Middle Upper	46.4
Upper	5.2

Of the students who screened positive for depression, majority were in the middle class (46.4% middle upper and 43.2% middle lower), while an equal number (5.2% each) were in the upper and lower social classes.

Hypothesis Testing

Chi square and fisher's exact tests were use to test the correlation between the dependent and independent variables

Table 7: Socio-Demographic Correlates

Variable	Depression		P value (0.05)
	Yes (%)	No (%)	
Age			
Mean (SD)	24.6 (7.4)	25.7 (7.7)	0.210*
Category, n (%)			
<20	15 (25.0)	45 (75.0)	
20-29	67 (26.0)	191 (74.0)	0.877*
30-39	11 (19.3)	46 (80.7)	0.458*
40-49	1 (5.0)	19 (95.0)	0.053*
>=50	4 (44.4)	5 (55.6)	0.223*
Sex			
Female	60 (25.6)	174 (74.4)	0.447
Male	38 (22.4)	132 (77.6)	
Marital Status			
Married	18 (22.8)	61 (77.2)	0.692
Single	80 (24.9)	241 (75.1)	
Mode of study			
Full-time	72 (29.5)	172 (70.5)	**0.002**
Part-time	26 (16.3)	134 (83.8)	
Year of Study			
1st year	43 (26.7)	118 (73.3)	0.316*
2nd year	20 (34.5)	38 (65.5)	0.541*
3rd year	11 (18.0)	50 (82.0)	0.497*
4th year	12 (28.6)	30 (71.4)	
Level of study			
Postgraduate	12 (14.6)	70 (85.4)	
Undergraduate	86 (26.7)	236 (73.3)	**0.023**
School			
Business	34 (26.8)	93 (73.2)	
Education & social sciences	21 (22.6)	72 (77.4)	0.370*
Medicine & Health Science	26 (25.0)	78(75.0)	0.833*
Science and Technology	17 (21.3)	3 (78.8)	0.552*

*fisher's exact test

Although there was a notable variation in the prevalence of depression among the different age groups, with the students who were aged more than 50 having a higher (44.4%) rate of depression, the difference was not found to be statistically significant (p>0.05). The student's gender, marital status, and the year, level and school of study were also found not to be significantly associated with depression (p>0.05).

The student's mode and level of study were found to be significantly associated with depression (p<0.05).

There was no statistically significant difference among the students in the various socio-economic classes (p>0.05).

Students who relied on parents or family for their finances however had a higher prevalence of depression of 27.1% as compared to 17.2% among those who were self-financing. The students in part time employment were found to be more depressed (35.1%) than those in full time (15.3%). Similarly, those who used public or private transport were less likely to be depressed (23% and 20.7% respectively) as compared to those walking (42.9%). Of the 12 students who lived in hostels, half of them were depressed. This was significantly higher prevalence of depression among those students who lived off campus alone as compared to those who lived off campus sharing.

Table 8: Socio-economic factors

	Depression		P value (0.05)
	Yes (%)	No (%)	
Socio-economic status			
Lower	5 (45.5)	6 (54.5)	0.622
Middle Lower	42 (23.6)	136 (76.4)	0.316
Middle Upper	45 (23.4)	147 (76.6)	0.307
Upper	5 (35.7)	9 (64.3)	
Finances			
Loan	2 (20.0)	8 (80.0)	0.826
Parents/Family	73 (27.1)	196 (72.9)	**0.039**
Scholarship	3 (42.9)	4 (57.1)	0.110
Self/friends	0	1 (100.0)	1.000
Self/Savings	20 (17.2)	96 (82.8)	
Employment			
No	72 (25.5)	210 (74.5)	
Yes	26 (21.3)	96 (78.7)	0.364*
Part or full time			
Full time	13 (15.3)	72 (84.7)	
Part time	13 (35.1)	24 (64.9)	**0.013***
Mode of transport			
Cycling	0	2 (100.0)	0.999
Private vehicle	12 (20.7)	46 (79.3)	**0.035**
Public vehicle	71 (23.0)	238 (77.0)	**0.023**
Train	2 (66.7)	1 (33.3)	0.445
Walking	12 (42.9)	16 (42.9)	
Residence			
Hostel	6 (50.0)	6 (50.0)	
Off campus- Alone	20 (19.4)	83 (80.6)	**0.024**
Off Campus- Family	64 (26.6)	177 (73.4)	0.088
Off campus- Sharing	2 (9.5)	19 (90.5)	**0.017**
Off campus- Spouse	5 (29.4)	12 (70.6)	0.265

*chi-square test

Academic performance was found to be statistically significant in that depressed students had a significantly lower mean GPA (2.9) compared to 3.2 in those who were not depressed (p<0.001).

Table 9: Individual Factors

	Depression		OR (95% CI)	P value (Chi-square test)
	Yes (%)	No (%)		
Mean GPA score	2.9 (0.5)	3.2 (0.4)		<0.001
Drug use No Yes	54 (22.7) 38(24.5)	184 (77.3) 117 (75.5)	1.0 1.1 (0.7-1.9)	0.676
Alcohol No Yes	56 (23.2) 36 (23.8)	185 (76.8) 115 (76.2)	1.0 1.0 (0.6-1.7)	0.891
Alcohol Frequent Rare	11 (37.9) 25 (20.5)	18 (62.1) 97 (79.5)	2.4 (1.0-5.7) 1.0	0.052
Tobacco No Yes	80 (22.3) 11 (33.3)	278 (77.7) 22 (66.7)	1.0 1.7 (0.8-3.7)	0.157
Tobacco Frequent Rare	4 (57.1) 7 (26.9)	3 (42.9) 19 (73.1)	3.6 (06-20.4) 1.0	0.145
Other drug No Yes	77(21.6) 15(44.1)	280 (78.4) 19 (55.9)	1.0 2.9 (1.4-5.9)	0.004
Other drug Frequent Rare	10 71.4) 5 (25.0)	4 (28.6) 15 (75.0)	7.5 (1.6-35.0) 1.0	0.010
Bhang use No Yes	81 (22.1) 9 (52.9)	285 (77.9) 8 (47.1)	1.0 4.0 (1.5-10.6)	0.071
Cocaine No Yes	87 (22.9) 3 (100.0)	293 (77.1) 0	-	0.013
Khat Use No Yes	86 (23.1) 4 (36.4)	286 (76.9) 7 (63.6)	1.0 1.9 (0.5-6.7)	0.315

Although there was no difference between students who used alcohol and those that do in terms of depression, frequent drinkers had higher prevalence of depression at 37.9% compared to those who rarely drunk alcohol (20.5%), OR 2.4 (95% CI 1.0-5.7), p=0.052.

Tobacco use was not found to be associated with depression. (p>0.005)

Use of drugs other than alcohol and tobacco, was associated with significantly higher prevalence of depression (44.1%) compared to 21.6% among those who did not use [OR 2.9 (95% CI 1.4-5.9), p=0.004. Moreover, frequent use of these drugs was associated with a higher prevalence of depression (71.4%), OR 7.5 (95% CI 1.6-35.0), p=0.010. Specifically, the 3 students who used cocaine were all found to be depressed.

Table 10: Multivariate Analysis of Independent factors

Variable	OR (95% CI)	P value
Study mode Full-time Part-time	 3.4 (1.1-10.7) 1.0	 0.039
Level of study Postgraduate Undergraduate	 1.0 3.1 (1.0-9.5)	 0.05

The mode and the level of study were the two factors found to be independently associated with depression. Full-time students had adjusted odds of 3.4 (95% CI 1.1-10.7) of being diagnosed with depression compared to part-time students. Similarly, the undergraduates had adjusted odds of 3.1 (95% CI 1.0-9.5) of being depressed. Employment type, mode of transport and residence were included in the logistic regression model and were found not to be independently associated with depression.

5. Discussion

The prevalence of depression of 24.26% that was found in this study is comparable to those reported in other studies among university students [5, 6, 10,11] but slightly lower than that reported in others [6,7,12,13,14,16,20].

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