

RESEARCH ARTICLE

Cyberbullying and its influence on social adjustment, self-concept, and anxiety among students in Anambra State

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ABSTRACT

Cyberbullying refers to aggressive behaviors that occur online, intending to hurt, especially where there is an imbalance of power in the relationship. Continuous online harassment can lead to severe emotional distress, reinforcing feelings of inadequacy and social fear, creating a vicious cycle of negative self-perception and increased anxiety. The study determined the relationship of cyberbullying with social anxiety, self-concept, and mental health of undergraduate students in a public university in Anambra State. We adopted a correlational research design. We selected 360 undergraduates under the Faculty of Education, Nnamdi Azikiwe University, Awka. The data were collected using four instruments: the Cyberbullying Questionnaire (CbQ), Mental Health Questionnaire (MHQ), Social Anxiety Questionnaire (SAQ), and Self-Concept Questionnaire (SCQ). The data were analyzed using the Pearson correlation and simple linear regression. The findings indicated a significant relationship prevails between cyberbullying and university students' mental health, social anxiety, and self-concept. Based on the study's findings, it was suggested that students should be exposed to social media literacy education to reduce cyber victimization and guard against it.

Keywords: Cyberbullying; Mental health; Social Anxiety; Self-Concept; undergraduate students; Anambra State

1. Introduction

Self-concept refers to one's perception and understanding. It includes how people define and understand themselves and perceive and interpret their experiences and interactions with others. Self-concept is a comprehensive psychological term that covers an individual's perception and mental picture of themselves, encompassing their beliefs, emotions, and views about their individuality, skills, abilities, and unique characteristics. It includes multiple components, such as self-esteem, self-image, and the ideal self, forming a complex understanding of the self^[1]. People regulate their self-concept as they grow based on their

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knowledge of themselves. Self-concept formation starts in the early years and progresses throughout an individual's lifetime^[2-6]. Social feedback, personal experiences, and cognitive growth influence this ongoing process. Mosanya and Kwiatkowska^[7] highlight that self-concept is constructed through multiple motives, such as the need for self-consistency, self-enhancement, and social validation. These motives drive individuals to seek out and interpret information in ways that align with their existing self-concept. Self-concept could be positive or negative in a person and could determine an individual's behavior.

Individuals with a positive self-concept tend to set higher goals and persistently achieve them. Yang et al.^[8] state that academic self-concept drives academic success and profits in self-assessment. For example, students who perceive themselves as capable learners are more likely to engage in challenging academic tasks, thus reinforcing their self-concept and promoting further achievement. A study by Robins and Trzesniewski^[9] highlights the dynamic interplay between self-concept and self-esteem, showing that a stable and positive self-concept can buffer against stress and psychological distress. Conversely, a negative self-concept can result in low self-esteem and higher sensitivity to mental health challenges, including depression and anxiety.

Research has shown that many students in Nigeria have tendencies for low self-concept, with studies indicating a low self-concept, with males having more low self-concept than their counterparts among university students in a university in north-central Nigeria^[10]. Research in South southern Nigeria indicated that approximately 68% of university students suffer from low self-esteem, as against only 32% of high self-esteem^[11]. Specifically, in southeast Nigeria, a study by Madu et al.^[12] using basic nursing students showed that approximately 69% and 27% had moderate and low self-esteem, while only about 4% had high self-esteem. Low self-esteem, which is closely related to low self-concept, can be a factor in social anxiety because it could foster a mindset of self-doubt, fear of judgment, and negative anticipation, all of which are key components of social anxiety.

Social anxiety involves a fear response to a perceived threat that is not inherently dangerous, yet the body and mind respond as though the threat is genuine^[13,14]. Kapoor et al.^[15] posited that it involves unnecessary, persistent, and consistent fear of self-embarrassment from performing in any public space, which could be negative in family and school environments. A mental health condition marked by intense and persistent fear arises when individuals perceive themselves as being watched, judged, or humiliated in social situations. This fear can significantly interfere with daily activities, work, and personal. The symptoms of social anxiety can vary widely among individuals. However, they may include excessive self-consciousness, fear of being the center of attention, fear of being judged or evaluating relationships negatively, fear of being rejected or humiliated, and avoidance of social situations or activities due to fear of embarrassment or ridicule^[16]. Social anxiety refers to an irrational fear experienced by individuals during social interactions, driven by their apprehension of receiving attention and being evaluated or observed by others.

Social anxiety is critical to one's quality of life, as it might make it harder to establish and keep relationships. Social anxiety may cause people to escape social situations out of fear of rejection or embarrassment, which leaves them with feelings of loneliness and social isolation^[17]. By implication, victims of social anxiety often anticipate and worry about upcoming social situations for extended periods before they occur. Students experiencing social anxiety often become self-conscious and anxious in situations requiring social interaction or performance under observation, such as delivering a presentation in class or eating in the company of peers^[18-19]. These circumstances may trigger physical symptoms, including sweating, trembling, and an accelerated heartbeat. In Nigeria, social anxiety is prevalent among

undergraduates. For example, Ugwuanyi^[20] found high social interaction anxiety among students in a southeastern university in Nigeria. A study found that social phobia, with approximately 6.6%, was the most prevalent phobia exhibited by adolescents in Nigeria, followed by phobia (6.4%), agoraphobia (4.7%), anxiety disorder (4.2%) and panic disorder (1.4%)^[21]. A study by Omoyemiju and Oluwatosin^[22] carried out in a public university in southern Nigeria revealed that out of 1600 students consisting of 690 males and 910 females with an age range between 15 and 38 years, selected using a proportionate stratified sampling technique, 0.5% had no signs of social anxiety, at the same time 10.3%, 76.4%, and 12.8% showed lower, moderate and high levels of social anxiety respectively. Social anxiety could be detrimental to the mental health of students.

Mental health is paramount for students to function maximally and acquire learning. Mental health is conceptualized as students' mental wellness and cognitive balance for optimal academic functioning. Mental health involves staying positive with contentment, striving towards personal development, and functioning well in relationships and society^[23]. Students are usually exposed to pedagogical, learning, and curricular experiences requiring cognitive engagement. For students to carry out cognitive tasks optimally, they need their mental health. Scholars such as Miranda et al.^[24] posited that students' mental health could affect their engagement in studies. Arif et al.^[25] reported that adverse mental health conditions such as depression, anxiety, stress, and suicidal behavior are prevalent among university students. Such psychological conditions could be triggered when students are consistently bullied in cyberspace.

Cyberbullying is described as intentionally causing harm through the use of electronic devices on victims considered weaker than their bullies^[26]. Cyberbullying refers to the deliberate use of technology to harass, threaten, demean, or target individuals through online threats, as well as aggressive, offensive, or derogatory texts, posts, messages, images, or videos intended to cause harm or humiliation. This form of bullying, facilitated by electronic devices, is linked with vulnerable mental health consequences, including depression and anxiety, affecting both the victims and perpetrators. Cyberbullied individuals can struggle to concentrate in school, which can affect how well they do there. The most common places where cyberbullying may include social media, such as Instagram, Facebook, TikTok, Snapchat, messaging apps, Email, and Online gaming communities. Willard in Angwaomaodoko^[27], enumerated various forms of cyberbullying, including cyber-harassment, cyber-denigration, cyber-trolling, flaming, exclusion, outing, trickery, cyber-stalking, and cyber-impersonation.

Cyberbullying represents a prevalent form of social maladjustment with detrimental effects on the well-being and developmental outcomes of students. In Nigeria, evidence indicates that cyberbullying is a pervasive issue among university students. For instance, a study by Olanmi et al.^[28] found that 54 % of students in western Nigeria had faced cyberbullying, while 24 % confessed to perpetrating such behavior online. Similarly, research carried out by Nwosu et al.^[29] revealed that 48 % to 57 % of students had been victims of cyberbullying, with 29 % to 40 % acknowledging involvement in bullying others via social media platforms. In northern Nigeria, a study involving students reported that 74 % of individuals had faced cyberbullying through the use of the internet or mobile devices^[30]. One of the factors that could trigger poor mental health, social anxiety, or low self-concept among individuals is cyberbullying.

Previous studies have shown that cyberbullying is a factor in building or hampering self-concept among individuals. Using a cross-sectional design, Rojo-Ramos et al.^[31] studied cyberbullying and self-concept in children at a public secondary school in Extremadura, a Spanish autonomous community. They observed that cyber victimization and cyberbullying were associated with poor self-concept, irrespective of gender. In their study, to establish a model of cyber victimization based on its relationship with self-concept and stress using

an SEM with a sample size of 542 Spanish students aged 10–12, Escortell et al.^[32] established that variables of self-concept and school anxiety are associated to cyber victimization. Similarly, in a study with university students, Anierobi et al.^[26] revealed that cyberbullying has a negative relationship with the self-esteem of the students. By implication, an increase in cyberbullying would cause a decrease in the self-esteem of the victim. Self-esteem is an aspect of self-concept.

Scholars asserted that cyberbullying has a relationship with social anxiety among victims. In this regard, Martínez-Monteagudo et al.^[33] carried out a study on cyberbullying and social anxiety. They collected data from 1412 students aged 12 to 18. They reported that students who are victims of cyberbullying provided higher scores on social avoidance and stress in social situations in general with peers, unlike those who are not victims of cyberbullying. Similarly, Lam et al.^[34] carried out a study on 486 students from Texas and Ohio to determine how cyberbullying through social media use affects social anxiety and social comparison. The findings of the study showed that social anxiety was linked with cyberbullying perpetration and victimization.

Moreover, Literature is not consistent that cyberbullying has adverse impacts on the mental well-being of cyber victims. A study by Lucas-Molina et al.^[35] showed that suicidal behavior and depression, which bothers mental health, are linked to cyber victimization and cyberbullying, while Chaves-Montero et al.^[36] and Mahanta and Khatoniyar^[37] linked cyberbullying to mental health degrading among adolescent victims. In a study with female adolescents, Khadka et al.^[38] showed that victims of cyberbullying had episodes of depression, anxiety, and stress. By implication, the experience of cyberbullying negatively affected their mental well-being. However, Anierobi et al.^[26] observed differently in their study with undergraduates in a university in Anambra State, reporting that there is no relationship between cyberbullying and the mental well-being of the students. Although Anierobi^[1] reported a low and positive relationship between the two variables, the relationship was not significant when tested. Anierobi et al.^[26] argue that the disparity with other scholars' findings could be attributed to adaptive strategies the students might have developed in weathering any negative impact cyberbullying could make on their mental health.

The study is rooted in the Self-Discrepancy theory by psychologist Tory^[39]. The theory posits that individuals compare their actual selves to their ideal and ought selves, leading to emotional discomfort when discrepancies exist between them. This framework helps us understand how such discrepancies influence emotional states and psychological well-being. Concerning this study, cyberbullying can exacerbate these discrepancies by creating or reinforcing negative perceptions about the actual self, thereby increasing social anxiety and negatively affecting self-concept. By identifying the specific self-discrepancies that are most affected by cyberbullying, interventions can be designed to help undergraduates reduce these discrepancies. This might involve activities that enhance self-acceptance and reduce the gap between the actual and ideal selves. Self-discrepancy theory provides a clear theoretical framework for understanding how cyberbullying can impact self-concept and social anxiety by highlighting the role of self-perceptions and self-expectations. Therefore, this study sought to ascertain how cyberbullying determines the social anxiety, self-concept, and mental health of undergraduates in Anambra State. The following research questions and hypotheses drove the current study.

RQ1: How does correlate cyberbullying and the mental health of undergraduate students in Anambra State?

RQ2: How does cyberbullying correlate with social anxiety among undergraduate students in Anambra State?

RQ3: How does cyberbullying correlate with self-concept among undergraduate students in Anambra State?

H1: Cyberbullying has no significant relationship with the mental health of undergraduate students in Anambra State.

H2: Cyberbullying has no significant relationship with social anxiety among undergraduate students in Anambra State.

H3: Cyberbullying has no significant relationship with self-concept among undergraduate students in Anambra State.

2. Methods

2.1. Research design

The current study adopted a correlational research design to ascertain the relationship that cyberbullying has on the mental health, social anxiety, and self-concept of students in a public university in Anambra State. Specifically, we examined the associations existing between cyberbullying and mental health, cyberbullying and social anxiety, and cyberbullying and the self-concept of students in Anambra State.

2.2. Research participants

The sample size comprised 360 undergraduates (male 137, 38.1%, female 223, 61.9%) at a public university in Anambra State. The target of the study was to sample 10% of the undergraduates at the university; however, due to the usage of a Google form for data collection, only 360 responses were obtained for the study. The sample information is presented in **Table 1**.

Table 1. Demographic information.

	n	(%)
Field	-	-
Humanities	70	19.4
Technology/ICT	26	7.2
Science	122	33.9
Languages and Communication	104	28.9
Commercial	38	10.6
Gender		
Male	137	38.1
Female	223	61.9
Total	360	100.0

As shown in **Table 1**, the sample size consists of more female students (223, 61.9%) than male students (137, 38.1%). Seventy respondents, representing 19.4% of the students, are in the humanities; 26, representing 7.2%, are from Technology/ICT; 122 respondents, representing 33.9%, are from Sciences; 104 respondents, representing 28.9%, are from Languages and Communication; while 38 participants, representing 10.6%, are from the Commercials field.

2.3. Ethical considerations

The researchers ensured that educational and social science research adhered to ethics by following established ethical criteria. This was ensured by asking the respondents' permission and providing written explanations of the study and a link to the shared Google Form questionnaire. The respondents were informed that they were free to participate in the study or withdraw it if they felt it was acceptable. An

anonymous data collection method was used since no private student data was gathered. In gathering data, the researchers steered clear of any identifying markers.

2.4. Instruments for data collection

For data collection, we used four sets of instruments were used for data collection for the study. They are Cyberbullying Questionnaire (CQ), Social Anxiety Questionnaire (SAQ), and Self-Concept Questionnaire (SCQ). The Cyberbullying Questionnaire (CQ) is adapted from the Cyberbullying Questionnaire Instrument (CBQI) version by Michael (2017). It is a 44-item questionnaire designed to gather information from female university students about their perception and experience of cyberbullying. In adapting the instrument for the present study, 39 items considered not suitable for the population under study were not included in the final draft for use. Hence, there are five items in the CQ. The items were restructured on a four-point scale response of Always (4), Sometimes (3), Rarely (2), and Never (1).

The students' mental health was measured using the Mental Health Questionnaire (MHQ), a 14-item questionnaire adopted from the Warwick-Edinburgh mental well-being Scale (WEMWBS) by Tennant et al.^[40]. It is structured on a 5-point response pattern of None of the time (1) to All of the time (5).

Social anxiety was measured using the Social Anxiety Questionnaire (SAQ) adapted from the work of Erin et al. (2021), "Poor Academic Performance Caused by Social Anxiety." It is a 41-item questionnaire structured on a 5-point response scale. Thirty-one items considered not necessary for the group under study were omitted. Thereafter, the SAQ used for this study is a 10-item scale. The items were scaled on a four-point response pattern of Strongly Agree (4) to Strongly Disagree (1).

The Self-Concept Questionnaire (SCQ) for this study is adapted from the work of Rastogi (1979), "Self-Concept Questionnaire." It contains 51 items designed to measure self-concept across various populations using a five-point scale response ranging from Strongly Agree, Agree, undecided, Disagree, and Strongly Disagree. In adapting the instrument for the present, 42 items considered not suitable for the population under study were not included in the final draft for use. Hence, there are nine items restructured in a four-point response scale ranging from Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1) in SCQ.

Three experts in education validated the instruments. The reliability of the measures was obtained using the Cronbach Alpha method, which yielded alpha coefficients of 0.82, 0.86, 0.78, and 0.74 for CbQ, MHQ, SAQ, and SCQ, respectively.

2.5. Method of data analysis

Data were analyzed using Pearson and simple linear regression using the SPSS software. Researchers tested the significance level at 0.005 and noted that any data at < 0.05 is insignificant, while any at > 0.50 is significant. This determined the acceptance or rejection of the null hypotheses that guided the study.

3. Results

To examine the nature of the association between mental health and cyberbullying of students we deployed the Pearson correlation and the results are presented in **Table 2**.

Table 2. Correlation between cyberbullying and mental health.

S/N	Variables	N	M	SD	1	2
1.	Cyberbullying	360	9.39	3.65	1	.133*
2.	Mental Health	360	28.09	4.01	.133*	1

*.05 level

Table 2 revealed that cyberbullying with a mean (9.39) and standard deviation (3.65) has a low and positive relationship $r = .133$ with university students' mental health ($m=28.09$; $SD=4.01$). This implies that there is a positive relationship between cyberbullying and the mental health of students in Anambra State.

To answer RQ2, we again deployed Pearson correlation, and the results are presented in **Table 3**.

Table 3. Correlation between cyberbullying and social anxiety.

S/N	Variables	N	M	SD	1	2
1.	Cyberbullying	360	9.39	3.65	1	.298**
2.	Social Anxiety	360	25.77	6.04	.298**	1

** .01 level

Table 3 revealed that cyberbullying with a mean (9.39) and standard deviation (3.65) has a low and positive relationship $r = .298$ with university students' social anxiety ($m=25.77$; $SD=6.04$). This implies that there is a positive relationship between cyberbullying and social anxiety among students in Anambra State.

To answer the RQ3, we deployed Pearson correlation, and the results are presented in **Table 4**.

Table 4. Correlation between cyberbullying and self-concept.

S/N	Variables	N	M	SD	1	2
1.	Cyberbullying	360	9.39	3.65	1	.260**
2.	Self-Concept	360	27.85	3.99	.260**	1

** .01 level

$N =$ Number of participants, $M =$ Mean score, $SD =$ Standard deviation

Table 3 revealed that cyberbullying with a mean (9.39) and standard deviation (3.65) has a low and positive relationship $r = .260$ with university students' self-concept ($m=27.85$; $SD=3.99$). This implies that there is a positive relationship between cyberbullying and self-concept among students in Anambra State.

To test H1, we deployed simple linear regression and the results are presented in **Table 5**.

Table 5. Contribution of cyberbullying to students' mental health.

Model	Unstandardized Coefficients		Standardized Coefficients	t	p	
	B	Std. Error	Beta			
1	(Constant)	26.178	.580		46.064	.000
	Cyberbullying	.147	.058	.133		.011
	R	.133 ^a				.011
	R ²	.018				.011
	F	6.478				.011 ^b

Dependent Variable: Mental Health

Table 5 revealed an F-ratio ($F = 6.478$, $N = 360$); R ($\beta = .133$) with ($p < .05$, $.011$). The p-value ($p \leq .011$) is less than $.050$ and, therefore, found significant. Thus, H1 was rejected. It was concluded that a significant relationship prevails between cyberbullying and the mental health of university students in Anambra State.

To test H2, we again deployed simple linear regression and the results are presented in **Table 6**.

Table 6. Contribution of cyberbullying to students' social anxiety.

Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
1	(Constant)	21.143	.842		25.114	.000
	Cyberbullying	.493	.084	.298	5.898	.000
	R	.298 ^a				.000
	R ²	.089				.000
	F	34.784				.000

Dependent Variable: Social Anxiety

Table 6 revealed an F-ratio (F = 34.784, N = 360); R ($\beta = .298$) with ($p < .05, 0.000$). The p-value ($p \leq .000$) is smaller than 0.05 and, therefore, found significant. Consequently, H2 was rejected. The resulting inference indicates a significant association prevails between cyberbullying and social anxiety among university students in Anambra State.

To test H3, we again deployed simple linear regression and the results are presented in **Table 7**.

Table 7. Contribution of cyberbullying to students' self-concept.

Model		Unstandardized Coefficients		Standardized Coefficients	t	p
		B	Std. Error	Beta		
1	(Constant)	25.176	.562		44.775	.000
	Cyberbullying	.285	.056	.260	5.102	.000
	R	.260 ^a				.000
	R ²	.068				.000
	F	26.027				.000

Dependent Variable: Self-Concept

Table 7 revealed an F-ratio (F = 26.027, N = 360); R ($\beta = .260$) with ($p < .05, .000$). The p-value ($p \leq .000$) is less than 0.05 and, therefore, found significant. Consequently, H3 was also was rejected. The analysis led to the conclusion that a significant relationship exists between cyberbullying and the self-concept of university students in Anambra State.

4. Discussion

The study sought to explore the nature of the relationship that cyberbullying has on the mental health, social anxiety, and self-concept of undergraduates in Anambra state using randomly drawn 360 participants from a public university in Anambra state. The sample consists of more female students (223, 61.9%) than male students (137, 38.1%). 70, representing 19.4% of the students, are in the humanities; 26, representing 7.2%, are from Technology/ICT; 122 respondents, representing 33.9%, are from Sciences; 104 respondents, representing 28.9%, are from Languages and Communication; while 38 participants, representing 10.6%, are from commercials field.

The study's findings showed that cyberbullying has a relationship with the mental health of the students. When tested further, the relationship was found significant, implying a significant relationship between cyberbullying and the mental health of students in Anambra State. Cyberbullying and victimization, no doubt, are some of the triggers of mental torture leading to depression and other psychological distress victims

experience, especially students. This is given that during studentship, young adults crave social relationships and acceptance by peers and friends and mainly connect with them in cyberspace. Cyberbullying punctures such desires and cravings, leading to psychological and mental health distress. This finding aligns with Lucas-Molina et al. ^[35], who showed that suicidal behavior and depression, which bother mental health, are linked to cyber victimization and cyberbullying. It also agrees with Mahanta and Khatoniyar ^[37] and Chaves-Montero et al. ^[36], who linked cyberbullying to mental health degrading among adolescent victims. Moreover, the finding supports Khadka et al. ^[38], who revealed that victims of cyberbullying had episodes of depression, anxiety, and stress. By implication, the experience of cyberbullying negatively affected their mental well-being. The finding validates that of Anierobi et al. ^[26], who reported a low and positive relationship between the two variables but disagreed with the outcome of their tested hypothesis that there is no significant relationship between cyberbullying and the mental well-being of the students. Anierobi et al. ^[26] argue that the disparity with other scholars' findings could be attributed to adaptive strategies the students might have developed in weathering any negative impact cyberbullying could make on their mental health. However, the findings of this present study showed that the negative impact of cyberbullying on the mental health of victims is not in doubt.

The findings of this study revealed that there is a positive relationship between cyberbullying and social anxiety among undergraduates in Anambra State. When further subjected to statistical analysis, comparing the result with hypothesis 1 in **Table 6**, a significant relationship between cyberbullying and university students' social anxiety in Anambra state. There is no doubt that when students become regular victims of cyberbullying, the psychological impact on them would make them withdraw from social activities due to anxiety. People naturally would not associate with social groups or activities that come with threats and harm to them. The finding is supported by the Martinez et al. (2020) study, which confirmed that students who are victims of cyberbullying presented high scores on social avoidance and distress in social situations in general with peers, unlike those who are not victims of cyberbullying. The finding also agrees with Travis et al. (2022), who showed that social anxiety was associated with cyberbullying victimization and perpetration. This aligns with Anierobi et al. ^[26], who observed a positive relationship between cyberbullying and the social development of students.

The findings of the study revealed that there is a positive relationship between cyberbullying and self-concept among students in Anambra State. When further subjected to statistical analysis, comparing the result with hypothesis 2 in **Table 7**, a significant relationship between cyberbullying and university students' self-concept in Anambra State was obtained. Constant exposure to cyberbullying could cast aspersion on how the victim perceives self, resulting in low self-concept. Self-concept is influenced by social feedback and personal experiences. If the feedback from social experiences breeds harm, intimidation, and threats, the resultant debilitating impact will hamper one's concept of self. The finding is in line with the study by Rojo-Ramos et al. ^[31], which shows how self-concept could be a protective factor against cyberbullying. It also agrees with Anierobi et al. ^[26], who showed that cyberbullying has a negative relationship with the self-esteem of students. By implication, an increase in cyberbullying would cause a decrease in the self-esteem of the victim, which is an aspect of self-concept.

5. Conclusion

Based on the findings of the study, it is therefore concluded that cyberbullying is a factor contributing to social anxiety and affecting both the mental health and self-concept of undergraduates in Anambra state. This is given the positive relation that cyberbullying has on both social anxiety, mental health, and self-concept of the students. The findings validate the Self-Discrepancy theory by psychologist Tory ^[39], which

posits that individuals compare their actual selves to their ideal and ought selves, leading to emotional discomfort when discrepancies exist between them. Thus, cyberbullying can exacerbate these discrepancies by creating or reinforcing negative perceptions about the actual self, thereby increasing social anxiety and negatively affecting the self-concept and mental health of victims of cyberbullying. Cyberbullying, as a shared social maladjustment, has debilitating impacts on the well-being of students. Undergraduates who are victims of cyberbullying often experience intense emotional distress, anxiety, and depression. Continuous negative interactions and harassment online can severely damage undergraduates' self-concept. Victims of cyberbullying may feel inferior to their peers, exacerbating feelings of inadequacy and negatively impacting self-concept with a ripple effect of social anxiety. The findings of the study imply education. This is given that if cyberbullying is not checked among students, there is a high probability that students' self-concept will be hampered. They would be affected to function and perform optimally in social activities in the school, which ripple would, no doubt, have a debilitating impact on their mental health. To mitigate the effects of cyberbullying, universities should implement structured cyberbullying prevention programs incorporating digital literacy education and responsible social media usage. Strengthening campus counselling services with specialized support for cyberbullying victims can help students develop resilience and coping strategies. Furthermore, universities should establish clear policies and reporting mechanisms to address cyber harassment, ensuring a safer online environment. Peer support programs and awareness campaigns can also foster a culture of mutual respect and online responsibility, reducing the prevalence and impact of cyberbullying among undergraduates.

6. Limitations and future direction

Despite the significant results, our study had some limitations to the generalizations of findings. One limitation of this study is that it did not differentiate between various social media platforms or specific types of cyberbullying, such as direct messages, anonymous threats, or public posts. Different online environments may contribute uniquely to social anxiety, self-concept issues, and mental health challenges among students. Future research should explore how platform-specific features and the nature of online interactions influence the psychological effects of cyberbullying. Additionally, longitudinal studies could provide deeper insights into the long-term impact of cyberbullying on students' mental well-being and academic performance. Using questionnaires alone to collect quantitative data may be a limitation of our study. However, future researchers may design mixed-method studies that combine written (open-ended) and oral (interview) questionnaires for a robust and in-depth insight into the respondents' opinions. This would also help to triangulate findings and improve robustness. Besides, our reliance on self-reported responses from respondents through convenience sampling may not reflect the true situation of other students' perspectives if our sample were drawn to represent a greater percentage of the students in the university. Finally, using a particular university for the study might not represent the opinion of all the university students in Anambra State. Considering the above, caution must be taken when generalizing the findings. It is therefore recommended that future studies take care of these limitations.

7. Recommendations

Based on the study's findings, universities should implement comprehensive social media literacy programs to equip students with the skills to identify, prevent, and respond to cyberbullying. Educational institutions can introduce cyber-resilience workshops focusing on emotional regulation, coping strategies, and confidence-building to help students manage online harassment. Additionally, integrating peer-support networks within campuses can create a safe space where students can share experiences and receive psychological support. Counselling services should incorporate targeted interventions for students

experiencing cyberbullying, such as cognitive-behavioral therapy (CBT)-based training to improve self-concept and reduce social anxiety. Policies should also emphasize digital responsibility campaigns that promote ethical online behavior, empowering students to foster a positive and inclusive digital environment.

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Conflict of interest

The authors declare no conflict of interest.

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