

RESEARCH

Open Access



# Factors influencing suicidal ideation and self-harm among undergraduate students in a Nigerian private university

Olasumbo Kukoyi<sup>1</sup>, Edidiong Orok<sup>2\*</sup> , Funmilayo Oluwafemi<sup>1</sup>, Olawale Oni<sup>1</sup>, Tunrayo Oluwadare<sup>1</sup>, Tolulope Ojo<sup>1</sup>, Toba Bamitale<sup>3</sup>, Boluwaji Jaiyesimi<sup>3</sup> and Debbie Iyamu<sup>1</sup>

## Abstract

**Background:** Suicide and self-harm have been documented as the main cause of death among young adults. Nigeria as well as other low-income countries is reported to have a higher prevalence rate of suicidal ideation and self-harm as compared to high-income countries. The aim of this study was to evaluate the factors that influence self-harm and suicidal ideation among university undergraduates.

**Results:** Four hundred fifty students consented to participate in this study where 61.3% were female with mean age of  $20.02 \pm 1.88$  years. More than 46% (208) had moderate social support while 80.4% had a high self-esteem and 72.7% low environmental factor scores. There was an association between self-esteem ( $p=0.001$ ), social support ( $p<0.001$ ), and self-harm but no association between social support and suicide ideation ( $p=0.199$ ) as well as between gender and self-harm ( $p=0.118$ ).

**Conclusions:** There was some form of influence from self-esteem, social support, and environmental factors on self-harm and suicidal ideation. Interventions tailored towards these factors in order to improve mental health outcomes among undergraduates are needed.

**Keywords:** Suicidal ideation, Self-harm, Factors, Undergraduates, Nigeria

## Background

One major public health issue that has become rampant throughout the world and is increasing the burden of health care is suicidal behavior (suicidal ideation and deliberate self-harm) among young people [1]. Estimation from the World Health Organization (WHO) reported that each year, more than 700,000 people die from suicide and for every suicide there are many more people who attempt suicide [2]. Suicide is a tragedy that has a lasting impact on families, communities, and even nations. Suicide occurs at any age and was the fourth

biggest cause of death worldwide for people aged 15 to 29 in 2019 [2]. However, in Africa, suicide is the 2nd leading cause of death among people aged 15–29 years [3].

Suicide is a primary cause of death among school undergraduates globally [4]. Suicide rates among school undergraduates vary widely among countries ranging from 5% to about 31% [5–7]. Low-income countries including Nigeria have a higher prevalence rate of suicidal ideation and self-harm as compared to high income countries [5, 6, 8]. School undergraduates have biopsychosocial problems which could explain the high prevalence in African countries [9]. In Nigeria, a study reported a prevalence rate of 20% for suicide ideation and 12% of self-harm among young people [10]. Risky behaviors such as suicidal ideation and self-harm enhance students vulnerability to poor physical and mental outcomes [3, 9]. A study reported that those adolescents who follow

\*Correspondence: pharmorok@gmail.com

<sup>2</sup> Department of Clinical Pharmacy and Public Health, College of Pharmacy, Afe Babalola University, Ado Ekiti, Nigeria  
Full list of author information is available at the end of the article

through more readily with suicide are those with feelings of anxiety [8]. Also gender disparities, poor academic performance, and social economic factors are associated with suicidality and self-harm among school undergraduates [10, 11]. In some low-income countries, girls are at higher risk of suicidal behaviors notably because of rigid gender norms and discrimination. Also, female undergraduates are generally much more likely than males to experience suicidal ideation, while males complete suicide more than females [12]. Similarly, suicidal behavior is associated with certain factors which could be genetic, psychiatric, environmental, psychological, social, and cultural factors [1]. In addition, physical, sexual, and emotional abuses have also been related to suicidal ideation and attempt in adolescents [13]. According to Miller et al. (2013), it was reported that suicidal behaviors also comes together with other health risk behaviors such as tobacco smoking, aggressive behaviors, illicit drug use, alcohol use, and experience of sexual intercourse, anger, shock, and depression [13].

Deaths by suicide have received little or no recognition with most cases mistakenly labeled as an accident or another cause of death. Also, due to its sensitive nature and associated stigma around it, suicide is occasionally not acknowledged or reported [14]. Suicidal attempts in form of self-harm are significantly more common than actual suicide and are thought to occur between 10 and 20 times more frequently. About 3 out of every 1000 adults worldwide report trying to commit suicide each year, according to estimates. A lifelong attempt at suicide is made by about 2.5% of the population [15, 16].

In African countries including Nigeria, few studies have been carried out on suicidal ideation and self-harm [8, 10, 17]. This could be attributed to poor surveillance and socio-cultural factors associated with suicide as well as the stigma that it carries [7]. Also, suicide attempts are perceived as criminal offence rather than a mental health problem [18]. This study is meant to evaluate the various factors that influence self-harm and suicidal ideation among Afe Babalola undergraduates.

## Methods

### Research design

This research employed a cross-sectional descriptive research design.

### Study area

The study was conducted in Afe Babalola University, Ekiti. Ado-Ekiti, Nigeria. Ado-Ekiti is a city in Southwest with a population of over 424,340 [19]. The university operates a collegiate system and has six major colleges. They include College of Medicine and Health Sciences,

College of Sciences, College of Pharmacy, College Of Law, and College of Social and Management Sciences.

### Study population

The target population was Afe Babalola University undergraduate students estimated to be 8900 students in total grouped into different colleges and courses of study.

### Inclusion criteria and exclusion criteria

Undergraduates of Afe Babalola University who gave consent to participate in this study were included while students who did not give consent or were not available as at the time of administration of questionnaires were excluded.

### Sample size

Sample size was determined using the formula below:

$$N = \frac{Z^2 P(1 - P)}{d^2}$$

where  $n$  = minimum sample size

$Z$  = constant

$P$  = estimated prevalence (50%)

$d$  = Precision which is 95% confidence, interval is 5%

$$n = \frac{(1.96) \times 0.5 (1 - 0.5)}{0.05}$$

$n$  = 384 respondents

10% of the calculated sample size was added.

The minimum sample size for the study was 450 respondents.

### Sampling technique

The multi-stage sampling technique was used for this study.

Stage 1: Out of the 6 colleges. Four colleges were chosen using simple random sampling technique. These were College of Medical and Health Sciences, College of SMS, College of Sciences, and College of Engineering.

Stage 2: From the 4 colleges selected, 2 departments were selected using simple random sampling, making a total number of 8 selected departments. The departments selected were Nursing, Public Health, Computer Science, Geology, International Relations and Diplomacy (IRD), Accounting, Electrical Electronics, and Mechanical. Proportionate allocation was used here (Table 1).

Stage 3: Simple random sampling was used to select the students in each department.

**Table 1** Sample proportion allocation of students based on departments

Department	Population	Total Population	Calculated sample	Sample size
Nursing	612	2503	110	450
Public health	71	2503	12	450
Computer science	487	2503	88	450
Geology	73	2503	13	450
IRD	320	2503	58	450
Accounting	394	2503	71	450
Electrical electronics engineering	271	2503	49	450
Mechanical engineering	275	2503	49	450

### Data collection instrument

The instrument used for data collection in this study was a 51-item semi-structured questionnaire that was developed after a thorough literature search. The questionnaire had 4 sections. Section A comprised of 18 items aimed at assessing the socio-demographic characteristics and health behavior of the participants. The variables assessed included age, gender, ethnicity, religion, college, hostel, level of study, living situation at home, number of roommates, frequency of alcohol use, tobacco smoking, and physical activity. Section B assessed the reinforcing factors influencing self-harm and suicidal ideation. This section was made up of 14 Likert scale questions categorized into 2 sub-sections. The first sub-section assessed social support while the second measured self-esteem of the study participants. Social support was assessed using six Likert questions and was measured using a 4-point rating scale of Never (N), Rarely (R), Occasionally (OCC), Always (A) where Never (N) was represented as 1, Rarely (R) as 2, Occasionally (OCC) as 3, and Always (A) as 4.

Social support was categorized into poor (6–14), moderate (15–19), and strong support (20–24). Self-esteem was measured using eight Likert questions measured on a 4-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The scale was represented as Strongly Agree (SA) as 1, Agree (A) as 2, Disagree (D) as 3, and Strongly Disagree (SD) as 4. Self-esteem was categorized into low (<50% of total score) and high ( $\geq$ 50% of total score). Section C evaluated the enabling (environmental) factors that can influence self-harm and suicidal ideation in the participants. This section comprised of six Likert questions and was measured using a 4-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The scale was represented as Strongly Agree (SA) as 1, Agree (A) as 2, Disagree (D) as 3, and Strongly Disagree (SD) as 4. The environmental factors was categorized into low (<50% of total score) and high ( $\geq$ 50% of total score). Sections D assessed the pattern of suicidal ideation and self-harm

among the study participants. This section consisted of thirteen dichotomous yes or no questions.

### Reliability and validity of research instrument

The instrument was constructed under the guidance and inspection of the supervisor together with lecturers of the Department of Public Health, College of Medicine and Health Sciences. The research instrument was checked for validity using face validity by lecturers of the Department of Public Health, College of Medicine and Health Sciences, Afe Babalola University, who assessed the instrument for its intellectual content and extent to which the research instrument covered the concepts relating to the prevalence of factors influencing suicidal ideation and self-harm. Cronbach alpha test was conducted to test for the reliability of the instrument. A pre-test was first conducted for internal consistency of the instrument using 10% of the total projected sample size which was excluded from the main analysis.

### Data collection

The instrument used in this study was a semi-structured, self-administered questionnaire which was distributed to each randomly selected student. The questionnaire took about 10 min to complete.

### Data analysis

Data obtained from completed instrument was computed and analyzed using Statistical Package for Social Science (SPSS) version 25. Computed data were subjected to descriptive statistics (i.e., means, standard deviation) for numerical variables while association between the categorical variables was carried out using Pearson's chi-square test. Self-harm and suicidal ideation were coded as independent variables while demographics, environmental factors, self-esteem, and social support were coded as dependent variables during the cross tab analysis. Also information obtained was summarized and presented in tables.

**Ethical consideration**

This study obtained ethical approval from Afe Babalola University Research and Ethics Committee (ABUAD-REC). All selected participants used for this study were informed that their participation is voluntary, and informed consent was sought from all participants prior to their participation. Confidentiality of participants was maintained as no personal identifying information was collected on the questionnaire. This study was carried out in accordance with the latest version of the Declaration of Helsinki.

**Results**

**Demographics and health behavior of study participants**

A total of four hundred fifty students consented to participate in this study and the mean age of the participants was

20.02 ± 1.88 years (range 17–27 years). Two hundred and seventy-six were female while less than 8% (34) were Hausa. More than 89% (403) were Christians and two hundred and eighty people lived with both parents. Less than 30% (130) reported that a member of their family had attempted suicide before while more than 85% (385) documented that none of their siblings had thought of suicide (Table 2).

One-hundred and eighty students (40%) stated that they take alcohol and less than 25% reported they take it monthly. More than 26% (119) reported that they smoke cigarette and 10% admitted that they smoke twice weekly (Table 3).

**Reinforcing factors for self-harm and suicidal ideation**

The reinforcing factors for self-harm and suicidal ideation were assessed in this study and the factors were

**Table 2** Demographics of study participants

Variable		Frequency (n=450)	Percentage (%)
<b>Age (mean ±SD)</b>		<b>20.02± 1.882 years (range 17–27 years)</b>	
<b>Gender</b>	Male	174	38.7
	Female	276	61.3
<b>Ethnicity</b>	Yoruba	268	59.6
	Igbo	148	32.9
	Hausa	34	7.6
<b>Marital status</b>	Single	445	98.9
	Married	5	1.1
<b>College</b>	MHS	154	34.2
	Sciences	63	14.0
	SMS	98	21.8
	Engineering	135	30.0
<b>Level</b>	100	85	18.9
	200	96	21.3
	300	121	26.9
	400	85	18.9
	500	63	14.0
<b>Religion</b>	Christianity	403	89.6
	Islam	47	10.4
<b>Living situation at home</b>	With both parents	280	62.2
	With one parent	108	24.0
	With other family member	46	10.2
	With one parent and step parent	13	2.9
	With spouse	3	0.7
<b>Living condition in school</b>	One-man room	93	20.7
	Two-man room	97	21.6
	Four-man room	260	57.8
<b>Family member attempted suicide</b>	Yes	130	28.9
	No	320	71.1
<b>Brother or sister thought of suicide</b>	Yes	65	14.4
	No	385	85.6

Key: MHS Medical Health Sciences, SMS Social and Management Sciences

**Table 3** Health behaviour of the participants

Variable		Frequency (n=450)	Percentage (%)
<b>Do you take alcohol?</b>	Yes	180.0	40.0
	No	270	60.0
<b>Frequency of alcohol intake</b>	Once weekly	34	7.6
	Twice weekly	21	4.7
	Three times weekly	7	1.6
	Four times weekly	14	3.1
	Monthly	104	23.1
<b>Do you smoke?</b>	Yes	119	26.4
	No	331	73.6
<b>Frequency of smoking</b>	Once weekly	44	9.8
	Twice weekly	45	10.0
	Three times weekly	6	1.3
	Four times weekly	5	1.1
	Monthly	19	4.2

grouped into social support and self-esteem factors. For social support, fourteen percent (63) admitted that they do not have any special person with whom they can share their joys and sorrows while less than 27% (120) stated that they rarely talk about their problems with their family. One hundred ninety-nine participants (44.2%) reported that occasionally have friends with whom they can share joys and sorrows. Overall, more than 46% (208) had moderate social support while less than 25% (112) had poor social support (Table 4). For the participants' self-esteem, a total of one hundred and fifty-two (33.8%) students agreed that they felt that they are persons of worth and on an equal plane with others while more than 33% (150) strongly agreed that they certainly feel useless at times. Majority (362, 80.4%) had a high self-esteem (Table 5).

**Enabling (environmental) factors that influence self-harm and suicidal ideation**

In this study, less than 27% (121) strongly disagreed that they had a family member who engaged in self-harm while more than 45% (204) stated that their parents believed that suicidal ideations are demonic. Two hundred eleven students (46.9%) stated the counseling unit in school are too judgmental and do not understand them while majority (285, 63.3%) of the students reported that academic workload stresses them out and the school is not considerate of their situation. Most (72.7%, 327) had a low environmental factor score (Table 6).

**Patterns of suicidal ideation and self-harm**

The patterns of suicidal ideation and self-harm was also assessed in this study, and it was reported that less than

**Table 4** Social support of study participants

S/N	Statements	Responses (%)			
		N	R	OCC	ALW
1.	There is a special person with whom I can share my joys and sorrows	63 (14.0)	196 (43.6)	124 (27.6)	67 (14.9)
2.	I get the emotional help and support I need from my family	40 (8.9)	109 (24.2)	152 (33.8)	149 (33.1)
3.	I have a special person who is a real source of comfort to me	39 (8.7)	49 (10.9)	173 (38.4)	189 (42.0)
4.	I can count on my friends when things go wrong	73 (16.2)	79 (17.6)	173 (38.4)	125 (27.8)
5.	I can talk about my problems with my family	53 (11.8)	120 (26.7)	173 (38.4)	104 (23.1)
6.	I have friends with whom I can share my joys and sorrows	47 (10.4)	72 (16.0)	199 (44.2)	132 (29.3)
	Poor support (6–14)	112 (24.9)			
	Moderate support (15–19)	208 (46.2)			
	Strong support (20–24)	130 (28.9)			
	<b>Mean social support score ± SD</b>	<b>16.91 ± 4.366 (range: 6–24)</b>			
	<b>Total obtainable score: 24</b>				

Key: ALW Always-4, OCC occasionally-3, R rarely-2, N Never-1

**Table 5** Self-esteem of participants

S/N	Statements	Responses (%)			
		SA	A	D	SD
1.	I feel that I am a person of worth and on an equal plane with others	139 (30.9)	152 (33.8)	73 (16.2)	86 (19.1)
2.	All in all, I am inclined to feel that I am a failure	102 (22.7)	133 (29.6)	83 (18.4)	132 (29.3)
3.	I am able to do things as well as most other people	93 (20.7)	217 (48.2)	113 (25.1)	27 (6.0)
4.	I feel I do not have much to be proud of	96 (21.3)	189 (42.0)	105 (23.3)	60 (13.3)
5.	I take a positive attitude toward myself	117 (26.0)	154 (34.2)	151 (33.6)	28 (6.2)
6.	I certainly feel useless at times	150 (33.3)	109 (24.2)	121 (26.9)	70 (15.6)
7.	At times I think I am not good at all	64 (14.2)	143 (31.8)	115 (25.6)	128 (28.4)
	<b>High self-esteem (<math>\geq 50\%</math> of total score)</b>	<b>362 (80.4)</b>			
	<b>Low self-esteem (<math>&lt; 50\%</math> of total score)</b>	<b>88 (19.6)</b>			
	<b>Mean self-esteem score <math>\pm</math> SD</b>	<b>16.84 <math>\pm</math> 4.118 (range 7–26)</b>			
	<b>Total obtainable score: 28</b>				

Key: SA Strongly Agree-4, A Agree-3, D Disagree-2, SD Strongly Disagree-1

27% (120) admitted that they cut their wrists, arms, or other areas of the body while 400 (88.9%) burned themselves with a cigarette. More than 83.1% (374) admitted to burning themselves with a lighter while about 90% (406) reported that they do not stick sharp objects such as needles, pins, and staples into their skin. About 44% (194) of the students did self-harm while 56.9% did not carry out any form of self-harm in this study (Table 7). Three hundred forty-eight students (77%) admitted to have thought of killing themselves in the last 6 months and 85% (383) stated to have performed actions on the thoughts. The actions reported by the students were cutting of skin, drug overdose, and use of chemically poisonous substances.

**Influence of predisposing, enabling, and reinforcing factors towards suicidal ideation and self-harm**

In this study, there was no association between gender and self-harm ( $X^2=2.437$ ;  $p=0.118$ ) as well as with suicide

ideation ( $X^2=0.350$ ;  $p=0.554$ ), but there was an association between self-esteem and self-harm ( $X^2=11.189$ ;  $p=0.001$ ) as well as suicide ideation ( $X^2=6.450$ ;  $p=0.011$ ). There was also association between social support and self-harm ( $X^2=51.887$ ;  $p<0.001$ ) as well as between environmental factor, self-harm ( $X^2=28.573$ ;  $p<0.001$ ) and suicidal ideation ( $X^2=10.589$ ;  $p=0.001$ ), but no association between social support and suicide ideation ( $X^2=3.230$ ;  $p=0.199$ ) (Table 8).

**Discussion**

**Demographics, self-harm, and suicidal ideation among study participants**

Suicide and self-harm have been documented as the main cause of death in both men and women, particularly between the age of 15 and 35 years, and it happens at a higher incidence in this age group than in any other [20]. The population used for this study was of mean age 20

**Table 6** Environmental factors influencing self-harm and suicidal ideation

S/N	Statements	Responses (%)			
		SA	A	D	SD
1.	I had a family member who engaged in self-harm	123 (27.3)	64 (14.2)	142 (31.6)	121 (26.9)
2.	Anytime I think of the situation at home, I emotionally break down	110 (24.4)	148 (32.9)	105 (23.3)	87 (19.3)
3.	The available support services in school are not youth friendly	136 (30.2)	116 (25.8)	101 (22.4)	97 (21.6)
4.	My parents believe that suicidal ideations are demonic	204 (45.3)	124 (27.6)	96 (21.3)	26 (5.8)
5.	The counselling unit in my school are too judgemental and do not understand me	211 (46.9)	137 (30.4)	97 (21.6)	5 (1.1)
6.	The academic workload stress me out and the school is not considerate of my situation	285 (63.3)	115 (25.6)	38 (8.4)	12 (2.7)
	<b>Low score (<math>&lt; 50\%</math> of total score)</b>	<b>327 (72.7%)</b>			
	<b>High score (<math>\geq 50\%</math> of total score)</b>	<b>123 (27.3%)</b>			
	<b>Mean environmental factor score <math>\pm</math> SD</b>	<b>12.46 <math>\pm</math> 3.261 (range 6–21)</b>			
	<b>Total obtainable score: 30</b>				

**Table 7** Pattern of self-harm among the participants

S/N	Statements	Response (%)	
		Yes	No
1	Cut your wrists, arms or other areas of the body	120 (26.7)	330 (73.3)
2	Burned yourself with a cigarette	50 (11.1)	400 (88.9)
3.	Burned yourself with a lighter	76 (16.9)	374 (83.1)
4.	Carved words into your skin	75 (16.7)	375 (83.3)
5	Carved pictures design or other markers into your skin	37 (8.2)	413 (91.8)
6.	Bit yourself to the extent that you broke the skin	63 (14.0)	387 (86.0)
7.	Rubbed sandpaper on your body	14 (3.1)	436 (96.9)
8.	Dripped acid onto your skin	3 (0.7)	447 (99.3)
9.	Used bleach, comet, or cleaner to scrub your skin	12 (12)	438 (97.3)
10	Stuck sharp objects such as needles, pins and staples into your skin (excluding tattoos, ear piercing, needles used for drug use or body piercing)	44 (9.8)	406 (90.2)
	Self-harm	194 (43.1)	
	No self-harm	256 (56.9)	

**Table 8** Association between predisposing factors, enabling factors, and reinforcing factors self-harm and suicide ideation

Variables		Self-harm	No self-harm	X <sup>2</sup>	p value <sup>a</sup>	Suicide ideation	No suicide ideation	X <sup>2</sup>	p value <sup>a</sup>
<b>Gender of respondents</b>	<b>Male</b>	83	91	2.437	0.118	42	132	0.350	0.554
	<b>Female</b>	111	165			60	216		
<b>Living condition of respondents in school</b>	<b>One –man room</b>	34	59	4.510	0.105	23	70	0.308	0.857
	<b>Two-man room</b>	50	47			22	75		
	<b>Four-man room</b>	110	150			57	203		
<b>Living situation at home</b>	<b>With both parents</b>	118	162	1.753	0.781	62	218	1.791	0.774
	<b>One parent</b>	52	56			27	81		
	<b>Other family member</b>	18	28			8	38		
	<b>One parent + step parent</b>	5	8			4	9		
	<b>Spouse</b>	1	2			1	2		
<b>Self-esteem scores</b>	<b>Poor self-esteem</b>	24	64	11.189	<b>0.001*</b>	11	77	6.450	<b>0.011*</b>
	<b>Good self-esteem</b>	170	192			91	271		
<b>Social support scores</b>	<b>Poor</b>	81	31	51.887	<b>0.000*</b>	32	80	3.230	0.199
	<b>Moderate</b>	70	138			45	163		
	<b>Strong</b>	43	87			25	105		
<b>Environmental factor</b>	<b>Low score</b>	166	161	28.573	<b>0.000*</b>	87	240	10.589	<b>0.001*</b>
	<b>High score</b>	95	28			15	108		

Key: <sup>a</sup>Statistically significant value  $p \leq 0.05$ ; <sup>b</sup>Chi-square test

years which is quite close to findings in a study by Johnson and colleagues [21] where the mean age was 19.78 years This population is important because suicide ideation and self-harm may have long-term consequences, including sadness, depression, and morbidity.

This study showed that a higher proportion of males did self-harm and had suicide ideation than females similar to studies carried out by Neeleman et al. (2004) [22]

and Johnson et al. (2021) [21] that reported that self-harm and suicidal tendencies develops faster in males than females. This is contrary to a study from Li and colleagues where the female gender is significantly associated with suicidal ideation [23]. This could be due to the fact that women are more emotionally expressive than men. There was more alcohol use reported among the students than tobacco smoking. This is consistent with



studies in Nigeria where unhealthy alcohol consumption was estimated to be between 40 and 50% among adolescents and young adults aged 15 years and above [24, 25]. Furthermore, according to a number of studies, drinking alcohol is being reported as the main dangerous behavior among students and young adults in general [26–28]. Alcohol dependence, aggression, self-harm, and suicidal ideation have also been substantially correlated with harmful alcohol use among young adults [29–31]. Harmful alcohol use can impair functioning and can also raise dropout rates and cause adolescents to perform poorly in school [32–34]. Similarly, a strong association has been reported between cigarette smoking and suicide-related behaviors characterized as ideation, plans, attempts, and suicide-related death [35–37]. These associations have been shown to have positive dose-response relationships [38, 39]. There is a need for intervention in form of awareness and other prevention strategies against alcohol use and smoking targeted towards young adults in tertiary institutions.

#### **Social support, self-harm, and suicide ideation**

Social support is the functional (practical, emotional support) and structural (social network, network outside the family, household size) component of support generated from social networks [40]. In this study, there were more participants with moderate support and poor social support than strong social support and interestingly, a large proportion of participants with strong social support did not carry out self-harm or suicidal ideation. This is in tandem with a study by Chioqueta and Stiles [41] that reported that social support is linked to a lower risk of suicidal ideation. There was also an association between social support and self-harm. Adequate social support is vital as it has been shown to control personal stress responses and prevent anxiety or depression [42] and affect help-seeking behavior in individuals [43].

#### **Self-esteem, self-harm, and suicide ideation**

During adolescence and adulthood, self-esteem is said to have a substantial impact on crucial life outcomes such as health and social results. Higher self-esteem is linked to favorable outcomes such as stronger social relationships, a sense of well-being, favorable peer evaluations, academic accomplishment, and good coping abilities [44]. Low self-esteem on the other hand has been linked with depression, substance misuse, antisocial behavior, and suicide [45, 46]. Majority of the participants in this study had good self-esteem, but some students still had low self-esteem. According to Aryana [47], high self-esteem is linked with good academic performance but low self-esteem is linked with poorer outcomes among school students. Screening for poor

self-esteem in adolescents could be a useful technique for identifying young adults who are at risk of anxiety, depression, or suicide.

#### **Living situation at home, environmental factors, and self-harm**

Relationship between children and their parents can have a substantial impact on children's social communication and mental health [48]. Numerous researches have demonstrated the importance of family relationships in self-harm behavior in adolescents [49, 50]. In this study, a lesser proportion of the study participants that lived with both parents did self-harm and suicidal ideation compared to those living with a single parent. This is in line with a study by Moore et al. (2006) [51] where it was reported that children of single parents have a higher tendency of depression, aggression, loneliness, and other mental health-related problems than children with both parents. Similarly, parental strategies as well as parental attachment to their children have been as an important determining factor of self-harm and/or suicidal behavior in children [52]. Parental attention and emotional participation, as well as parenting methods, have a big role in determining the overall mental wellbeing and communication in the family throughout adolescence and the early phase of adult life. This study also showed that participants with higher environmental factor score had a higher self-harm tendency. This goes in line with a study by John et al. [53] where there was a significant association between environment risk factors (such as poor social support, parental care, child abuse, and drug abuse) and self-harm tendencies. Similarly, Cassels and colleagues stated that self-injury is associated with poor family functioning, an important environmental factor [54]. Children from households with negative environmental factors (such as sexual or physical abuse, neglect, parental loss, or significant family turmoil) are more likely to self-harm or consider suicide than those not exposed to these environmental factors [55, 56].

This study was not without limitations which included the fact that this study was carried out in one university, and this should be considered in the generalizability of the study findings. However, this study provides information that can serve as a building block for further studies.

#### **Conclusions**

There was some form of influence from self-esteem, social support, and environmental factors on self-harm and suicidal ideation. There is need for proper intervention channeled towards these factors to improve outcomes.



### Acknowledgements

The authors wish to thank all participants for their contribution to this research.

### Authors' contributions

All authors had full access to the data and their analysis, as well as drafting the article and editing of its draft. All authors read and approved the final manuscript.

### Funding

There was no external source of funding or grant for this research.

### Availability of data and materials

Due to the sensitive nature of this study, the data used in this study is strictly confidential and cannot be made available.

### Declarations

#### Ethics approval and consent to participate

Ethical approval was obtained from the Afe Babalola University Research Ethics Committee (ABUADREC). All selected participants used for this study were informed that their participation is voluntary, and informed consent was sought from all participants prior to their participation. Confidentiality of participants was maintained as no personal identifying information was collected on the questionnaire.

#### Consent for publication

This manuscript has been seen and approved by all authors, who accept full responsibility for the content and have also given their consent for inclusion and publication of this article.

#### Competing interests

The authors declare that they have no competing interests.

#### Author details

<sup>1</sup>Department of Public Health, College of Medicine and Health Sciences, Afe Babalola University, Ado-Ekiti, Nigeria. <sup>2</sup>Department of Clinical Pharmacy and Public Health, College of Pharmacy, Afe Babalola University, Ado Ekiti, Nigeria. <sup>3</sup>Department of Mathematical and Physical Sciences, College of Science, Afe Babalola University, Ado-Ekiti, Nigeria.

Received: 14 November 2022 Accepted: 17 December 2022

Published online: 05 January 2023

### References

- Hawton K, Saunders K, O'Connor R (2012) Self-harm and suicide in adolescents. *Lancet* 379(9834):2373–2382. [https://doi.org/10.1016/S0140-6736\(12\)60322-5](https://doi.org/10.1016/S0140-6736(12)60322-5)
- World Health Organization (2021) Suicide. <https://www.who.int/news-room/fact-sheets/detail/suicide/>. Accessed 28 June 2022.
- World Health Organization (2014) Forty-eighth report of the WHO Expert Committee on specifications for pharmaceutical preparations. <https://apps.who.int/iris/handle/10665/112733/>. Accessed 28 June 2022.
- Patton GC, Coffey C, Sawyer SM, Viner RM, Haller DM, Bose K, Vos T, Ferguson J, Mathers CD (2009) Global patterns of mortality in young people: a systematic analysis of population health data. *Lancet*. 374(9693):881–892. [https://doi.org/10.1016/S0140-6736\(09\)60741-8](https://doi.org/10.1016/S0140-6736(09)60741-8)
- Palmier JB (2011) Prevalence and correlates of suicidal ideation among students in sub Saharan Africa. Thesis, Georgia State University. <https://doi.org/10.57709/2120397/>. Accessed 28 June 2022.
- Eaton DK, Kann L, Kinchen S, Shanklin S, Flint KH, Hawkins J, Harris WA, Lowry R, McManus T, Chyen D, Whittle L, Lim C, Wechsler H (2011) Centers for Disease Control and Prevention (CDC) (2012) Youth risk behavior surveillance - United States. *MMWR Surveill Summ* 61(4):1–162
- Randall JR, Doku D, Wilson ML, Peltzer K (2014) Suicidal behaviour and related risk factors among school-aged youth in the Republic of Benin. *PLoS One* 9(2):e88233. <https://doi.org/10.1371/journal.pone.0088233>
- Opong K, Kugbey N, Osafo J, Quarshie EN, Sarfo JO (2017) The prevalence and correlates of suicidal behaviours (ideation, plan and attempt) among adolescents in senior high schools in Ghana. *SSM - Popul Health* 3:427–434. <https://doi.org/10.1016/j.ssmph.2017.05.005>
- Glozah FN, Pevalin DJ (2017) Association between psychosomatic health symptoms and common mental illness in Ghanaian adolescents: age and gender as potential moderators. *J Health Psychol* 22(11):1376–1386. <https://doi.org/10.1177/1359105316628736>
- Omigbodun O, Dogra N, Esan O, Adedokun B (2008) Prevalence and correlates of suicidal behaviour among adolescents in southwest Nigeria. *Int J Soc Psychiatry* 54(1):34–46. <https://doi.org/10.1177/0020764007078360>
- Arat G, Wong PW (2016) The relationship between parental involvement and adolescent mental health in six sub-Saharan African countries: findings from Global School-based Health Surveys (GSHS). *Int J Ment Health Promot* 18(3):144–157
- McMahon EM, Keeley H, Cannon M, Arensman E, Perry IJ, Clarke M, Chambers D, Corcoran P (2014) The iceberg of suicide and self-harm in Irish adolescents: a population-based study. *Soc Psychiatry Psychiatr Epidemiol* 49(12):1929–1935. <https://doi.org/10.1007/s00127-014-0907-z>
- Miller AB, Esposito-Smythers C, Weismore JT, Renshaw KD (2013) The relation between child maltreatment and adolescent suicidal behavior: a systematic review and critical examination of the literature. *Clin Child Fam Psychol Rev* 16(2):146–172. <https://doi.org/10.1007/s10567-013-0131-5>
- De Leo D (2015) Can we rely on suicide mortality data? *Crisis* 36(1):1–3. <https://doi.org/10.1027/0227-5910/a000315>
- Nock MK, Borges G, Bromet EJ, Alonso J, Angermeyer M, Beautrais A, Bruffaerts R, Chiu WT, de Girolamo G, Gluzman S, de Graaf R, Gureje O, Haro JM, Huang Y, Karam E, Kessler RC, Lepine JP, Levinson D, Medina-Mora ME, Ono Y, Williams D (2008) Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *BJPsych* 192(2):98–105. <https://doi.org/10.1192/bjp.bp.107.040113>
- Borges G, Nock MK, Haro Abad JM, Hwang I, Sampson NA, Alonso J, Andrade LH, Angermeyer MC, Beautrais A, Bromet E, Bruffaerts R, de Girolamo G, Florescu S, Gureje O, Hu C, Karam EG, Kovess-Masfety V, Lee S, Levinson D, Medina-Mora ME, Kessler RC (2010) Twelve-month prevalence of and risk factors for suicide attempts in the World Health Organization World Mental Health Surveys. *J Clin Psychiatry* 71(12):1617–1628. <https://doi.org/10.4088/JCP.08m04967blu>
- Tolulope O, Olutayo A, Babatunde S, Adesanmi A (2019) Suicidality in a non-clinical sample of Nigerian adolescents: prevalence and correlates. *Suicidol Online* 10(7):1–8
- Osafo J, Hjelmeland H, Akotia CS, Knizek BL (2011) The meanings of suicidal behaviour to psychology students in Ghana: a qualitative approach. *Transcult Psychiatry* 48(5):643–659. <https://doi.org/10.1177/1363461511417319>
- National Population Commission (2012) National Population Estimates. <https://nigerianstat.gov.ng/download/474/>. Accessed 28 June, 2022
- Edwards J (2018) Suicide risk in the young, what, how and who to study. <https://tinyurl.com/y49bojdy/>. Accessed 19 May, 2022
- Johnson FA, Ogunsanmi L, Ayokanmi I (2021) Risk factors for suicidal ideation and self-harm among undergraduate students in a private university in Ogun State, Nigeria. *Afr J Nurs Midwifery* 4(6):29–42. <https://doi.org/10.52589/AJHNM-02IMTTGX>
- Neeleman J, de Graaf R, Vollebergh W (2004) The suicidal process; prospective comparison between early and later stages. *J Affect Disord* 82(1):43–52. <https://doi.org/10.1016/j.jad.2003.09.005>
- Li CQ, Zhang JS, Ma S, Lv RR, Duan JL, Luo DM, Yan XJ, Ma N, Song Y (2020) Gender differences in self-harm and drinking behaviors among high school students in Beijing, China. *BMC Public Health* 20(1):1892. <https://doi.org/10.1186/s12889-020-09979-6>
- GBD (2016) Alcohol Collaborators (2018) Alcohol use and burden for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet* 392(10152):1015–1035. [https://doi.org/10.1016/S0140-6736\(18\)31310-2](https://doi.org/10.1016/S0140-6736(18)31310-2)
- Ajayi AI, Owolabi EO, Olajire OO (2019) Alcohol use among Nigerian university students: prevalence, correlates and frequency of use. *BMC Public Health* 19:752. <https://doi.org/10.1186/s12889-019-7104-7>
- Davoren MP, Demant J, Shiely F, Perry IJ (2016) Alcohol consumption among university students in Ireland and the United Kingdom from 2002 to 2014: a systematic review. *BMC Public Health* 16(1):1–13

27. Dumbili EW, Williams C (2016) Anywhere, everywhere: alcohol industry promotion strategies in Nigeria and their influence on young people. *Afr J Drug Alcohol Stud* 15(2):135–152
28. Lasebikan VO, Ayinde O, Odunleye M, Adeyefa B, Adepoju S, Fakanle S (2018) Prevalence of alcohol consumption and alcohol use disorders among outdoor drinkers in public open places in Nigeria. *BMC Public Health* 18(1):1–10
29. Tosevski DL, Milovancevic MP, Gajic SD (2010) Personality and psychopathology of university students. *Curr Opin Psychiatry* 23(1):48–52. <https://doi.org/10.1097/YCO.0b013e328333d625>
30. Dumbili EW (2013) Patterns and determinants of alcohol use among Nigerian university students: an overview of recent developments. *Afr J Drug Alcohol Stud* 12(1):29–51
31. Lancet Child and Adolescent Health Editorial (2018) Hard measures needed to tackle youth drinking. *Lancet Child Adolesc Health* 2: 765. [https://www.thelancet.com/pdfs/journals/lanchi/PIIS2352-4642\(18\)30319-5.pdf](https://www.thelancet.com/pdfs/journals/lanchi/PIIS2352-4642(18)30319-5.pdf). Accessed 2 December, 2022.
32. El Ansari W, Stock C, Mills C (2013) Is alcohol consumption associated with poor academic achievement in university students? *Int J Prev Med* 4(10):1175–1188
33. Meda SA, Gueorguieva RV, Pittman B, Rosen RR, Aslanzadeh F, Tennen H, Leen S, Hawkins K, Raskin S, Wood RM, Austad CS, Dager A, Fallahi C, Pearson GD (2017) Longitudinal influence of alcohol and marijuana use on academic performance in college students. *PLoS One* 12(3):e0172213. <https://doi.org/10.1371/journal.pone.0172213>
34. Mekonen T, Fekadu W, Mekonnen TC, Workie SB (2017) Substance use as a strong predictor of poor academic achievement among university students. *Psychiatry J* 2017:7517450. <https://doi.org/10.1155/2017/7517450>
35. Sankaranarayanan A, Mancuso S, Wilding H, Ghuloum S, Castle D (2015) Smoking, suicidality and psychosis: a systematic meta-analysis. *PLoS One* 10(9):e0138147. <https://doi.org/10.1371/journal.pone.0138147>
36. Poorolajal J, Darvishi N (2016) Smoking and suicide: a meta-analysis. *PLoS One* 11(7):e0156348. <https://doi.org/10.1371/journal.pone.0156348>
37. Harrison R, Munafò MR, Davey Smith G, Wootton RE (2020) Examining the effect of smoking on suicidal ideation and attempts: triangulation of epidemiological approaches. *BJPsych* 217(6):701–707. <https://doi.org/10.1192/bjp.2020.68>
38. Evins AE, Korhonen T, Kinnunen TH, Kaprio J (2017) Prospective association between tobacco smoking and death by suicide: a competing risks hazard analysis in a large twin cohort with 35-year follow-up. *Psychol Med* 47(12):2143–2154. <https://doi.org/10.1017/S0033291717000587>
39. Green M, Turner S, Sareen J (2017) Smoking and suicide: biological and social evidence and causal mechanisms. *J Epidemiol Community Health* 71(9):839–840. <https://doi.org/10.1136/jech-2016-207731>
40. Wu CY, Chang CK, Huang HC, Liu S, Stewart R (2013) The association between social relationships and self-harm: a case-control study in Taiwan. *BMC Psychiatry* 13:101. <https://doi.org/10.1186/1471-244X-13-101>
41. Chioqueta AP, Stiles TC (2007) The relationship between psychological buffers, hopelessness, and suicidal ideation: identification of protective factors. *Crisis* 28(2):67–73. <https://doi.org/10.1027/0227-5910.28.2.67>
42. Brugha TS, Weich S, Singleton N, Lewis G, Bebbington PE, Jenkins R, Meltzer H (2005) Primary group size, social support, gender and future mental health status in a prospective study of people living in private households throughout Great Britain. *Psychol Med* 35(5):705–714. <https://doi.org/10.1017/s0033291704003903>
43. Wu CY, Stewart R, Huang HC, Prince M, Liu SI (2011) The impact of quality and quantity of social support on help-seeking behavior prior to deliberate self-harm. *Gen Hosp Psychiatry* 33(1):37–44. <https://doi.org/10.1016/j.genhosppsych.2010.10.006>
44. Boden JM, Fergusson DM, Horwood LJ (2008) Does adolescent self-esteem predict later life outcomes? A test of the causal role of self-esteem. *Dev Psychopathol* 20(1):319–339. <https://doi.org/10.1017/S0954579408000151>
45. McClure AC, Tanski SE, Kingsbury J, Gerrard M, Sargent JD (2010) Characteristics associated with low self-esteem among US adolescents. *Acad Pediatr* 10(4):238–244. <https://doi.org/10.1016/j.acap.2010.03.007>
46. Choo CC, Harris KM, Chew P, Ho RC (2017) What predicts medical lethality of suicide attempts in Asian youths? *Asian J Psychiatr* 29:136–141. <https://doi.org/10.1016/j.ajp.2017.05.008>
47. Aryana M (2010) Relationship between self-esteem and academic achievement amongst pre-university students. *J Appl Sci* 10(20):2474–2477. <https://doi.org/10.3923/jas.2010.2474.2477>
48. Yulong W (2015) The effect of invalid family environment on self-injury behavior of different family types of adolescents. *Spec Educ China* 5:80–84
49. Kvermmo S, Rosenvinge JH (2009) Self-mutilation and suicidal behaviour in Sami and Norwegian adolescents: prevalence and correlates. *Int J Circumpolar Health* 68(3):235–248. <https://doi.org/10.3402/ijch.v68i3.18331>
50. Tan AC, Rehffuss MC, Suarez EC, Parks-Savage A (2014) Nonsuicidal self-injury in an adolescent population in Singapore. *Clin Child Psychol Psychiatry* 19(1):58–76. <https://doi.org/10.1177/1359104512467273>
51. Moore KA, Vandivere S, Redd Z (2006) A sociodemographic risk index. *Soc Indic Res* 75:45–81. <https://doi.org/10.1007/s11205-004-6398-7>
52. Ferrey AE, Hughes ND, Simkin S, Locock L, Stewart A, Kapur N, Gunnell D, Hawton K (2016) Changes in parenting strategies after a young person's self-harm: a qualitative study. *Child Adolesc Psychiatry Ment Health* 10:20. <https://doi.org/10.1186/s13034-016-0110-y>
53. John A, del Pozo BM, Lloyd K (2018) Environmental risk factors on suicide of children and young people. *Int J Popul Data Sci* 3(3):313. <https://doi.org/10.23889/ijpds.v3i4.903>
54. Cassels M, van Harmelen AL, Neufeld S, Goodyer I, Jones PB, Wilkinson P (2018) Poor family functioning mediates the link between childhood adversity and adolescent nonsuicidal self-injury. *J Child Psychol Psychiatry* 59(8):881–887. <https://doi.org/10.1111/jcpp.12866>
55. Mann JJ, Currier DM (2010) Stress, genetics and epigenetic effects on the neurobiology of suicidal behavior and depression. *Eur Psychiatry* 25(5):268–271. <https://doi.org/10.1016/j.eurpsy.2010.01.009>
56. Peñã JB, Kuhlberg JA, Zayas LH, Baumann AA, Gulbas L, Hausmann-Stabile C, Nolle AP (2011) Familism, family environment, and suicide attempts among Latina youth. *Suicide Life-Threat Behav* 41(3):330–341. <https://doi.org/10.1111/j.1943-278X.2011.00032.x>

## Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submit your manuscript to a SpringerOpen® journal and benefit from:

- Convenient online submission
- Rigorous peer review
- Open access: articles freely available online
- High visibility within the field
- Retaining the copyright to your article

Submit your next manuscript at ► [springeropen.com](https://www.springeropen.com)