

Correlates of suicide behaviors and co-existing mental health conditions among undergraduate university students in Kenya: A web-based cross-sectional correlation survey

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Abstract

The trend of suicide rates among university students has been increasing globally. The purpose of this study was to establish the correlates of suicide behaviors and coexisting mental health conditions among undergraduate university students in Kenya. The study used a web based cross sectional correlation survey conducted among 138 university students in Kenya. A google form was formulated using researcher-generated socio-demographic questionnaire, Beck Depression Inventory second edition; Suicide Behavior Questionnaire revised edition, and Child and Adolescent Trauma Screen – Youth to collect data. The prevalence of suicide ideation was at 29.7%, suicide plans was at 48.5% and attempted suicide was at 13.8%. Also, the percentage of participants with clinical depression was 59.2% while Clinical PTSD was 71.8%. A positive correlation was found between suicide behaviour (ideation, plan and attempt) and depression ($r = .373^{**}$ $p=0.000$), a positive correlation between suicide behaviour and PTSD ($r = .174^*$ $p = 0.038$) and positive correlation between PTSD and depression ($r= .395^{**}$ $P = 0.000$). Clinicians need to assess other co-morbidities having screened university students for suicide behaviours. This will help to determine holistic therapeutic approaches to treat university students with suicide behaviours and other co-existing mental health conditions.

Keyword: Correlates, suicide behaviours, comorbidity, co-existing, mental health conditions, undergraduate university students.

Introduction and Background

Suicide has become a leading cause of injury and death worldwide while university students have been found to be among the most affected more than the general population (Abdu et al., 2020; Anny-Chen et al., 2020). This has been found to be true in both developed and developing countries although they show marked differences in suicidal behavior (Vijayakumar, 2004). Vijayakumar found that in developed countries, suicide was highest among the age group of 15-24 and the elderly while in developing countries it was highest

among youth aged below 30 years. Youth aged below 30 years form the highest population of undergraduate university students. It is therefore, important to establish the prevalence of suicidal ideation, suicidal plan and attempts among university students in order for relevant measures to be put in place to reduce rates of suicidal death among them.

Previous studies have found that most suicides were related to psychiatric illnesses such as depression, psychosis and substance use (Bachman, 2018; Roca et al., 2019; Wanyoike 2014). Akram et al. (2020) in a study conducted in UK among 1273 university students found that 37.3% of students were at high risk for suicidal behavior. The study also established that 42.2% of the students had contemplated suicide at least once in the same year while 25.1% had told someone about suicidal ideation thoughts at least once. Higher prevalence was found in a study by Abdu and colleagues where the lifetime prevalence of suicidal ideation was found to be 58.3%, suicidal plan was at 37.3% and suicidal attempt was 4.4% among university students in Mettu University in South West Ethiopia (Abdu et al., 2020). The study established that suicidal ideation was higher among females, students with poor social support, family history of suicide attempt, lifetime alcohol use, rural residence and not engaging in religious activities frequently.

While the prevalence of suicidal ideation in Ethiopia may be considered high, a study conducted in Bangladesh utilizing suicide press reports found that 61% of suicide reports were from individuals aged below 30 years and many were university students (Shah et al., 2017). However, a study conducted among university students in six Asian nations found a lower prevalence of suicidal ideation at 11.7% and those students who had attempted suicide were 2.4% (Peltzer et al., 2017). Similarly, a study conducted among university students in Ghana found a lower prevalence of suicidal ideation at 15.2%, attempted suicide at 6.3%, death wishes at 24.3% and suicide plan at 6.6% (Owusu-Ansah et al., 2020). The foregoing ascertains that suicidal behavior is prevalent among university students both in developed and developing countries though the prevalence appears to be varied. To be able to come up with measures to mitigate suicide behavior among university students, it is important to also establish the correlates of suicidal behavior and other co-morbid mental illnesses so that the necessary interventions may be put in place to prevent the same.

A study conducted by Rotenstein et al. (2016) among medical students from 47 countries found that 11.5% of medical students had suicidal ideation while 27% showed symptoms of clinical depression. The study went on to explain that depression and subsequent suicidal

ideation among medical students was due to admission processes with high entry points as well as medical school competitive environment despite the fact that it was a desirable course to many students (Coentre,& Góis, 2018). Despite the presence of clinical depression and suicidal ideation being present among the medical students, a treatment gap of 85% was found as only 15% of the students sought treatment for depression. This means that the mental health condition could only get worse without the relevant intervention being provided. This is true of many programs that undergraduate university students undertake as there is really no easy course at university.

Similarly, other studies have found corresponding results. In a study conducted by Akram et al. (2020) in the UK, findings showed that suicidal ideation was significantly associated with symptoms of depression (OR=1.15,p<.001, 95% CI=1.10 - 1.19), psychological stress (OR=1.04,p=.012, 95% CI =1.01 - 1.07), mania (OR=0.92,p=.002, 95% CI=0.83 - 0.97) and psychosis (OR=1.10, p<.001, 95% CI = 1.04 - 1.15). This was also true as found in a study conducted by Astorga et al. (2017) in Spain among students in the University of Valladolid where 11.6% of students had suicidal ideation, 15.8% had depression, while 38.5% had anxiety disorders.

A meta-analysis of 17 studies conducted among medical students in 13 western and non-western countries found the prevalence of suicidal ideation to range from 1.8% to 53.6% (Coentre, & Góis, 2018). The study established that previous diagnosis of mental illness, depression; financial difficulties as well as low socio economic status, drug use history and feeling neglected by parents were associated with suicidal ideation among the medical students. Other studies also found negative effects of poor mental health among medical school students which included substance use, poor academic performance, drop out and suicide (Mandal et al., 2021; Midtgaard et al., 2008; Tyssen et al., 2001).

Previous studies have found suicide behavior to be associated with various factors. Depression and phobic anxiety were found to be associated with suicidal behavior among males while depression and obsessive compulsive disorder associated with suicidal behavior among females in a study conducted among 6 universities in China (Tang et al., 2018). In the study, 7.6% of the students reported suicidal behavior in the last year. Another study conducted at Haramaya University in Ethiopia on prevalence and associated factors of suicidal ideation found the prevalence of suicidal ideation to be 23.7% (95%CI, 20.5-26.8) while suicidal attempt was 3.9% (95%CI, 2.6-5.5). Suicidal ideation was found to be

associated with depression (AOR = 3.58, 95% CI: 2.23–5.76) and anxiety (AOR = 3, 95%CI: 1.88–4.77) while suicidal attempts was associated with depression, AOR = 5.4, 95% CI: 1.45–20.14), and anxiety (AOR = 3.19, 95% CI: 1.01–10.18) (Asfaw et al., 2020). The foregoing confirms that suicidal behavior is correlated with other mental illnesses among university students.

Co-morbidities of mental illness have been found to lead to reduced quality of life, a more severe course of mental illness and premature mortality which is true for university students too (Fagiolini, & Goracci, 2009). To make things worse, the study by Fagiolini and colleague further found that harmful side effects of medications used to treat psychological disorders among patients with severe mental illnesses could lead people to develop comorbid physical ailments. For action to be taken to mitigate these negative consequences of suicidal ideation comorbid with other mental disorders, it is important that the prevalence of these disorders is established as well as their correlates. In Kenya, there is a dearth of information on the same.

Methodology

This study used a web based cross sectional correlation survey among 138 undergraduate university students from private and public universities in Kenya. The participants were aged 17 years and above. This study was conducted during the Covid-19 pandemic period when educational institutions were closed as a containment measure of Covid-19 in Kenya (Janssens et al., 2021). The research tools were in google form and administered online via social media platforms such as Email, Twitter, Facebook and WhatsApp group platforms. Data was collected using researcher-generated socio-demographic questionnaire, Beck Depression Inventory second edition (BDI-II), Suicide Behavior Questionnaire revised edition (SBQ-R), and Child and Adolescent Trauma Screen (CATS) – Youth. All the research instruments were administered as self-reports. Researcher developed socio demographic questionnaire was used to collect socio demographic characteristics such as age, gender, type of university (public or private) and year of study, place of residence, parents marital status and economic background.

Beck Depression Inventory second edition (BDI-II) was used to collect information on symptoms of depression and hopelessness. BDI-II has 21 items scored 0-3 with 3 being severe symptoms of depression and 0 being none. The cut off points were 1-10 minimal

depression, 11-16 mild depression, 17-20 borderline clinical depression, 21-30 moderate depression, 31-40 severe depression and 41-63 extreme depression. The higher the score, the more severe the symptoms of depression. Participants who scored 21 or greater were considered to present with clinical depression whereas participants who scored 20 or less were considered to present with less severe or non-clinical depressive symptoms.

Suicide Behavior Questionnaire revised edition (SBQ-R) was used to collect information on past suicidal ideation and attempts. SBQ-R is a brief 4 item questionnaire which looks at different dimensions of suicidality. The higher the score, the higher the risk of suicidal behavior. Item 1 looks at lifetime suicide ideation and or suicide attempt. Item 2 checks for suicidal ideation in the past 12 months, item 3 checks for the threat of suicide attempt and item 4 checks for self-reported likelihood of suicidal behavior in the future. The tool can be used to identify specific risk behaviors and at risk individuals.

Child and Adolescent Trauma Screen (CATS) – Youth was used to collect information on symptoms of Posttraumatic Stress Disorder (PTSD). It is based on DSM-5 criteria for PTSD which measures potentially traumatic events and symptoms of PTSD. Participants who scored 15 or greater were considered to present with clinical PTSD symptoms whereas participants who scored 14 or less were considered not to present with clinical PTSD symptoms.

The study was carried out online through social media platforms: Facebook, WhatsApp, Twitter and email. The consent form was first sent to prospective participants and only those who consented to participate in the study were sent the rest of the research instruments to complete. The study used convenience sampling as only those participants who could access social media were sampled. The researcher also used snowball method where the participants were encouraged to refer and provide email to their friends to enable the researcher reach more participants from different universities in Kenya.

Results

Table 1: Descriptive Statistics and Distribution of Suicide Behaviors

Variables	Frequency	Percent
No suicide Ideation	35	25.4%
Suicide Ideation	41	29.7%
Suicide Plan	67	48.5%
Suicide Attempt	19	13.8%

Table 1 shows the percentage of undergraduate students who experience suicide ideation was 29.7%, participants who had suicide plans was higher at 48.5% as opposed to participants who actually attempted suicide at 13.8%. This indicated that undergraduate university students in Kenya present with suicidal behavior.

Table 2: Frequency and Percentage of Depression among Undergraduate University Students

Scores	Variables	Frequency	Percent
0-20	Non-clinical depression	42	40.8
21-62	Clinical Depression	61	59.2
	Total	103	100

Table 2 indicates that the percentage of undergraduate university students with clinical depression was 59.2% which was more than half of the participants who took part in the study.

Table 3: Frequency of Participant's Level of Severity of Depression Scores

Scores	Variable	Frequency	Percent
0-10	Minimal Depression	16	15.5
11-16	Mild Depression	10	9.7
17-20	Borderline Clinical Depression	16	15.5
21-30	Moderate Depression	30	29.1
31-40	Severe Depression	20	19.4
41-63	Extreme Depression	11	10.7
	Total	103	100

Table 3 implied that the percentage of participants with moderate depression was highest at 29.1% followed by severe depression (19.4%), borderline clinical depression (15.5%), extreme depression (10.7%) and mild depression (9.7%). Having 30.1% of students presenting with symptoms of severe/extreme depression is alarming.

Table 4: Socio-demographic Characteristics of Participants and Symptoms of Depression

Variables			Non-Clinical Depression		Clinical Depression		Chi-Square Test		
	n	%	n	%	n	%	P	df	Sig.
Age									
17-19	7	6.8%	3	2.9%	4	3.9%	.571	3	.903
20-22	56	54.4%	24	23.3%	32	31.1%			
23-25	33	32.0%	13	12.6%	20	19.4%			
26+	7	6.8%	2	12.6%	5	4.9%			
Gender									
Female	73	70.9%	27	26.2%	46	44.7%	1.491	1	.222
Male	30	29.1%	15	14.6%	15	14.6%			
Type of university									
Private University	53	51.5%	20	19.4%	33	32.0%	.418	1	.518
Public University	50	48.5%	22	21.4%	28	27.2%			
Residence									
Off-campus	84	81.6%	31	30.1%	53	51.5%	2.827	1	.093
In-campus	19	18.4%	11	10.7%	8	7.8%			
Religious Affiliation									
Pentecostal	30	29.1%	12	11.7%	18	17.5%	6.889	5	.331
Evangelical/orthodox	4	3.9%	0	0.0%	4	3.9%			
x	22	21.4%	10	9.7%	12	11.7%			
Catholics	1	1.0%	0	0.0%	1	1.0%			
Islam	9	8.7%	6	5.8%	3	2.9%			
SDA	37	36.0%	14	13.6%	23	22.4%			
Others									
Marital Status									
Single no relation	72	69.9%	32	31.1%	40	38.8%	1.778	2	.411
Single in relation	30	29.1%	10	9.7%	20	19.4%			
Married	1	1.0%	0	0.0%	1	1.0%			
Family Economic Status									
Poor	5	4.9%	3	2.9%	2	1.9%	3.492	2	.174
Average	90	87.4%	38	36.9%	52	50.5%			
Affluent	8	7.8%	1	1.0%	7	6.8%			
Parents Marital Status									
Married	62	60.2%	26	25.2%	36	35.0%	4.931	4	.294
Separated	10	9.7%	4	3.9%	6	5.8%			
Divorced	8	7.8%	5	4.9%	3	2.9%			
Single parents	18	17.5%	4	3.9%	14	13.6%			
Living with guardian	5	4.9%	3	2.9%	2	1.9%			

According to Table 4, the chi-square test indicates that the difference in the distribution of depression according to socio demographic characteristics was insignificant in all socio demographic characteristics ($P_s < 0.05$). However, the percentage of clinical depression was higher among the participants aged 20 to 22 at 31.1%, female participants (44.7%), participants from private university (32%), participants whose mode of residence was off-

campus (51.5%). The percentage of depressive disorder was higher among participants whose religious affiliation was ‘Others’ at 22.4% compared to mainstream religious affiliations (Pentecostal, Evangelical/orthodox, Catholics, Islam or SDA), participants whose marital status was single and not in a relationship (38.8%), average economic status (50.5%) and participants whose parents were married (35%).

Table 5: Frequency of Participant’s Scores on Child and Adolescent Trauma Screen (CATS) – Youth Report

Scores	Variables	Frequency	Percent%
≤ 14	Non-clinical PTSD	29	28.2%
≥ 15	Clinical PTSD	74	71.8%
	Total	103	100%

According to Table 5 the prevalence of Clinical PTSD among the participants was 71.8%. This indicates that participants who had suicidal behavior also presented with symptoms of PTSD.

Table 6: Distribution of PTSD in Regard to Socio Demographic Characteristics

Variables			Non-Clinical PTSD		Clinical PTSD		Chi-Square Test		
	n	%	n	%	n	%	P	df	Sig.
Respondent's Age									
17-19	7	6.8	2	1.9	5	4.9	2.953	3	.399
20-22	56	54.4	17	16.5	39	37.9			
23-25	33	32.0	10	9.7	23	22.3			
26+	7	6.8	0	0.0	7	6.8			
Respondent's Gender									
Female	73	70.9	18	17.5	55	53.4	1.516	1	.218
Male	30	29.1	11	10.7	19	18.4			
Type of university									
Private University	53	51.5	15	14.6	38	36.9	.001	1	.973
Public University	50	48.5	14	13.6	36	35.0			
Mode of Residence in University									
Off-campus	84	81.6	21	20.4	63	61.2	2.241	1	.134
In-campus	19	18.4	8	7.8	11	10.7			
Religious Affiliation									
Pentecostal	30	29.1	8	7.8	22	21.4	12.639	5	.049
Evangelical/orthodox	4	3.9	4	3.9	0	0.0			
Catholics	22	21.4	7	6.8	15	14.6			
Islam	1	1.0	0	0.0	1	1.0			
Islam	9	8.7	1	1.0	8	7.8			
SDA	37	36.0	9	8.7	28	27.2			
Others									
Marital Status									
Single	72	69.9	23	22.3	49	47.6	1.889	2	.389
Single in relationship	30	29.1	6	5.8	24	23.3			
Married	1	1.0	0	0.0	1	1.0			
Family Economic Status									
Poor	5	4.9	2	1.9	3	2.9	.393	2	.822
Average	90	87.4	25	24.3	65	65.1			
Affluent	8	7.8	2	1.9	6	5.8			
Parents Marital Status									
Married	62	60.2	21	20.4	41	39.8	4.631	4	.327
Separated	10	9.7	2	1.9	8	7.8			
Divorced	8	7.8	0	0.0	8	7.8			
Single parents	18	17.5	5	4.9	13	12.6			
Living with guardian	5	4.9	1	1.0	4	3.9			

Table 6 indicates that the percentage of undergraduate students with clinical PTSD was higher among the age group of 20 to 22 year olds at 37.9%, female participants (53.4%), private university students (36.9%), participants who reside off-campus (61.2%),

pparticipants who were singles but not in relationship (47.6%), average economic status (65.1%), participants whose parents were married (39.8%). Chi-square test done showed that there was no significant difference in the distribution of all the socio-demographic characteristics ($P>0.05$) except the religiousus affiliation ($p = 0.049$).

Table 7: *Nonparametric Correlates of Suicide, Depression and PTSD Symptoms*

			Respondent's SBQ Scores	Respondent's Depression Scores	CATS (PTSD) Scores
Kendall's tau_b	Respondent's SBQ Total Scores	Correlation Coefficient	1.000	.373**	.174*
		Sig. (2- tailed)	.	.000	.038
		N	103	103	103
	Respondent's Depression Scores	Correlation Coefficient	.373**	1.000	.395**
		Sig. (2- tailed)	.000	.	.000
		N	103	103	103
	Child and Adolescent Trauma Screen (CATS) - Youth Report	Correlation Coefficient	.174*	.395**	1.000
		Sig. (2- tailed)	.038	.000	.
		N	103	103	103

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 7 presents Kendall's Tau_b nonparametric correlation test. Kendall's tau b (τ_b) correlation coefficient is a nonparametric measure of the strength and direction of association that exists between two variables measured on an ordinal scale. The table indicates a positive correlation between suicide behavior and depression ($r = .373^{**}$ $p=0.000$). This signifies that the two variables have a perfect positive relationship, whereby when depression moves higher or lower, suicide behavior moves in the same direction with the same magnitude. Similarly, Table 7 shows a positive correlation between suicide behavior and PTSD ($r = .174^*$ $p = 0.038$). This implies that when PTSD becomes severe or less severe, the suicide behavior moves in the same direction. This means that depression and PTSD are positively correlated but the chances of participants with depressive symptoms to present with suicide behavior are higher at 99% as opposed to participants with PTSD symptoms at 95%. Further, a positive correlation was established between PTSD and depression ($r= .395^{**}$

$P = 0.000$). This suggests that the intensity of PTSD determines the intensity of depression meaning that the chances of a participant exhibiting PTSD symptoms to also present with depressive symptoms concurrently is very high.

Discussion

Findings from this study showed the prevalence of suicide ideation among undergraduate university students was 29.7%, suicide plans was at 48.5% and participants who actually attempted suicide was 13.8%. Also, the percentage of participants with clinical depression was at 59.2% and clinical PTSD was 71.8%. These findings were significantly higher than existing data on suicide behaviours among university students. For examples, a study reported about 6.4% to 9.5% of university students seriously consider suicide (suicide ideation), and 1.3% to 1.5% made a suicide attempt at the end of the school year (Wilcox et al., 2011). COVID-19 pandemic lockdown might be responsible for the upsurge in suicide behaviours among undergraduate university students in Kenya. This was also found to be true in a study conducted among university students in Mettu, Ethiopia in 2020 where a high lifetime prevalence of suicide ideation, plan, and attempt was 58.3%, 37.3%, and 4.4% respectively (Abdu et al., 2020).

Results from this present study align with a study in Botswana that reported that 53.8% of university students who had clinical depression had also contemplated suicide (Korb & Plattner, 2014). In a survey done among 69,054 university students living in France during COVID-19 quarantine, the results showed the prevalence of suicidal thoughts was 22.4%, severe depression was at 24.7% and high level of PTSD/ perceived stress was at 27.5% (Wathelet et al., 2020). The findings of this study suggest that the student's mental health has become critical in the context of a pandemic, and this underlines the need to reinforce prevention, surveillance, and access to care.

Findings from this study also indicated a positive correlation between suicide behaviour and depression ($r = .373^{**}$ $p=0.000$), a positive correlation between suicide behaviour and PTSD ($r = .174^*$ $p = 0.038$) and positive correlation between PTSD and depression ($r= .395^{**}$ $P = 0.000$). The results from this study are similar to an online-based survey on prevalence and correlates of PTSD and depressive symptoms, one month after the outbreak of the COVID-19 epidemic in a sample of home-quarantined Chinese university students. The study found a

positive correlation of PTSD and depression among the participants from 6 universities (Tang, et al., 2020). Suicidal behaviour has been found to be very rare in the absence of major mental disorders (Rihmer, 2007). Studies in high income countries have suggested that suicide deaths are associated with psychiatric disorders (Conwell et al., 1996) . A systematic review showed positive correlates of suicidal behaviours and mental illness as well as psychopathology, specifically depressive disorders and PTSD (Krysinska & Lester, 2010). The forgoing indicates that suicidal behavior is comorbid with internalizing mental illnesses like depression and PTSD.

It was interesting to note that the distribution of depression according to socio demographic characteristics was insignificant in all socio demographic characteristics ($P_s < 0.05$). The distribution of PTSD according to socio demographic characteristics was also insignificant except for religious affiliation ($p=.049$). However, though insignificant, females had higher symptoms of depression (44.7%) and PTSD (53.4%) compared to males. Similarly, findings of a study by Taha, and Sijbrandij (2021) found no statistically significant difference between males and females who presented with symptoms of PTSD and depression. Participants who ascribed to other religious affiliations from the main stream churches (Pentecostal, Evangelical/orthodox, Catholics, Islam or SDA) also had higher symptoms of depression and PTSD. This implied that attending a mainstream church translated into lower symptoms of depression. In regard to PTSD, religious affiliation was found to be a confounder to undergraduate university students developing symptoms of PTSD. Similar findings were found in other studies that found that religion was a protective factor against developing depression and PTSD, and recovering from the same (Henslee et al., 2015; Ronneberg et al., 2106).

Contrary to findings of other studies that people from lower socio economic status have higher symptoms of PTSD and depression, this study found that participants of average economic status had higher symptoms of PTSD and depression compared to those of lower economic status and affluent (Levy & O'Hara 2010; Parto et al., 2011). Another interesting finding was that participants whose parents were married had higher symptoms of depression and PTSD compared to those whose parents were single or divorced though the difference was insignificant. This supports the finding that parenting practices affect the mental health of children and not necessarily the parents' marital status (National Research Council (US)

and Institute of Medicine (US) Committee on Depression, Parenting Practices, and the Healthy Development of Children, 2009). .

Conclusion

This study established that undergraduate university students in Kenya present with suicidal behavior, comorbid with symptoms of PTSD and depression. The study recommends that clinicians constantly assess for other co-morbidities among undergraduate university students having screened for suicide behaviours. This will help to determine holistic therapeutic approaches. Mental illness prevention programs need also to be put into place to equip undergraduate university students with skills to cope with the challenges they experience.

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Ethical Considerations

Ethical approval was provided by United States International University-Africa Research and Ethics Review Board and National Council for Science, Technology and Innovation (NACOSTI). All participants gave informed consent. Participants aged 17 years and above were considered as emancipated minors as they were living separately from their parents and guardians as well as managing their own finances at university level (Katz et al., 2016).

References

- Abdu, Z., Hajure, M., & Desalegn, D. (2020). Suicidal behavior and associated factors among students in Mettu University, South West Ethiopia, 2019: An institutional based cross-sectional study. *Psychology Research and Behavior Management, 13*(1), 233-243.
- Andrea Fagiolini, & Arianna Goracci (2009). The effects of undertreated chronic medical illnesses in patients with severe mental disorders.
[link]: <http://hdl.handle.net/11365/25326>
- Anny-Chen, L., Wu, C., Lee, M., & Yang, L. (2020). Suicide and associated psychosocial correlates among university students in Taiwan: A mixed-methods study. *Journal of the Formosan Medical Association, 2020*(1), 1-14.
- Asfaw H, Yigzaw N, Yohannis Z, Fekadu G, Alemayehu Y (2020) Prevalence and associated factors of suicidal ideation and attempt among undergraduate medical students of Haramaya University, Ethiopia. A cross sectional study. PLoS ONE 15(8): e0236398. <https://doi.org/10.1371/journal.pone.0236398>
- Astorga, A. A., De la Red Gallego, M. H., Sánchez, A. A., De la Fuente Ballesteros, S., Santillana, T. D., Anton, R. H., ... & Garrote, J. B. (2017). Anxiety, depression and suicidal behavior among medical students from the university of Valladolid. *European Psychiatry, 41*(S1), S290-S290.
- Bachmann S. Epidemiology of Suicide and the Psychiatric Perspective. *Int. J. Environ. Res. Public Health.* 2018;**15**:1425. doi: 10.3390/ijerph15071425.
- Coentre, R., & Góis, C. (2018). Suicidal ideation in medical students: recent insights. *Advances in medical education and practice, 9*, 873–880.
<https://doi.org/10.2147/AMEP.S162626>
- Conwell, Y., Duberstein, P. R., Cox, C., & Hermann, J. H. (1996). Relationship of age and axis 1 diagnoses in victims of completed suicide: A psychological autopsy study. *American Journal of Psychiatry, 153*(8), 1001-1008.
- Fang Tang, Majella Byrne, & Ping Qin (2-18). Psychological distress and risk for suicidal behavior among university students in contemporary China. *Journal of Affective Disorders, 228*, 101-108, ISSN 0165-0327, <https://doi.org/10.1016/j.jad.2017.12.005>.
(<https://www.sciencedirect.com/science/article/pii/S0165032717311667>).
- Henslee, A. M., Coffey, S. F., Schumacher, J. A., Tracy, M., Norris, F. H., & Galea, S. (2015). Religious Coping and Psychological and Behavioral Adjustment After Hurricane Katrina. *The Journal of psychology, 149*(6), 630–642.
<https://doi.org/10.1080/00223980.2014.953441>
- Korb, I., & Plattner, I. E. (2014). Suicide ideation and depression in university students in Botswana. *Journal of Psychology in Africa, 24*(5), 420-426.

- Krysinska, K., & Lester, D. (2010). Post-traumatic stress disorder and suicide risk: A systematic review. *Archive of Suicide Research, 14*(1), 1-23.
- Levy L.B., & O'Hara M. W.(2010). Psychotherapeutic interventions for depressed, low-income women: a review of the literature. *Clin Psychol Rev. ;30*(8):934–50.
- Mandal A, Ghosh A, Sengupta G, Bera T, Das N, Mukherjee S. Factors affecting the performance of undergraduate medical students: a perspective. *Indian J Community Med. 2012;37*(2):126–129.
- Midtgaard M, Ekeberg Ø, Vaglum P, & Tyssen R. (2008). Mental health treatment needs for medical students: a national longitudinal study. *Eur Psychiatry. 23*(7):505–511.
- National Research Council (US) and Institute of Medicine (US) Committee on Depression, Parenting Practices, and the Healthy Development of Children; England MJ, Sim LJ, editors. Depression in Parents, Parenting, and Children: Opportunities to Improve Identification, Treatment, and Prevention. Washington (DC): National Academies Press (US); 2009. 4, Associations Between Depression in Parents and Parenting, Child Health, and Child Psychological Functioning. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK215128/>
- Parto JA, Evans MK, Zonderman AB. Symptoms of posttraumatic stress disorder among urban residents. *J Nerv Ment Dis. 2011 Jul;199*(7):436–9.
- Rihmer, Z. (2007). Suicide risk in mood disorders. *Current Opinion in Psychiatry, 20*(1), 17-22.
- Roca, M., Del Amo, A. R. L., Riera-Serra, P., Pérez-Ara, M., Castro, A., Roman Juan, J., García-Toro, M., García-Pazo, P. and Gili, M.,. (2019). Suicidal risk and executive functions in major depressive disorder: a study protocol. *BMC psychiatry, 19*(1), 1-6.
- Ronneberg,C. R., Miller,E. A., Dugan,E., & Porell, F. (2016).The Protective Effects of Religiosity on Depression: A 2-Year Prospective Study. *Gerontologist, 56*(3), 421–431 doi:10.1093/geront/gnu073 Advance Access publication July 25, 2014
- Rotenstein, L. S., Ramos, M. A., Torre, M., Segal, J. B., Peluso, M. J., Guille, C., ... & Mata, D. A. (2016). Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. *Jama, 316*(21), 2214-2236.
- Taha, P. H., & Sijbrandij, M. (2021). Gender Differences in Traumatic Experiences, PTSD, and Relevant Symptoms among the Iraqi Internally Displaced Persons. *International journal of environmental research and public health, 18*(18), 9779. <https://doi.org/10.3390/ijerph18189779>
- Tang, W., Hu, T., Hu, B., Jin, C., Wang, G., Xie, C., et al. (2020). Prevalence and correlates of PTSD and depressive symptoms one month after the outbreak of the COVID-19 epidemic in a sample of home0quarantined Chinese university students. *Journal of Affectives Disorders, 274*(1), 1-7.

- Tyssen R, Vaglum P, Grønvold NT, Ekeberg O. (2001). Suicidal ideation among medical students and young physicians: a nationwide and prospective study of prevalence and predictors. *J Affect Disord.* 64(1):69–79.
- Umair Akram, Antonia Ypsilanti, Maria Gardani, Kamila Irvine, Sarah Allen, Asha Akram, Jennifer Drabble, Eleanor Bickle, Lauren Kaye, Damian Lipinski, Eva Matuszyk, Helia Sarlak, Ellie Steedman, & Lambros Lazuras (2020-07-01). Prevalence and psychiatric correlates of suicidal ideation in UK university students.
[link]: <http://eprints.gla.ac.uk/215138/>
- Vijayakumar L. (2004). Suicide prevention: the urgent need in developing countries. *World psychiatry : Official Journal of the World Psychiatric Association (WPA)*, 3(3), 158–159.
- Wanjiku, B. Wanyoike (2014). Depression As A Cause of Suicide. *The Journal of Language, Technology & Entrepreneurship in Africa (JOLTE)*, 5 (2)
- Wathelet, M., Duhem, S., & Vaiva, G. (2020). Factors associated with mental health disorders among university students in France confined during the COVID-19 pandemic. *JAMA Network Open*, 3(10), e2025591.
- Wilcox, H. C., Arria, A. M., Caldeira, K. M., Kathryn, B., Pinchevsky, G. M., & Grady, K. E. (2011). Attempts during college. *Journal of Affective Disorders*, 127(1-3), 287-294.