Research Article

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Prevalence and Determinants of Depression and Suicidality among Health Sciences and Engineering Students at Busitema University: a Snapshot After Covid-19 Lockdown

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Abstract

Background

Depression is the most prevalent psychiatric disorder in Uganda and is strongly associated with suicide, an important cause of death among people aged 15-29 years. Among University students, depression affects social and academic performance, thus limiting the capabilities of this potentially productive population. Additionally, many students display suicidal behaviour which is commonly a manifestation of severe depression; hence, it is necessary to evaluate both depression and suicidality in a bid to address them. This cross-sectional study aimed to assess the prevalence and determinants of depression and suicidality among students of two campuses at Busitema University in rural eastern Uganda.

Methods

A total of 658 were recruited with 360 from Busitema Campus (Faculty of Engineering) and 298 from Mbale Campus (Faculty of Health Sciences). Depression and suicidality were assessed using the Mini International Neuropsychiatric Interview and relevant sociodemographic and clinical factors were collected using an investigator-designed questionnaire. Data were analysed quantitatively using STATA version 16.

Results

The prevalence of major depressive episodes and suicidality were 32.4% and 25.5%, respectively. The prevalence of both depression and suicidality was higher among health science students than engineering students. Risk factors for depression included studying the health sciences (adjusted odds ratio (AOR] =1.6, p-value (p) =0.005), having a chronic medical condition (AOR=2.9, p=0.001), being worried about academic activities (AOR=1.6, p=0.015), and being bullied by students

familial history of mental illness (AOR=1.8, p=0.022), while being in the second and fourth years of study ((AOR=0.4, p=0.001 and AOR=0.2, p<0.001, respectively) were protective against suicidality.

Conclusion
The findings indicated that depression and suicidality are highly prevalent public health challenges among university students and are influenced by factors, some of which are potentially modifiable. Hence, there is an urgent need for institutions of higher learning to implement interventions against these challenges involving staff, as well as students and their relatives, to ensure good mental health among students, which may improve their functioning and performance.

Keywords: Depression, Suicide, University, Students, Uganda, Covid-19.

1. Background

Depression is a common emotional disorder characterized by excessive feelings of sadness, loss of interest in previously pleasurable activities, and other associated signs and symptoms such as appetite and sleep disturbances1. Globally, 5% of adults suffer from depression, the leading cause of disability2,3. In addition to impaired functioning, it is also strongly associated with suicidality which is characterized by suicidal gestures, attempts, or ideas3. Suicide is the fourth leading cause of death among people aged 15-19 years and 77% of cases occur in low- and middle-income countries like Uganda4. Additionally, people with mental disorders other than depression, such as psychosis, can portray suicidal behaviors.

Several studies conducted at higher institutions of learning in different countries have indicated that students suffer from various psychiatric disorders, including depression and suicidality, accounting for approximately 25%5. Among university students in Uganda, suicidal behaviour has been reported in up to 31.9%, with 6.1% reporting previous suicidal attempts7. At Makerere University, 80.7% of undergraduate students reported depressive symptoms6. Additionally, several suicide cases have been reported among students attending various Universities in Uganda, including Busitema University. Factors associated with depression and suicidality vary geographically and range from biological predisposition to psychosocial challenges. University students face several challenges which increase their susceptibility to mental-health problems. These factors vary geographically and include experiencing abuse or bullying, having a pre-existing history of mental illness, financial challenges, family related challenges, such as parental separation, and a family history of mental illness5. Moreover, the workload and study environment may vary depending on the course pursued.

Additionally, personal lifestyle,8 academic, and relationship challenges characterised by inadequate interpersonal/social skills are associated with mental ill-health among university students.9 Unfortunately, with the current situation where people are recovering from the effects of the COVID-19lockdowns, the risk of mental illness among students appears to have increased 10. Biologically, some students join the university at a stage of late adolescence which is characterised by rapid psychological, social, and physiological growth that comes with additional challenges related to creating a self-image, identity, and risk-taking behaviour.11 This, combined with other challenges already stated, further increases the risk of tertiary students becoming depressed and exhibiting suicidal behaviour.1213 Although many institutions have put in place measures to prevent or reduce these mental health challenges, there is a need to clearly understand the burden and determinants of these challenges to accurately inform the interventions. Unfortunately, many institutions still lack context-specific literature in consideration of the COVID-19 pandemic and its chronic effects; hence, the challenges continue to increase which negatively impacts the performance of the concerned students. Therefore, this study aimed to determine the prevalence and determinants of depression and suicidality among undergraduate health science and engineering students at Busitema University, Eastern Uganda. The outcomes were meant to accurately inform the institution about the factors that need to be addressed to curb the increasing cases of mental health challenges among students.

2. Methods

2.1 Design: This cross-sectional study was conducted with 658 students pursuing Health Science and Engineering courses at Busitema University, located in Eastern Uganda.

2.2 Study Site

This study was conducted at the Busitema University Faculty of Health Sciences (BUFHS, Mbale Campus) and Busitema University Faculty of Engineering (Busitema Main Campus). The Faculty of Health Sciences at Busitema University is housed under the Mbale Regional Referral Hospital, which serves patients from 16 districts14. The BUFHS mainly offers health science/medical courses at the undergraduate level, including Bachelors in Medicine and surgery, bachelor of nursing science, and bachelor of anaesthesia, with about 500 students in total. The second setting was the Faculty of Engineering which is located in Busitema, Tororo District, and mainly offers engineering courses at the diploma and bachelor levels, including water resources and computer electrical engineering, mining, agro processing, textile, polymer and industrial, agricultural mechanisation, and irrigation, with a student population of approximately 700.15

2.3 Study Participants

Our target population was undergraduate students enrolled at Busitema University, either at the Faculty of Health Sciences or Faculty of Engineering. We included all the students taking undergraduate courses offered by the two faculties. We excluded stu-

dents who may have an emergency medical condition that renders them unable to respond to our study questions or anyone who may be actively involved in an academic activity such as examinations at the time of data collection. We also excluded those with a known history of any of the mental disorders being investigated before joining university.

Sample Size Estimation, Sampling and Recruitment Procedure.
Because the study used cluster sampling, the design effect was calculated using the following formula, considering an inter-cluster correlation coefficient (ICC) of 0.5, and the number of clusters (CN) was 2. This enabled the adjustment for design effects, given that data were collected from two faculties, here considered clusters.

Design effect (DE) is given as 1+ICC(CN-1). [16]
The sample size was estimated based on a precision level (α) of 0.05, a standard normal (Z value) of 1.96, and a desired confidence level (1 – α) of 95%. Following Cochran (1977)17, sample size was estimated using the following formula:
$n = Z^2 pq / e^2$

where *p* is the proportion of students assumed to have depression or suicidality and q is the proportion of students without mental disorders. We assumed that 50% of students experienced depression or suicidality. The estimated sample size was multiplied by the design effect (DE). We also allowed for a 10% non-response rate. Therefore, we recruited 658 students, and given the disproportionate number of students across the two campuses, probability proportional to size sampling was applied to allocate 298 students to the Faculty of Health Sciences and 360 to the Engineering faculty. At the faculty level, students were sampled according to their proportion per year of study. The participants were approached by research assistants through various programs/classes and requested to provide written informed consent to participate in the study. The recruitment was until the required sample size per class was obtained.

2.4 Data Collection, Management and Analysis.
Trained research assistants collected data using a piloted researcher-administered questionnaire consisting of three sections: 1) demographic factors, 2) the Mini-International Neuropsychiatric Interview (MINI), and 3) psychosocial factors associated with mental disorders. The MINI is a Diagnostic and Statistical Manual fifth edition-based tool that assesses mental disorders18. It has been widely used in different parts of Uganda and other countries to screen for mental disorders, including depression 19. Relevant psychosocial factors associated with mental disorders among university students were derived from existing literature. Data validation and cleaning were performed daily to ensure data quality and provide timely feedback to data collection teams. Data were collected by external research assistants, rather than students or teachers, to minimise conflicts of interest and enable participants to freely express themselves. All interviews were conducted in safe and secure places to ensure privacy, and the collected information was treated with a high level of confidentiality. Students were informed that participation was voluntary and that non-participation would not affect their learning in any way. The collected data were checked for completeness and entered into Excel sheets, and data summaries, tabulations, and cross-tabulations were run to detect internal inconsistencies in the data and filter out any response that did not make sense. During the final data cleaning, all processes were documented in a STATA Do file. Data were labelled and recoded, and a data dictionary was developed together with the metadata. Univariate, bivariate, and multivariate analyses were performed using the latest version of Stata software (StataCorp LP, College Station, Texas, USA). Frequency tables and cross tabulations were also performed. As the outcome variable was dichotomous, a binary logistic regression was fitted to assess the determinants of depression and suicidality. Odds ratios associated with various factors were estimated and adjusted for potential confounders and effect modifiers with a 5% statistical significance and 95% confidence interval. Variables with a p-value of less than 0.2 were included in the multivariate logistic regression model.

2.5 Ethical Consideration
Ethical approval was obtained from Busitema University, Faculty of Health Sciences Research and Ethics Committee (Number: BUFHS-2022-11), and the Uganda National Council of Science and Technology (Number: HS2700ES). Participants with signs and symptoms of mental illness received professional counselling services and were later referred to the Mbale Regional Referral Hospital psychiatry department for further psychiatric assessment and management.

3. Results
Of the 658 participants recruited, majority (67.8%) were aged 18-24 years, 63.7% were male, 84.5% were single, 67.2% were privately sponsored, and 62.2% were undertaking courses for a maximum duration of 4 years. A total of 213 (32.4%) participants screened positive for at least one major depressive episode, whereas 168 (25.5%) screened positive for suicidality. The prevalence of depression and suicidality was higher in the faculty of health sciences (39.3% and 30.5%, respectively) than in engineering (26.7% and 21.4%, respectively). (see Table 1.a. and 1.b.)

Variables	Total n=658(%)	Depression, n (%)		P-value	Suicidality, n (%)		P-value
		No n=445(%)	Yes n=213(%)		No n=490(%)	Yes n=168(%)	
Age category				0.547			0.720
18-24	446(67.8)	305(68.5)	141(66.2)		334(68.2)	112(66.7)	
>=25	212(32.2)	140(31.5)	72(33.8)		156(31.8)	56(33.3)	
Sex				0.529			0.455
Female	239(36.3)	158(35.5)	81(38.0)		182(37.1)	57(33.9)	
Male	419(63.7)	287(64.5)	132(62.0)		308(62.9)	111(66.1)	
Religion				0.718			0.179
Anglican	159(24.2)	106(23.8)	53(24.9)		117(23.9)	42(25.0)	
catholic	125(19.0)	86(19.3)	39(18.3)		84(17.1)	41(24.4)	
Christian	293(44.5)	197(44.3)	96(45.1)		225(45.9)	68(40.5)	
SDA	22(3.3)	13(2.9)	9(4.2)		17(3.5)	5(3.0)	
Moslem	50(7.6)	35(7.9)	15(7.0)		38(7.8)	12(7.1)	
Others	9(1.4)	8(1.8)	1(0.5)		9(1.8)	0(0.0)	
Marital status				0.894			0.296
Married	75(11.4)	49(11.0)	26(12.2)		51(10.4)	24(14.3)	
Single	556(84.5)	378(84.9)	178(83.6)		417(85.1)	139(82.7)	
Cohabiting	27(4.1)	18(4.0)	9(4.2)		22(4.5)	5(3.0)	
Faculty				0.001			0.007
Health Sciences	298(45.3)	181(40.7)	117(54.9)		207(42.2)	91(54.2)	
Engineering	360(54.7)	264(59.3)	96(45.1)		283(57.8)	77(45.8)	
Year of study				0.692			0.000
1	274(41.6)	191(42.9)	83(39.0)		184(37.6)	90(53.6)	
2	156(23.7)	104(23.4)	52(24.4)		127(25.9)	29(17.3)	
3	94(14.3)	58(13.0)	36(16.9)		63(12.9)	31(18.5)	
4	107(16.3)	74(16.6)	33(15.5)		93(19.0)	14(8.3)	
5	27(4.1)	18(4.0)	9(4.2)		23(4.7)	4(2.4)	
Source of funding				0.870			0.549
Private	442(67.2)	298(67.0)	144(67.6)		326(66.5)	116(69.0)	
Government	216(32.8)	147(33.0)	69(32.4)		164(33.5)	52(31.0)	
University residence				0.301			0.348
Private (self)	325(49.4)	217(48.8)	108(50.7)		234(47.8)	91(54.2)	
University hall	323(49.1)	219(49.2)	104(48.8)		248(50.6)	75(44.6)	
Home (with guardian)	10(1.5)	9(2.0)	1(0.5)		8(1.6)	2(1.2)	
Home residence				0.022			0.028
Rural	138(21.0)	106(23.8)	32(15.0)		109(22.2)	29(17.3)	
Semi urban	357(54.3)	228(51.2)	129(60.6)		251(51.2)	106(63.1)	

Urban (city)	163(24.8)	111(24.9)	52(24.4)		130(26.5)	33(19.6)	
Region of origin				0.632			0.742
Eastern	317(48.2)	217(48.8)	100(46.9)		240(49.0)	77(45.8)	
western	112(17.0)	73(16.4)	39(18.3)		80(16.3)	32(19.0)	
Central	138(21.0)	91(20.4)	47(22.1)		99(20.2)	39(23.2)	
Northern	87(13.2)	60(13.5)	27(12.7)		68(13.9)	19(11.3)	
non-Ugandan	4(0.6)	4(0.9)	0(0.0)		3(0.6)	1(0.6)	
Family financial status				0.156			0.951
Wealthy	20(3.0)	16(3.6)	4(1.9)		16(3.3)	4(2.4)	
Quite well off	293(44.5)	208(46.7)	85(39.9)		217(44.3)	76(45.2)	
Not well off	278(42.2)	180(40.4)	98(46.0)		207(42.2)	71(42.3)	
Poor	67(10.2)	41(9.2)	26(12.2)		50(10.2)	17(10.1)	
Maximum duration of course				0.010			0.003
0.5	6(0.9)	4(0.9)	2(0.9)		5(1.0)	1(0.6)	
1	2(0.3)	2(0.4)	0(0.0)		1(0.2)	1(0.6)	
2	47(7.1)	41(9.2)	6(2.8)		29(5.9)	18(10.7)	
4	409(62.2)	280(62.9)	129(60.6)		324(66.1)	85(50.6)	
5	184(28.0)	113(25.4)	71(33.3)		125(25.5)	59(35.1)	
6	2(0.3)	0(0.0)	2(0.9)		0(0.0)	2(1.2)	
7	8(1.2)	5(1.1)	3(1.4)		6(1.2)	2(1.2)	
Have a retake	19(2.9)	9(2.0)	10(4.7)	0.055	14(2.9)	5(3.0)	0.937

Table 1.a. Study participant characteristics (N=658)

Variable	Total n=658(%)	Depression, n (%)		P-value	Suicidality, n (%)		P-value
		No n=445(%)	Yes n=213(%)		No n=490(%)	Yes n=168(%)	
History of chronic medical condition	48(7.3)	20(4.5)	28(13.1)	0.000	32(6.5)	16(9.5)	0.198
Often worried about academic performance	335(50.9)	197(44.3)	138(64.8)	0.000	241(49.2)	94(56.0)	0.130
Often worried about academic activities	187(28.4)	102(22.9)	85(39.9)	0.000	128(26.1)	59(35.1)	0.026
Bullied by students	45(6.8)	22(4.9)	23(10.8)	0.005	34(6.9)	11(6.5)	0.862
Bullied by teachers	44(6.7)	28(6.3)	16(7.5)	0.558	31(6.3)	13(7.7)	0.527
Involved in romantic relationship	461(70.1)	299(67.2)	162(76.1)	0.020	333(68.0)	128(76.2)	0.044
Feel pressured by relatives about your academics	229(34.8)	133(29.9)	96(45.1)	0.000	159(32.4)	70(41.7)	0.030
Having dependents	165(25.1)	108(24.3)	57(26.8)	0.490	117(23.9)	48(28.6)	0.226
Family history of mental illness	112(17.0)	69(15.5)	43(20.2)	0.135	72(14.7)	40(23.8)	0.007

Family history chronic medical illness	344(52.3)	229(51.5)	115(54.0)	0.543	252(51.4)	92(54.8)	0.455
Choose by yourself to undertake course of study	552(83.9)	379(85.2)	173(81.2)	0.197	418(85.3)	134(79.8)	0.092
Assured of getting tuition upkeep	478(72.6)	331(74.4)	147(69.0)	0.148	365(74.5)	113(67.3)	0.070
Ever use alcoholic beverages	265(40.3)	172(38.7)	93(43.7)	0.220	190(38.8)	75(44.6)	0.181
Ever use any other substance	74(11.2)	39(8.8)	35(16.4)	0.004	46(9.4)	28(16.7)	0.010

Table 1.B. Study participant characteristics (N=658)

The prevalence of current, past, and recurrent major depressive episodes was 33.5%, 45.3%, and 21.2%, respectively. Logistic regression analysis showed that any major depressive episode was associated with studying at the Faculty of Health Sciences (adjusted odds ratio (AOR] =1.6, p-value (p)=0.005), having a chronic medical condition (AOR=2.9, p=0.001), being worried about academic activities (AOR=1.6, p=0.015), and being bullied by students (AOR=2.0, p=0.038) (see Table 2).

Variables	Crude OR (95% C.I)	P value	AOR (95% C.I)	P value
Faculty Health sciences	1.8(1.3, 2.5)	0.001	1.6(1.2, 2.5)	0.005
Engineering	1		1	
Home residence				
Rural	1		1	
Semi urban	1.9(1.2, 2.9)	0.006	1.5(0.9, 2.5)	0.082
Urban (city)	1.6(0.9, 2.6)	0.094	1.4(0.8, 2.4)	0.263
Have a retake	2.4(0.9, 6.0)	0.063	1.7(0.7, 4.6)	0.264
History of chronic medical condition	3.2(1.8, 5.9)	0.001	2.9(1.5, 5.5)	0.001
Often worried about academic performance	2.3(1.6, 3.2)	0.001	1.6(1.1, 2.4)	0.015
Often worried about academic activities	2.2(1.6, 3.2)	0.001	1.3(0.8, 1.9)	0.266
Bullied by students	2.3(1.3, 4.3)	0.007	2.0(1.04, 3.8)	0.038
Involved in romantic relationship	1.6(1.1, 2.2)	0.021	1.3(0.9, 2.0)	0.166
Feel pressured by relatives about your academics	1.9(1.4, 2.7)	0.001	1.4(1.0, 2.0)	0.067
Family history of mental illness	1.4(0.9, 2.1)	0.136	1.2(0.8, 1.9)	0.379
Choose by yourself to undertake course of study	0.8(0.5, 1.2)	0.198	0.7(0.5, 1.2)	0.221
Assured of getting tuition upkeep	0.8(0.5, 1.1)	0.149	0.8(0.5, 1.2)	0.270
Ever use any other substance	2.0(1.3, 3.3)	0.004	1.5(0.9, 2.6)	0.119

Table 2: Factors associated with major depressive episode among university students at both campuses, (n=213).

Among the 168 students who screened positive for suicidality, 151(78.2%) had a current episode, 26 (13.5%) reported a lifetime attempt, and 16(8.3%) were likely to attempt suicide in the near future. The median suicidality score was 16 (interquartile range:8-24) and 13 (2.0%) students screened positive for suicidal behaviour disorder. Logistic regression analysis indicated that suicidality was associated with a family history of mental illness (AOR=1.8, p=0.017) and a major depressive episode (AOR=6.2, p<0.001). Conversely, the second and fourth years of the study (AOR=0.4, p=0.001 and AOR=0.2, p<0.001, respectively) were protective against suicidality among the students. (see Table 3)

Variables	COR (95% C.I)	P value	AOR (95% C.I)	P value
Faculty Health sciences	1.6(1.1, 2.3)	0.008	1.2(0.8, 1.8)	0.412
Engineering	1		1	
Year of study				
1	1		1	
2	0.5(0.3, o.8)	0.002	0.4(0.2, 0.7)	0.001
3	1.0(0.6, 1.7)	0.981	0.9(0.5, 1.6)	0.739
4	0.3(0.2, 0.6)	0.000	0.2(0.1, 0.4)	<0.001
5	0.4(0.1, 1.1)	0.063	0.6(0.1, 1.1)	0.080
Home residence				
Rural	1		1	
Semi urban	1.6(0.9, 2.5)	0.053	1.5(0.9, 2.5)	0.121
Urban (city)	0.9(0.5, 1.7)	0.869	0.9(0.5, 1.7)	0.816
History of chronic medical condition	1.5(0.8, 2.8)	0.201	1.5(0.7, 3.0)	0.267
Often worried about academic performance	1.3(0.9, 1.9)	0.130	1.0(0.7, 1.6)	0.824
Often worried about academic activities	1.5(1.1, 2.2)	0.026	1.2(0.7, 1.8)	0.488
Involved in romantic relationship	1.5(1.01, 2.3)	0.045	1.5(0.9, 2.3)	0.071
Feel pressured by relatives about your academics	1.5(1.03, 2.1)	0.031	1.3(0.9, 2.0)	0.176
Family history of mental illness	1.8(1.2, 2.8)	0.007	1.8(1.1, 2.9)	0.022
Choose by yourself to undertake course of study	0.7(0.4, 1.1)	0.093	0.6(0.4, 1.0)	0.064
Assured of getting tuition upkeep	0.7(0.5, 1.02)	0.070	0.8(0.5, 1.2)	0.325
Ever use alcoholic beverages	1.3(0.9, 1.8)	0.181	1.1(0.7, 1.7)	0.591
Ever use any other substance	1.9(1.2, 3.2)	0.011	1.5(0.8, 2.6)	0.201
Major depressive episode	6.1(4.2,8.9)	<0.001	6.2(4.1,9.5)	<0.001

Table 3: Factors associated with suicidality among students at both campuses, (n=168).

4. Discussion

This study aimed to determine the prevalence of depression, suicidality, and its associated factors among undergraduate students in BU. We found that the prevalence of major depressive episodes and suicidality was 32.4% and 25.5%, respectively, which were the highest among students pursuing health science courses. Depression was associated with studying health sciences, chronic medical conditions, worries about academic activities, and being bullied by students. Conversely, suicidality was associated with a familial history of mental illness and major depressive episodes, while those in the second and fourth years of study were protective factors.

These findings are in line with several studies that have documented the prevalence of depression among university students to be 31% at the University of Jaffna in Sri Lanka20 and 31.2% at Gulu University in Northern Uganda21. However, they also differ markedly from what has been reported in other settings, such as Ethiopia, where only 28.3% of Jimma University students reported depressive symptoms, although this study was conducted before the COVID-19 pandemic22. Additionally, this prevalence is considerably higher than the 20% reported in an online survey conducted during the COVID-19 pandemic across four Uganda Universities23. Notably, this study did not include Eastern Uganda which has markedly higher poverty levels. However, having used an online survey due to COVID-19 infection prevention and control interventions/restrictions at the time, many depressed patients with limited access to the internet may have missed the survey, resulting in a lower prevalence. However, our findings may point to a worsening mental health status as a long-term psychosocial complication of the COVID-19 pandemic. In addition, our findings on the prevalence of depression are much higher than those found in Spain, where depression among university students screened using the Depression, Anxiety, and Stress Scale (DASS) was found to be 18.4%.24 However, this study was conducted in a high-income country before the COVID-19 pandemic which could explain the low prevalence compared to the findings in this study. Another study conducted in China during the COVID-19 pandemic using the DASS also reported a lower prevalence of depression (27.3%) than our findings25. This may still emphasise that mental health challenges are more prevalent among students attending institutions in developing countries, with exacerbations during the COVID-19 pandemic26. However, another online survey conducted during the COVID-19 pandemic reported that 80.7%

of the university students experienced depressive symptoms6. In this study, we used a tool to screen for major depressive episodes based on the DSM-5 criteria. Similar to the above study, most studies conducted among university students have used tools that screen only for depressive symptoms. Hence, this study provides important information for clinical purposes because it uses a tool that follows the standard DSM-5 criteria for major depressive episodes. Depression was found to be associated with studying health science courses compared to engineering courses, which may be due to differences in the intensity of the courses. In addition, medical trainees may have been more exposed to COVID-19 patients during the pandemic which potentially increased the risk of psychological distress, as documented in previous studies, while engineering students rarely interact with patients27,28. Students with chronic medical conditions were at a higher risk of depression because they suffered from chronic illnesses worsened by stressors at the university. This is in line with the literature which indicates that people with chronic illnesses suffer more from depression than those without.29,30 Mohammed et al. found that medical students with chronic medical conditions are more likely to suffer from depression than their health peers31. Additionally, since university life involves various academic activities such as assignments, lectures, and exams, some students tend to excessively worry about them which can potentially predispose them to depression, especially if they fail to fulfil their expectations. In addition, bullying among students has been reported as a common cause of depression in victims because it affects their self-esteem and image, leading to social withdrawal, feelings of sadness, and hence depression.32–34 Unlike findings from other studies conducted during the COVID-19 pandemic which found that being a final-year student was protective against depression, there was no significant association between depression and year of study6,23. This could be because COVID-19 and the associated lockdown non-selectively affected most people regardless of the student's year of study.

The prevalence of suicidality in this study was higher than that reported by Kaggwa et al. (13.9%23. Although this could be due to differences in data collection methods, our study used a physical approach versus an online survey, which could still indicate worsening mental health problems attributable to COVID-19. Generally, the current study was conducted when the country was recovering from COVID-19 which caused significant psychological and social challenges to people's livelihoods, posing a higher risk of mental health challenges. Another study conducted in southwestern Uganda reported a higher prevalence of suicidal ideation (31.9%) in university students35. Notably, this study was conducted at the time when the incidence of COVID-19 was at its peak, and most students were out of school as a preventive measure against the spread of COVID-19, suggesting a high prevalence of suicidal ideation among people even before the COVID 19 lockdowns.

This study found that suicidality was associated with a family history of mental illness which is in line with findings from other studies, indicating that mental illness has a strong genetic link36. Mental illnesses that have a familial predisposition, such as psychotic disorders and depression, have been linked to a higher risk of suicide37,38. Additionally, these students may easily give up when faced with challenges in fear of mentally breaking down, just like their relatives who suffer from mental illness. There was also a strong link between suicide and depression which supports the existing literature showing that depression is a risk factor for suicide. Generally, people with depression experience symptoms which make life appear meaningless and hence view suicide as a way of ending their suffering39–41.

However, unlike other studies, we also found that years two and four of study were protective against suicide. Usually, when students join year one of the university, there tends to be pressure and a need to adjust to the new environment and routines. Consequently, year two of training comes with some relief since they are more used to university life and can cope better, hence providing a protective effect. Similarly, most courses at the university end in the fourth year of study, and students are more focused on completing the course which gives them hope for a bright future ahead, and hence, less likely to be suicidal. Although several studies have documented that the final year of study is protective against mental disorders such as depression, this study shows that the same effect is observed among university students regarding suicidality.

Most factors associated with depression and suicidality among university students are modifiable, and although they may have existed before the COVID-19 pandemic, the findings indicate a worsening picture. As University administrations have put in place interventions that can reduce these occurrences, the above factors need to be considered for their effectiveness. Universities supporting and enforcing existing mental health programs, such as regular mental health talks and student mentorship programs, may improve the mental health of students.

However, this study was conducted at two of the six campuses of Busitema University and did not include several other universities in the region. Hence, some findings may not be generalisable to other institutions.

5. Conclusion

Generally, as a country recovers from the COVID-19 pandemic, the prevalence of depression and suicidality increases among university students. Although the prevalence of these disorders is comparable to the findings of some existing studies, the risk and protective factors differ markedly from place to place. Therefore, there is a need to address the influencing factors which are generally modifiable, draw lessons, and reinforce protective factors against mental health challenges. This calls for designing context-specific interventions that mainly involve students, university staff, and administrators, such as stress management programs for students and implementing policies against bullying. This should also involve early identification and support of students who are at the highest risk of mental breakdown, such as those with chronic

illnesses and a family history of mental illness.

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Declarations

Ethical Approval and Consent to Participate

Ethical approval was obtained from Busitema University, Faculty of Health Sciences Research and Ethics Committee (Number: BUFHS-2022-11), and the Uganda National Council of Science and Technology (Number: HS2700ES). All participants provided written informed consent prior to participating in the study. Permission to collect data at the two university campuses was obtained from the Vice Chancellor's office. All study procedures were performed in accordance with the guidelines of the Uganda National Council of Science and Technology.

Consent for Publication: Not applicable.

Availability of Data and Materials

The datasets generated and/or analysed during the current study are available from the corresponding author upon reasonable request.

Competing Interests

The authors declare that they have no competing interests.

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Authors Contribution

JK conceived the idea, wrote the proposal, oversaw data collection, analysis, and interpretation of results, drafted the manuscript, and proofread all the co-authors' contributions. EKK, JM, and FO conceived the idea; wrote the proposal; participated in data collection, analysis, and interpretation of results; and proofread all versions of the manuscript, including the final version. CEA, AGN, AA, AO, and PW supported proposal writing, data collection, analysis, and interpretation of results and proofread all versions of the manuscript.

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