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ORIGINAL ARTICLE

Prevalence and Correlates of Suicidal Ideation among Medical Students in a Tertiary Institution in Southern Nigeria

Prévalence et Corrélats des Idées Suicidaires chez les Étudiants en Médecine dans un Établissement d'Enseignement Supérieur du Sud du Nigéria

[1]*B. E. A. Uteh, [1]O. A. Adejumo, [2]R. E. Ogbolu, [3]J. O. Omoaregba, [4]A. A. Akinnuoye

ABSTRACT

INTRODUCTION: Medical students have an increased risk of suicidal ideation compared to similar age groups within the general population. Suicidal ideation is a significant predictor of suicidal attempt, therefore, identifying and addressing factors associated with suicidal ideation among medical students may potentially reduce their overall rates of suicide.

AIM: To determine the prevalence and correlates of suicidal ideation among medical students in a Nigerian medical school.

METHODOLOGY: This was a cross-sectional study that determined the prevalence and correlates of suicidal ideation among clinical students. Beck's suicidal ideation questionnaire, Beck's depression inventory and World Health Organisation Alcohol Smoking and Substance Involvement Screening Test (ASSIST) were used to assess for suicidal ideation, depression and lifetime substance use respectively. P value of <0.05 was taken as significant

RESULTS: One hundred and twenty-one students participated in the study. Mean age of the participants was 21.78±3.54 years. The prevalence of suicidal ideation was 12.4%. Factors associated with suicidal ideation were intimate relationship problems (p=0.03); being managed for a chronic medical condition (p=0.02); higher depression scores (p<0.001); and having fewer maternal siblings (p=0.02). Forty-five (37.2%) students had a life time use of psychoactive substances which was mainly alcohol.

CONCLUSION: Suicidal ideation was relatively high among the medical students. Medical schools should create programmes that will cater for the emotional and psychological wellbeing of their students to reduce their suicidal risk. **WAJM 2022; 39(5): 529–537.**

Keywords: Suicidal ideation, medical students, Nigeria.

RÉSUMÉ

INTRODUCTION: Les étudiants en médecine ont un risque accru deles idées suicidaires par rapport à des groupes d'âge similaires au sein de l'population générale. Les idées suicidaires sont un prédicteur important de tentatives de suicide, par conséquent, identifier et traiter les facteurs associés à des idées suicidaires chez les étudiants en médecine peuvent réduire potentiellement leur taux global de suicide.

OBJECTIF: Déterminer la prévalence et les corrélats des suicides idéation parmi les étudiants en médecine dans une école de médecine nigériane.

MÉTHODOLOGIE: Il s'agissait d'une étude transversale qui déterminé la prévalence et les corrélats des idées suicidaires parmi les étudiants cliniciens. Le questionnaire d'idées suicidaires de Beck,L'inventaire de la dépression de Beck et l'Organisation mondiale de la santéTest de dépistage du tabagisme et de la toxicomanie(ASSIST) ont été utilisés pour évaluer les idées suicidaires, la dépression et la consommation de substances au cours de la vie, respectivement. La valeur P de <0,05 était considérés comme significatifs.

RÉSULTATS: Cent vingt et un étudiants y ont participédans l'étude. L'âge moyen des participants était de 21,78 ±3,54 ans.La prévalence des idées suicidaires était de 12,4 %. Facteurs associés à des idées suicidaires étaient une relation intime problèmes (p = 0,03); être pris en charge pour un traitement médical chroniquecondition (p = 0,02); scores de dépression plus élevés (p<0,001); etavoir moins de frères et sœurs maternels (p = 0,02). Quarante-cinq (37,2 %)les élèves ont consommé toute leur vie des substances psychoactives qui était principalement de l'alcool.

CONCLUSION: Les idées suicidaires étaient relativement élevées chez les étudiants en médecine. Les facultés de médecine devraient créer des programmes qui répondront aux besoins émotionnels et psychologiquesle bien-être de leurs élèves pour réduire leur risque suicidaire. **WAJM 2022; 39(5): 529–537.**

Mots-clés: Idées suicidaires, étudiants en médecine, Nigéria.

[1]**University of Medical Sciences, Ondo, Ondo State, Nigeria.** [2]**Suicide Research and Prevention Initiative (SURPIN), Nigeria & Lancashire and South Cumbria NHS Foundation Trust, United Kingdom.** [3]**Federal Neuropsychiatric Hospital, Uselu, Benin City, Edo State, Nigeria.** [4]**Neuropsychiatric Specialist Hospital, Akure, Ondo State, Nigeria.**

***Correspondence:** **Dr. Uteh Blessing Enorioware Aminatu,** University of Medical Sciences, Ondo, Ondo State, Nigeria. Email: utehb@yahoo.com, Phone: +234-8163164847

Abbreviations: ASSIST, Alcohol Smoking and Substance Involvement Screening Test; **BDI-II,** Beck's depression inventory version 2; **DSM-IV,** The Diagnostic and Statistical Manual of Mental Disorders, 4th Edition; **LMIC,** Low and Middle Income Countries; **SPSS 22,** Statistical Package for the Social Sciences version 22; **SSI,** Scale for Suicide Ideation; **WHO,** World Health Organisation.

INTRODUCTION/AIM

The World Health Organisation (WHO) defines suicide as 'the act of killing oneself, deliberately initiated and performed by the person concerned in the full knowledge or expectation of its fatal outcome'.[1] It is a major public health challenge.[2] Suicidal ideation, a recognised prelude to suicidal attempt refers to any self-reported passive thought about wanting to be dead, or active thoughts about killing oneself not accompanied by preparatory behaviour.[3]

The lifetime prevalence of suicidal ideation for the general world population is about 9% within a 12-month period [4] and 9.1% to 48.2% among medical students from previous studies.[5–7] Locally, a mental health survey in a southern state in Nigeria had reported suicidal ideation rate of 7.8% among adults.[8] Also, according to the 2017 National Survey on Drug Use and Health (NSDUH) by the Substance Abuse and Mental Health Services Administration (SAMHSA), 4.3% of adults in the United States of America aged 18 and above had thoughts of suicide, with the highest prevalence among adults ages 18 to 25 years.[9] This prevalence has been corroborated by other studies which show that, although suicide rates increase with age, suicidal thoughts and behaviours tend to be more among young people 15 to 25 years [2,10,11] with over 800,000 of them dying from suicide each year.[12] This is the common age group for medical students.

Notable risk factors for suicidal ideation and suicide among young people are; the presence of mood disorders, substance abuse, hopelessness, adverse life events, personal history of physical or sexual abuse, and family history of suicide.[13] Of these, the most significant risk factor is having a major depressive disorder for which it's prevalence is stated to be higher among medical students than their peers in other faculties.[14,15] This finding is further corroborated by the reports from systematic reviews which reveal that the prevalence of depression among medical students were as high as 27.2%.[16] In addition to the above, previous studies have also stated that medical students' life satisfaction in general tend to drop at the start of their studies and remains low until graduation.[17,18]

For medical students, some specific contributory factors to increased rates of depression and suicidal ideation among them include; knowledge and easy access to means of suicide, effects of untreated psychological symptoms,[19–22] maladaptive behavioural and personality traits, substance abuse and stressful personal or academic events.[23–25] Unfortunately, the specific personality traits which school selection for medicine may favour include individuals with perfectionism, altruist traits and self-critical or performance-based self-esteem, which predispose individuals to depression and suicidal behaviour.[26,27] Furthermore, suicidal ideation rates were reported to be higher among female medical students compared to their male counterparts.[28]

Despite this high prevalence of depression and suicidal ideation, the illness is often under diagnosed and undertreated in spite of the assumption that medical students should have good access to health care.[29,30] Barriers to seeking mental health care among medical students include concerns about time, confidentiality, stigma, and the potential negative effects on their careers.[22,31] Moreso, a bothersome report from a cross-national research on suicidal ideation among adults in 17 countries including Nigeria revealed that a third of those with suicide ideation continue to make a plan, and about 30% make a suicide attempt.[4]

Suicide therefore, being an extreme consequence of mental health problems, requires that medical schools identify students at the greatest risk for suicide in the hope for prompt intervention before a tragic outcome ensues.[32] Suffice it to say that medical students of today are the physicians of tomorrow, hence the need to pay attention to issues related to their mental health. It has been postulated that mechanisms to facilitate early detection including prevalence studies, counselling services and treatment of depression among medical students should be provided in medical schools.[33] The need for prevalence studies on suicidal ideation to tackle suicide-related issues with an overall reduction in rates of suicide has been proposed by WHO and previous studies.[34–37]

Although, studies from sub-Saharan Africa have also documented a high prevalence of depression among medical students, a few have studied suicidal ideation.[38–41] Some authors have posited that the reasons for scarce researches on suicide and related concepts in this environment are due to socio-cultural taboos, political / economic instability, cultural and religious diversity.[42–44]

It is against this backdrop that there is a need to find rates of suicidal ideation and associated factors among medical students in a low- and middle-income country like Nigeria. This study therefore, aims to determine the prevalence and correlates of suicidal ideation among medical students in a Nigerian medical school, specifically assessing clinical students.

METHODS

Study Setting

The study was carried out at the University of Medical Sciences, (a new State-owned medical school) Ondo State, South-West Nigeria. At the time of the study, 500 level was the highest clinical level for medical and dental students. The questionnaire was administered to 4th and 5th year medical and dental students during their introductory medical clinical posting and current clinical posting (medicine or surgery) respectively. The data was collected from August to September 2019.

Eligibility Criteria

Students who were18 years and above were eligible to participate in the study after signed written informed consent. Students who were absent during data collection were excluded.

Study Design

The study design was cross-sectional. Medical students were approached to participate in the study. Those who gave written informed consent to participate in the study were administered a socio-demographic and clinical characteristics questionnaire, the Beck's suicidal ideation questionnaire, the Beck's depression inventory and the

initial set of questions of the WHO Alcohol Smoking and Substance Involvement Screening Test (ASSIST) which assesses for life time substance use.

Study Instruments

Socio-demographic and Clinical Characteristics Questionnaire: was designed by the researchers to elicit socio-demographic characteristics of the medical students such as; age, gender, marital status, sexual orientation and so on. Clinical characteristics such as a previous history of a mental illness in self or a relative, previous history of suicidal attempts in self or a relative and the presence of a chronic medical condition in the students were also elicited.

Beck's Depression Inventory: was created by Aaron T. Beck as a 21-question multiple-choice self-report inventory. It is one of the most widely used psychometric tests for measuring the severity of depression by health care professionals and researchers in a variety of settings. It was designed as an inventory for measuring and monitoring depression. There are three versions of this instrument but its current version, the BDI-II, which was used in this study, is designed for individuals aged 13 and over. The internal consistency was described as around 0.9 and the retest reliability ranged from 0.73 to 0.96 which is acceptable.[45]

In this study it was used to measure presence and level of depression among the students. It comprises items relating to symptoms of depression such as hopelessness and irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex.[46] Each item is scored from zero to three which indicate the severity of depressive symptoms, the summation of scores gives a range from 0 to 63. Scores from 0 through 10 indicate no or minimal depression; 11 through 16 indicate mild depression; 17 through 20 indicate border line clinical depression; 21 through 30 indicate moderate depression; 31 through 40 indicate severe depression; and scores over 40 indicate extreme depression.[46]

Beck's Suicidal Ideation Questionnaire: The Scale for Suicide Ideation (SSI) is a clinician-rating scale and is presented in a semi-structured interview format.[47] It consists of 19 items that evaluate three dimensions of suicide ideation: active suicidal desire, specific plans for suicide, and passive suicidal desire. Each item is rated on a 3-point scale from 0 to 2. The higher the total score, the greater the severity of suicide ideation.

In a previous study among adults, a suicide ideation score of 6 or more was used as a cut-off threshold for clinically significant suicidal ideation.[48] This cut-off was applied in this study. The psychometric properties of the SSI have been evaluated for adult psychiatric patient population; the internal consistency of the scale was found to be good ($\alpha = 0.89$). [47]

WHO Alcohol Smoking and Substance Involvement Screening Test (ASSIST): The WHO ASSIST version 3 was used in this study to assess for lifetime use of psychoactive substances. The ASSIST (v3.0) consists of eight items. The first 7 items cover ten substances: tobacco, alcohol, cannabis, cocaine, amphetamine type stimulants, inhalants, sedatives, hallucinogens, opioids and 'other drugs'. Item 1which elicits information about lifetime substance use was employed in this study.

In general, the World Health Organisation's Alcohol, Smoking and Substance Involvement Screening Test (ASSIST, version 3) is able to specify level of involvement with substances and the corresponding treatment needs of the individuals.[49] Eleven domains of ASSIST had internal correlation coefficients of greater than 0.7 when assessed individually hence, it was concluded that the ASSIST version 3 has acceptable psychometric properties and is valid for use among university students.[50]

Sample Size Determination: A total population sampling method was adopted to recruit all fourth and fifth year medical and dental students into the study.

Sampling / Interview Detailing Inclusion and Exclusion Criteria: A convenience sampling of all the students was done. Those who refused to participate were excluded. An initial informed consent form was administered to the participants. Those who gave consent to participate filled the socio-demographic and clinical characteristics questionnaire. Thereafter, the other questionnaires were filled by them. All questionnaires were self-administered.

Ethical Approval: Ethical approval and permission were obtained from the Research and Ethics committee of the university. In addition, students with clinically significant depression and suicidal ideation scores were contacted by the mental health physicians in the institution who were part of the research. Those who were willing received appropriate treatment.

Data Analysis

Data collected were inputted into the SPSS 22 for analysis. Socio-demographic variables were presented on frequency tables. Bivariate analysis between graded suicidal ideation scores and categorical variables was done using the Chi-square analysis, while Pearson's correlation co-efficient was used for continuous variables. Level of significance was set at p less than 0.05.

Of the 132 students approached, 5 students declined participation and responses from 6 participants were excluded due to incomplete filling of questionnaire. Data was analysed for 121 students. The response rate was 96%.

RESULTS

The mean age of the participants was 21.78 (±3.54) years. Their minimum and maximum ages were 18 and 44 years, respectively. The majority of participants were single (96.7%), male (52.9%) and from monogamous family settings (86.0%).

One (0.8%) participant reported being managed for a mental illness and five students were related to a family member who had attempted suicide. (Table 1).

Participants who had a suicidal ideation score of 6 or more were categorized as having clinically significant suicidal ideation. Using this cut off, the prevalence estimate of

Table 1: Socio-demographic and Clinical Characteristics of Participants

Variable	Frequency	Percentage (%)
Gender		
Male	64	52.9
Female	57	47.1
Ethnicity		
Yoruba	94	77.7
Edo	14	11.6
Delta	6	4.9
Igbo	7	5.8
Religion		
Christian	110	90.9
Muslim	11	9.1
Marital Status		
Single	117	96.7
Married	4	3.3
Family Type		
Monogamous	104	86.0
Polygamous	12	9.9
Separated / divorced parents	5	4.1
Sexual Orientation		
Heterosexual	95	78.5
Homosexual	6	5.0
Bisexual	2	1.7
I don't know	18	14.9
Academic Level		
400l	60	49.6
500l	61	50.4
Source of Major Financial Support		
Parents	116	95.8
Siblings	3	2.5
Friends	2	1.7
Number of Father's Children		
0 – 4	75	62.0
5 – 10	34	28.1
1 – 14	2	1.7
15 – 20	3	2.5
Number of Mother's Children		
0 – 4	87	71.9
5 – 10	34	28.1
Intimate relationship problems		
Yes	11	9.1
No	87	71.9
Not applicable	22	18.2
Have you ever been managed for a mental illness		
Yes	1	0.8
No	120	99.2
Does any member of your family have a mental illness		
Yes	6	5.0
No	115	95.0
Has any member of your family member attempted suicide		
Yes	5	4.0
No	116	95.9

suicidal ideation among the study participants was 12.4%, while 16.5% had depressive symptoms based on the BDI-II scores.

Of the socio-demographic and clinical characteristics, the presence of intimate relationship problems among the medical students was associated with having suicidal ideations and, this relationship was statistically significant ($\chi^2 = 7.08$; df = 2, p=0.03). There was a statistically significant association between students who were being managed for a chronic medical condition ($\chi^2 = 5.38$; df = 1, p=0.02), their academic level ($\chi^2 = 6.34$; df = 1, p= 0.01) and suicidal ideations (Table 2).

Pearson's correlation coefficients was used for associations between continuous variables (beck's depression score, age, self-rating academic performance, participant's position among maternal siblings , participant's position among paternal siblings, number of father's children and number of mother's children) and suicidal ideation scores. Greater severity of depressive symptoms depicted by higher scores on the Beck's depression inventory was significantly correlated with a greater tendency of having suicidal ideations ($r = 0.67$; $p < 0.001$). Also, number of mother's children was negatively correlated with suicidal ideations ($r = –0.21$; p=0.02).

Forty-five (37.2%) students had a lifetime use of any substance, more males had a lifetime use of any substance compared to the females (42%vs32%, df = 1, p = 0.23). Alcohol was the most commonly used psychoactive substance (32.2%) (Table 3). Suicidal ideation was more in those who reported a lifetime use of any substance but this difference was not statistically significant (χ^2=0.66, df=1, p= 0.42) (Table 2).

DISCUSSION

Our major finding was a prevalence estimate of suicidal ideation of 12.4%. Significant associations of suicidal ideation were; intimate relationship problems, presence of a chronic medical condition, higher depression scores, and having fewer maternal siblings among the clinical students.

The prevalence of significant suicidal ideation in this study of 12.4% is

Table 2: Relationship between Suicidal Ideation and Categorical Socio-Demographic and Clinical Characteristics

Variable	Suicidal Ideation Absent (%)	Suicidal Ideation Present (%)	Analysis
Gender			
Male	55(85.93)	9(14.06)	χ^2=0.35
Female	51(89.47)	6(10.53)	df=1 p=0.56
Religion			
Christian	95(87.16)	14(12.84)	χ^2 =0.13
Muslim	10(90.90)	1(9.09)	df=1 p=0.59
Marital Status			
Single	101(87.07)	15(12.93)	χ^2 =1.08
Married	4(100)	0(0)	df=1 p=0.59
Sexual Orientation			
Heterosexual	80(86.02)	13(13.98)	χ^2=2.29
Homosexual	6(100)	0(0)	df=3
Bisexual	2(100)	0(0)	p=0.52
I don't know	16(88.89)	2(11.11)	
Intimate Relationship Problems			
Yes	7(63.64)	4(36.36)	χ^2 =7.08
No	77(88.51)	10(11.49)	df=2
Not applicable	21(95.45)	1(4.55)	p=0.03*
Any Drug Use			
Yes	38(84.44)	7(15.56)	χ^2=0.66
No	68(89.47)	8(10.53)	df=1p=0.42
Presence of a Chronic Medical Condition			
Yes	2(50)	2(50)	χ^2=5.38
No	104(88.89)	13(11.11)	df=1p=0.02*
Presence of a Mental Illness			
Yes	0(0)	1(100)	χ^2=4.24
No	106(88.33)	14(11.67)	df=1p=0.12
Year of Study			
400 Level	48 (95)	12 (20)	χ^2 = 6.34
500 Level	58 (5)	3 (80)	df= 1p=0.01*

Table 3: Frequency Distribution of Lifetime Use of Psychoactive Substances

Substance	Frequency	Percentage (%)
Tobacco		
Yes	5	4.1
No	116	95.9
Alcohol		
Yes	39	32.2
No	82	67.8
Cannabis		
Yes	3	2.5
No	118	97.5
Amphetamine		
Yes	6	5.0
No	115	95.0
Inhalants		
Yes	2	2.5
No	118	97.5
Sedatives		
Yes	8	6.6
No	113	93.4
Opioids		
Yes	1	0.8
No	120	99.2
Cocaine		
Yes	0	0
No	121	100

within the range of 4.9% to 35.6% reported from previous studies among medical students.[16,51] This is also similar to the lifetime prevalence estimates of suicidal ideation among adolescents and young adults of 12.1% to 37.9% from previous studies conducted in different countries including Nigeria.[52–55] Few studies have compared rates of depression and suicidal ideation between medical students and those in other faculties. However, some available studies have opined that medical students have higher rates of depression and suicidal ideation compared to aged match populations[14,15] while others have reported no significant differences.[56,57] One of the studies which found an insignificant difference in suicidal ideation among the different faculties (Social sciences, Medicine and Engineering) studied however reported higher rates of psychological symptoms by students in the social sciences.[56]

The factors identified as causing suicidal ideation among young people especially students in higher institution of learning are largely multi-factorial/ multidimensional.[58] These factors include hopelessness, impulsivity, aggression, body perception, communication difficulties, lack of social belonging, problems with the law, break up with a significant other, bullying or victimization, academic crisis or school failure , forced or extended separation from friends or family, family conflict, abuse or trauma, substance abuse, lack of social support, and unsuccessful attempts to access mental health, sexual orientation, religious practice, suicidal behaviors in the family and among friends.[59–62]

For medical students, specific reasons enumerated from previous studies for their high rates of suicidal ideation were; female gender, use of psychoactive substances, poor academic performance and abnormal personality traits.[28,63–66] Contrary to previous studies which show that female medical students and physicians had significant higher levels of suicidal ideation compared to the males,[30,67–69] our study revealed more male medical students reporting suicidal ideations compared to their female counterparts, though this difference was not statistically significant. One possible reason for this could be the demand placed on males in this part of the world to graduate quickly and with good grades so they can become breadwinners for their prospective nuclear family, as well as the extended family who may have contributed to defray the exorbitant cost of medical education.[70] This could be an area for further research.

The enormous stress associated with medical education has been well documented.[71,72] This stress tends to worsen as the student progresses in academics, including periods of facing professional examinations.[71] There are also the unhealthy personality traits of perfectionism and self-criticism which are often carried into residency.[73] Coupled with the increased academic work, burnout and mistreatment,[72] these factors could explain the significantly higher rates of reported suicidal ideation among 5th year compared to 4th year medical students found in our study. More so, medical students have been found to be more susceptible to psychiatric stressors which could result in depressive illness and suicidal ideation.[74]

Most major mental illnesses increase the risk of suicide and this underscores the importance of our finding of 16.5% of the students experiencing depressive symptoms. This is very relevant because of the contribution of depression to global suicide rates, as previously cited above. The factors that predispose medical students to depression have already been discussed earlier.

Similarly, our study also found that medical students with a chronic medical condition reported higher levels of suicidal ideation. Individuals who live with chronic medical conditions could have lower quality of life and be predisposed to having depression and other mental health conditions. Studies have reported causality link between medical conditions and mental illnesses.[75–77]An added disadvantage is that, the ability to cope with such chronic medical conditions may be worse for younger people, hence the significant relationship with suicidal ideations in this study.

Students who were from small families with mothers having few number of children expressed more suicidal ideation. This may be a result of the more protective nature of large families wherein children learn to cope with stress better, to delay gratification, acquire better social skills which is needed to survive their home environment. Although another study reported large families as a greater risk for suicidal ideation due to a generally poor psychological health, [78] however, the authors acknowledged that the generalisation of their finding is limited as cofounders such as parenting styles, socio-economic status of family and other factors were not assessed in the study. Small families are an increasing trend in African societies among the educated and middle class families. This may be another area for further research to determine which family size is protective against mental illness and distress in this environment.

Suicidal ideation being significantly present in those with intimate relationship problems could be explained by the link between low self-esteem, self-dissatisfaction, self-rejection and suicidal ideation.[79,80] These traits have been reported to be common among medical students in a previous study.[80] These relationship problems may result in feeling rejected, and in the lack of a confiding relationship to share intimate concerns, and these in turn may predispose to depression, which has been found to be a strong contributor to suicide[81] These effects may be worse if the relationships were abusive or exploitative.

Although the percentage of students with suicidal ideation that used any substance was higher than those who did not, this was not statistically significant. This is somewhat similar to findings from a previous systematic review suggesting a direct link between problematic drug use and suicidal ideation.[82] This could be an area for further research as the current study just assessed for lifetime use of substances of abuse. A third of the students reported a lifetime use of drugs and the number of drug users was not significantly different between females and males. This finding was not surprising as recent studies have shown a closing gap between both genders as it pertains to drug abuse.[83] Alcohol was the most prevalent psychoactive substance used while amphetamine was the most prevalent illicit drug abused, this is at variance with a previous review that had reported cannabis use as being the most prevalent illicit psychoactive substance abused in the Nigerian setting.[83] Current data on amphetamine use in this setting are scare, however, there are reports from the media of its increased use in cheaper and readily available forms. Also, amphetamine is associated with increased alertness and wakefulness[84] hence its preference among medical students to improve academic performance.

CONCLUSION

Suicidal ideation was relatively high among the clinical students studied. Increased suicidal ideation was associated with the presence of intimate relationship problems; being managed for a chronic medical condition; having higher depression scores; and those with fewer maternal siblings. The strengths of this study include the fact that it assessed for suicidal ideation using a standardized instrument and, it was a whole population study. It is important for medical schools to create programmes and avenues to cater for the emotional and psychological wellbeing of her students. This will reduce the rates of depression and suicide ideation among them as well as preventing the fatal outcome of suicide.

Limitation

It was a single centre study with a small sample size involving only clinical students which limits generalization. The limited scope of this study prevented the exploration of other important co-founders which have been suggested for further research.

REFERENCES

1. Report TWH. Mental Health New Understanding, New Hope. Geneva: The World Health Report. 2001. p. 37.
2. WHO. Suicide huge but preventable public health problem, says WHO. Geneva: 2004 Contract No.: WHO/61. [7].
3. Sadock BJ, Sadock VA . No Title. kaplan and Sadock‘s synopsis of psychiatry Behavioral Science/Clinical Psychiatry, L. W. Wilkins, Ed., Philadelphia, USA, 10th edition. 2007.
4. Nock MK, Borges G, Bromet EJ, *et al.* Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *Br J Psychiatry.* 2008; **192:** 98–105.
5. Dyrbye LN, Harper W, Moutier C, *et al*. A multi-institutional study exploring the impact of positive mental health on medical students’ professionalismin an era of high burnout. *Acad Med.* 2012; **87:** 1024–1031.

6. Thompson D, Goebert D TJ. A program for reducing depressive symptoms and suicidal ideation in medical students. *Acad Med.* 2010; **85:** 1635–1639.
7. Garlow SJ, Rosenberg J, Moore JD, *et al*. Depression, desperation, and suicidal ideation in college students: results from the American Foundation for Suicide Prevention College Screening Project at Emory University. *Depress Anxiety.* 2008; **25:** 482–488.
8. Abiodun O. Adewuya, Bolanle A. Ola, Olurotimi A. Coker, Olayinka Atilola MPZ, Olufemi Olugbile AF and OI. Prevalence and associated factors for suicidal ideation in the Lagos State Mental Health Survey, Nigeria. *BJPsych Open.* 2016; **2:** 385–389.
9. National Survey on Drug Use and Health (NSDUH) Releases. Substance Abuse and Mental Health Services Administration. 2017.
10. Dixon PG, Sinyor M, Schafer A, Levitt A, Haney CR, Ellis KN, *et al*. "Association of weekly suicide rates with temperature anomalies in two diferent climate types,." I*nt J Environ Res Public Health.* 2014; **11:** 11627–11644.
11. WHO. Preventing suicide Geneva: Executive summary; 2013.
12. Organization. WH. WHO Mortality Database WHO, Update. 2013.
13. Mann JJ, Apter A, Bertolote J, Beautrais A, Currier D, Haas A, *et al.* Suicide prevention strategies: a systematic review. *JAMA*. 2005: **294.**
14. Alkot MM, Alnewirah AY, Bagasi AT, Alshehri AA BN. Depression among medical versus non-medical students in Umm Al-Qura University, Makkah Al-Mukaramah, Saudi Arabia. *Am J Psychiatry Neurosci.* 2017; **5:** 1–5.
15. Ibrahim MB AM. Prevalence of anxiety and depression among medical and pharmaceutical students in Alexandria University. *Alexandria J Med.* 2015; **51:** 167–173.
16. Lisa S. Rotenstein, Marco A. Ramos, Matthew Torre, J. Bradley Segal, Michael J. Peluso, Constance Guille, Srijan Sen, Douglas A. Mata. Prevalence of Depression, Depressive Symptoms, and Suicidal Ideation Among Medical Students A Systematic Review and Meta-Analysis. *JAMA*. 2016; **316:** 2214–2236.
17. Kjeldstadli K, Tyssen R, Finset A, *et al.* Life satisfaction and resilience in medical school-a six-year longitunidal, nationwide and comparative study. *BMC Med Educ.* 2006; **6:** 48.
18. Downs N, Feng W, Kirby B, *et al.* AP. Listening to depression and suicide risk in medical students: the Healer Education Assessment and Referral (HEAR) Programme. 2014; **38:** 547–553.
19. Sun L, Sun L-N, Sun Y-H, Yang L-S, Wu H-Y, Zhang D-D, *et al.* Correlations between psychological symptoms and social relationships among medical undergraduates in Anhui Province of China. *Int J Psychiatry Med.* 2011; **42:** 29–47.
20. Klonsky ED MA. The three-step theory (3ST): a new theory of suicide rooted in the "ideation-to-action" framework. *Int J Cogn Ther.* 2015; **8:** 114–129.
21. Tjia J, Givens JL SJ. Factors associated with undertreatment of medical student depression. *J Am Coll Heal.* 2005; **53:** 219–224.
22. Givens JL TJ. Depressed medical students' use of mental health services and barriers to use. *Acad Med.* 2002; **77:** 918–921.
23. Pickard M, Bates L, Dorian M et al. Alcohol and drug use in second-year medical students at the University of Leeds. *Med Educ.* 2000; **34:** 148–150.
24. Rosiek A, Rosiek-Kryszewska A, Leksowski Ł, *et al.* Chronic stress and suicidal thinking among medical students. *Int J Environ Res Public Heal.* 2016; **13:** 212.
25. Rau T, Plener P, Kliemann A, *et al.* Suicidality among medical students-A practical guide for staff members in medical schools. *GMS Z Med Ausbild.* 2013; **30:** doc 48.
26. Honney K, Buszewicz M, Coppola W GM. Comparison of levels of depression in medical and non-medical students. *Clin Teach.* 2010; **7:** 180–184.
27. Tam W, Lo K PJ. Prevalence of depressive symptoms among medical students: overview of systematic reviews. *Med Educ.* 2019; **53:** 345–354.
28. Dyrbye LN, Thomas MR, Massie FS, *et al.* Burnout and suicidal ideation among U.S. medical students. *Ann Intern Med.* 2008; **149:** 334–341.
29. Levine RE, Breitkopf CR, Sierles FS, *et al*. Complications associated with surveying medical student depression: the importance of anonymity. *Acad Psychiatry.* 2003; **27:** 12–18.
30. Schwenk TL, Davis L, Wimsatt L. Depression, Stigma, and Suicidal Ideation in Medical Students. *JAMA.* 2010; **304:** 1181–1190.
31. Moutier C, Cornette M, Lehrmann J, Geppert C, Tsao C, DeBoard R E, Al. When residents need health care: stigma of the patient role. *Acad Psychiatry.* 2009; **33:** 431–441.
32. Dyrbye LN, Thomas MR, Massie FS, *et al.* Burnout and suicidal ideation among U.S. medical students. *Ann Intern Med.* 2008; **149:** 334–341.
33. Rawat R, Kumar S ML. Prevalence of depression and its associated factors among medical students of a private medical college in south India. *Int J Community Med Public Heal.* 2016; **3:** 1393–1398.
34. World Health Organisation. Mental Health Action Plan 2013–2020. 2013.
35. Gureje O, Kola L, Uwakwe R, Udofia O, *et al.* The profile and risks of suicidal behaviours in the Nigerian Survey of Mental Health and Well-Being. *Psychol Med.* 2007; **7:** 821–830.
36. Anderson RN SB. Deaths: Leading causes for 2002. National Vital Statistics Reports: From the Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System. 2005; **53:** 1–89.
37. Reinherz HZ, Tanner JL, Berger SR, Beardslee WR FG. Adolescent suicidal ideation as predictive of psycho-pathology, suicidal behavior, and compromised functioning at age 30. *Am J Psychiatry.* 2006; **163:** 1226–1232.
38. Ngasa SN, Sama CB, Dzekem BS, *et al.* Prevalence and factors associated with depression among medical students in Cameroon: a cross-sectional study. *BMC Psychiatry.* 2017; **17:** 216.
39. Alem A, Araya M, Melaku Z, Wendimagegn D AA. Mental distress in medical students of Addis Ababa University. *Ethiop Med J.* 2005; **43:** 159–166.
40. van Zyl PM, Joubert G, Bowen E, *et al*. Depression, anxiety, stress and substance use in medical students in a 5-year curriculum. *Afr J Heal Prof Educ.* 2017; **9:** 67–72.
41. Asante KO, Andoh-Arthur J. Prevalence and determinants of depressive symptoms among university students in Ghana. *J Affect Disord.* 2015; **171:** 161–166.
42. Palmier JB. Prevalence and correlates of suicidal ideation among students in sub-saharan Africa. Georgia State University; 2011.
43. Fine G, Alison HC, Vanderwesthuizen, D, Kruger C. Predicting frequency of suicidal attempts of adolescent out-patients at Weskoppies Hospital using clinical and demographic characteristics. *South African J Psychiatry.* 2012; **18:** 22–26.

44. Ibrahim N, Amit N SM. Psychological factors as predictors of suicidal ideation among adolscents in Malaysia. *PLoS One.* 2014; 9.
45. Wang Y, Gorenstein C. Psychometric properties of the Beck Depression Inventory-II/ : a comprehensive review. *Braz J Psychiatry.* 2013; **35:** 416–431.
46. Beck AT. Depression: Causes and Treatment. Philadelphia. Philadelphia: University of Pennsylvania Press; 1972.
47. Beck AT, Kovacs M WA. Assessment of suicidal intention: the Scale for Suicide Ideation. *J Consult Clin Psychol.* 1979; **47:** 343–352.
48. Sokero TP, Melartin TK, Rytsala HJ, Leskela US, Lestela-Mielonen PS IE disorder. Suicidal ideation and attempts among psychiatric patients with major depressive. *J Clin Psychiatry.* 2003; **64:** 1094–1100.
49. Humeniuk R, Ali R World Health Organisation G. Validation of the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) and Pilot Brief Intervention: A Technical Report of Phase II Findings of the WHO ASSIST Project. 2006.
50. Onifade PO, Bello AO, Abiodun O, Sotunsa JO LO, *et al.* Psychometric Properties of Alcohol Smoking and Substance Involvement Screening Test (Assist V3.0) Among University Students. *J Addict Behav Ther Rehabil.* 2014; 3.
51. Osama M, Islam MY, Hussain SA, *et al.* Suicidal ideation among medical students of Pakistan: a cross-sectional study. *J Forensic Leg Med.* 2014; **27:** 65–68.
52. Nock MK, Green JG, Hwang I MK, Sampson NA, Zaslavsky AM, *et al.* Prevalence, correlates, and treatment of lifetime suicidal behavior among adolescents: Results from the national comorbidity survey replication adolescent supplement. *Psychiatry. JAMA.* 2013; **70:** 300–310.
53. Bruffaerts R, Mortier P, Auerbach RP AJ, Hermosillo De la Torre AE, Cuijpers P, *et al.* Lifetime and 12-month treatment for mental disorders and suicidal thoughts and behaviors among first year college students. *Int J Methods Psychiatr Res.* 2019; **28:** e1764.
54. Miché M, Hofer PD, Voss C, Meyer AH, Beesdo-Baum K, *et al.* Mental disorders and the risk for the subsequent first suicide attempt: results of a community study on adolescents and young adults. *Eur Child Adolesc Psychiatry.* 2018; **27:** 839–848.
55. Omigbodun O, Dogra N, Esan O AB. Prevalence and Correlates of Suicidal Behaviour Among Adolescents in Southwest Nigeria. *Int J Soc Psychiatry.* 2008; **54:** 34–46.
56. Sabahat Naseem SM. Suicidal Ideation, Depression, Anxiety, Stress and Life Satisfaction of Medical, Engineering , and Social Sciences Students Original Article Suicidal Ideation, Depression, Anxiety, Stress and Life Satisfaction of Medical, Engineering and Soc. *J Ayub Med Coll Abbottabad.* 2017; **29:** 422–427.
57. Alexandrino-silva C, Lazarini M, Pereira G, Bustamante C, Corrêa A, Ferraz DT, *et al.* Suicidal ideation among students enrolled in healthcare training programs/ : a cross-sectional study Ideação suicida entre estudantes da área da saúde/ : um estudo transversal. *Rev Bras Psiquiatr.* 2009; **31:** 338–344.
58. Pereira A & Cardoso F. Suicidal Ideation in University Students: Prevalence and Association with School and Gender. *Paidéia.* 2015; **25:** 299–306.
59. Gvion Y, Horesh N, Levi-Belz Y, Apter A. A proposed model of the development of Suicidal ideations. *Compr Psychiatry.* 2015; **56:** 93–102.
60. Lieberman R, Poland S, Cowan K. Suicide prevention in the schools. *Princ Leadersh.* 2006; **7:** 11–15.
61. Centre for Disease Control and Prevention. Web-based injury statistics Query and reporting system (WISQARS). *National Center for Injury Prevention and Control.* 2013.
62. Mackenzie S, Wiegel JR, Mundt M, Brown D, Saewye E, Heiligenstein E. Depression and suicide ideation among students accessing campus healthcare. *Am J Orthopsychiatry.* 2011; **81:** 101–107.
63. Humphris G KS. The encouragement of 'perfect' health professionals. *Med Educ.* 1998; **32:** 452–455.
64. Hirschfeld RM KG. Personality attributes and affective disorders. *Am J Psychiatry.* 1979; **136:** 67–70.
65. Midtgaard M, Ekeberg Ø, Vaglum P TR. Mental health treatment needs for medical students: a national longitudinal study. *Eur Psychiatry.* 2008; **23:** 505–511.
66. Mandal A, Ghosh A, Sengupta G, Bera T, Das N MS. Factors affecting the performance of undergraduate medical students: a perspective. *Indian J Community Med.* 2012; **37:** 126–129.
67. Goebert D, Thompson D, Takeshita J, *et al.* Depressive symptoms in medical students and residents:a multischool study. *Acad Med.* 2009; **84:** 236–241.
68. Dahlin M, Joneborg N RB. Stress and depression among medical students: a cross-sectional study. *Med Educ.* 2005; **39:** 594–604.
69. Schernhammer ES CG. Suicide rates among Assessment, physicians: a quantitative and gender/ :, (meta-analysis). *Am J Psychiatry.* 2004; **161:** 2295–2302.
70. James BO, Thomas IF, Omoaregba JO, Okogbenin EO, Okonoda KM, Ibrahim AW, *et al.* Psychosocial correlates of perceived stress among undergraduate medical students in Nigeria. *Int J Med Educ.* 2017; **8:** 382–388.
71. Aniebue PN OG. Prevalence of depressive symptoms among Nigerian medical undergraduates. *Trop Doct.* 2008; **38:** 157–158.
72. Cook AF, Arora VM, Rasinski KA, Curlin FA YJ. Prevalence of Medical Students Mistreatment and Its Association with Burnout. *Acad Med.* 2014; **89:** 749–754.
73. Aguocha Gu, Onyeama GM, Bakare MO IM. Prevalence of Depression among Resident Doctors in a Teaching Hospital, South East Nigeria. *Int J Clin Psychiatry [Internet].* 2015; **3:** 1–5. Available from: http://article.sapub.org/10.5923.j.ijcp.20150301.01.html
74. . Slavin SJ, Schindler DL CJ. Medical student mental health 3.0: Improving student wellness through curricular changes. *Acad Med.* 2014; **89:** 573–577.
75. Oosthuizen P, Carey P ER. Psychiatric disorders and general medical conditions: implications for the clinician. *Afr J Psychiatry* [Internet]. 2008; **11:** 18–22. Available from: https://www.ajol.info/index.php/ajpsy/article/viewFile/30250/62601).
76. Mbakwem AC AON. Co-morbid psychiatric disorders among subjects in stable state of heart failure in a West African teaching hospital. *Br J Cardiol* [Internet]. 2008; **15:** 322–325. Available from: https://bjcardio.co.uk/2008/11/co-morbid-psychiatric-disorders-among-subjects-in-stable-state-of-heart-failure-in-a-west-african-teaching-hospital/
77. Serafini G, Pompili M, Innamorati M *et al.* The Impact of Anxiety, Depression, and Suicidality on Quality of Life and Functional Status of Patients With Congestive Heart Failure and Hypertension: An Observational Cross-Sectional Study. *Prim Care Companion to J Clin Psychiatry.* 2010: 12(6).

78. Akande A, Lester D. Psychological health , suicidal ideation , and family size among Nigerian Yoruba. *Individ Psychol*. 1994; **50:** 203–206.
79. Brezo J, Paris J TG. . Personality traits as correlates of suicidal ideation, suicide attempts and suicide completions: a systematic review. *Acta Psychiatr Scand*. 2006; **113:** 180–206.
80. Mitsui N, Asakura S, Shimizu Y et al. The association between suicide risk and self esteem in Japanese university students with major depressive episodes of major depressive disorder. *Neuropsyhiatr Dis Treat*. 2014; **10:** 811–816.
81. World Health Organisation (WHO). Depression and Other Common Mental Disorders. Global Health Estimates (2017). Accessed 11/15/2107. 2017; Available from: http://www.who.int/mental_health/management/depression/prevalence_global_health_estimates/en/
82. Ricardo Coentre CG. Suicidal ideation in medical students: recent insights. *Adv Med Educ Pract*. 2018; **9:** 873–880.
83. United Nations Office on Drug and Crime (UNODC). Drug use in Nigeria (Nigeria Drug Survey). 2018.
84. Amphetamines Uses, Effects, and Addiction. [Internet]. 2021. Available from: www.addictiongroup.org/drugs/illegal/amphetamines/