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# Problematic Social Media Use and Its Association with Suicidal Behaviour, Self-esteem, Depression and Quality of Life among College of Health Sciences Undergraduate Students in Nigeria

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## Abstract

# Background

Problematic social media use (PSMU) is increasingly recognised as a potential behavioural and public-health concern among young people. University students may be particularly vulnerable because social media is embedded in communication, learning, peer interaction and leisure. This study examined the prevalence and pattern of problematic social media use and its associations with suicidal behaviour, self-esteem, depressive symptoms and quality of life among undergraduate students in the College of Health Sciences, Osun State University, Nigeria.

# Methods

A cross-sectional analytical survey was conducted among undergraduate students in the College of Health Sciences. A minimum sample size of 384 was calculated and increased to 500. A multistage stratified sampling procedure was used: the College was stratified into Clinical Sciences, Basic Medical Sciences and Basic Clinical Sciences; departmental allocations were made according to student population, and eligible students were selected by simple random sampling within departments. Data were collected using the 9-item Social Media Disorder Scale (SMD-9), Rosenberg Self-Esteem Scale (RSES), Patient Health Questionnaire-9 (PHQ-9), Suicidal Behaviours Questionnaire-Revised (SBQ-R), and WHOQOL-BREF. Data were analysed using SPSS version 21, with descriptive statistics, chi-square tests and multinomial logistic regression. Quality-of-life domain scores were compared across the three social-media-use groups using one-way ANOVA.

# Results

Of the 500 questionnaires distributed, 426 were complete and analysed (85.2%). Problematic social media use was present in 170 (39.9%), while 171 (40.1%) were classified as at risk and 85 (20.0%) as normal users. Positive indicators of suicidal behaviour were present in 76 (17.8%), low self-esteem in 27 (6.3%), and moderate depressive symptoms in 170 (39.9%). Social media-use category was significantly associated with self-esteem ($\chi^2$=43.410, df = 2, $p < 0.001$), suicidal behaviour ($\chi^2$=116.179, df = 2, $p < 0.001$), and depressive-symptom category ($\chi^2$=319.504, df = 4, $p < 0.001$). In multinomial regression, depression and suicidal behaviour significantly contributed to the overall model, whereas self-esteem could not be reliably estimated because of quasi-complete separation. Quality-of-life domain scores were also statistically significant across social media-use categories in the analysis $P < 0.001$.

# Conclusion

PSMU was common in this sample and strongly associated with depressive symptoms, suicidal-behaviour indicators and differences in quality of life. The findings support the integration of digital-wellness approaches with routine student mental-health promotion and early identification. Longitudinal studies are needed to clarify directionality and causal pathways between problematic social media use, depression, suicidal behaviour or poorer quality of life.

# Introduction

Social media platforms have become integral to communication and social interaction among adolescents and young adults. For university students, these platforms may support peer relationships, educational activities, information seeking and access to social support. At the same time, a subgroup of users develops patterns characterised by impaired control, persistent engagement despite negative consequences and displacement of other activities. The distinction between frequent use and problematic use is important because time spent online alone does not adequately capture maladaptive engagement.[1,2,3,4]

Problematic social media use (PSMU) has been associated with a range of psychological outcomes, although the magnitude and direction of associations vary across studies. An umbrella review found that the evidence linking social media use with adolescent mental health was heterogeneous, with many reviews describing associations as weak or inconsistent.[3] More recent systematic reviews and meta-analyses nevertheless indicate that PSMU, rather than social-media exposure considered simply as duration, is more consistently associated with depression, anxiety, sleep problems and poorer well-being.[5,6]

The Social Media Disorder Scale (SMD-9) was developed to assess problematic social media use using nine criteria adapted from the DSM-5 framework for internet gaming disorder.[1] The instrument has subsequently been evaluated in different populations, including Nigerian students, where acceptable reliability and criterion-related validity have been reported.[2] This provides a useful basis for assessing problematic social media use in Nigerian university populations while recognising that the diagnostic status and cut-off of social media disorder remain debated.

Depressive symptoms and suicidal behaviour are particularly important outcomes in university populations. A Nigerian study found important relationships between suicidal ideation/attempts and depression-related psychosocial factors among undergraduates.[7] International evidence also indicates an association between problematic internet/social-media use and suicidal behaviour, although causal pathways remain uncertain.[8] The relationship may be bidirectional: students experiencing distress may increase online engagement as a means of coping or seeking connection, while maladaptive engagement may expose vulnerable individuals to social comparison, cyberbullying, sleep disruption or other stressors.[4,5,6,8]

Self-esteem represents another potentially important pathway. Social comparison and feedback processes on social media may influence self-evaluation, while individuals with lower self-esteem may

also use social media more heavily for reassurance, validation or social connection. Empirical work has demonstrated associations between problematic social media use and self-esteem, although the direction of effects cannot be established confidently from cross-sectional data.[9]

Quality of life provides a broader outcome encompassing physical health, psychological well-being, social relationships and environmental circumstances. The WHOQOL-BREF was developed as a brief measure of these four domains and has demonstrated satisfactory psychometric properties.[10] Its use has also been examined in Nigerian populations.[11] Examining quality of life alongside depression, self-esteem and suicidal behaviour may therefore provide a more comprehensive picture of the potential correlates of problematic social media use.

Despite increasing literature, evidence from Nigerian university populations remains less extensive than evidence from high-income settings. This study therefore examined the pattern of social media use and its relationship with suicidal behaviour, self-esteem, depressive symptoms and quality of life among undergraduate students in the College of Health Sciences of Osun State University.

**Objectives**

1. To determine the prevalence and pattern of social media use among undergraduate students in the College of Health Sciences, Osun State University.

2. To assess the prevalence of suicidal-behaviour indicators among the respondents.

3. To examine the association between social media-use category and self-esteem.

4. To examine the association between social media-use category and depressive symptoms.

5. To compare quality-of-life domain scores across social media-use categories.

# Methods

**Study design and setting**

A cross-sectional analytical survey was conducted among undergraduate students in the College of Health Sciences of Osun State University, Osogbo, Osun State, Nigeria. The study was restricted to the College of Health Sciences, whose student population during the study period was 8,670. The College comprised three faculties: Clinical Sciences (CS), Basic Medical Sciences (BMS), and Basic Clinical Sciences (BCS). The reporting structure was revised to follow the STROBE principles for cross-sectional observational studies.[12]

**Study population and eligibility**

The study population comprised registered undergraduate students in the College of Health Sciences who met the study eligibility criteria and consented to participate.

### Sample size

The minimum sample size was calculated using the single-population proportion formula, $n=Z^2pq/d^2$, assuming a 50% prevalence, 95% confidence level (Z=1.96), and 5% precision. This produced a minimum sample size of approximately 384. The sample was increased to 500 questionnaires to improve precision and provide allowance for incomplete responses. Given the sampling fraction relative to the College population, the original study retained the conventional single-proportion estimate rather than applying a finite-population correction.

### Sampling and proportionate allocation

A multistage stratified random sampling procedure was used. At the first stage, the College was stratified into the three faculties. The faculty populations were Clinical Sciences, 1,256; Basic Medical Sciences, 6,126; and Basic Clinical Sciences, 1,288. Of the intended 500 questionnaires, 70, 355 and 75 were allocated to these faculties, respectively. Proportionate allocation was based on $n_i=(N_i/N)\times n$, where $n_i$ is the allocation for a stratum, $N_i$ is the population of that stratum, N is the population of the corresponding sampling frame, and n is the sample size to be allocated.

### Departmental stratification and selection

Clinical Sciences comprised two departments: MBBS (589 students) and Nursing (667 students). The 70 questionnaires allocated to Clinical Sciences were distributed approximately equally between the two departments; the final complete responses comprised 34 MBBS students and 35 Nursing students, after one questionnaire from the faculty was excluded for incompleteness. Within Clinical Sciences, approximately equal allocation was used between MBBS and Nursing to ensure adequate representation of both programmes; this resulted in a minor departure from strict proportional allocation.

Basic Medical Sciences comprised eight departments: Health Information Science (257), Environmental Health Science (210), Radiography and Radiation Science (566), Human Nutrition and Dietetics (917), Public Health (1,468), Medical Laboratory Science (464), Anatomy (1,153), and Physiology (1,091). The 355 questionnaires were allocated proportionately as 15, 12, 33, 53, 85, 27, 67 and 63, respectively. Basic Clinical Sciences comprised Pharmacology alone (1,288 students), and all 75 questionnaires allocated to the faculty were therefore assigned to Pharmacology.

### Selection within departments

Within each departmental stratum, eligible students were selected using simple random sampling from the available departmental sampling frame. The source protocol indicates that class/student lists were obtained and a balloting process was used to achieve random selection. The questionnaire was self-administered after informed consent. Research assistants were trained in the study procedures during which inter-rater reliability was 0.91, and completed questionnaires were screened for completeness before inclusion in the analysis.

### Questionnaire completion and final analytical sample

Five hundred questionnaires were distributed. Four hundred and twenty-six (85.2%) were fully completed and included in the analysis, while 74 (14.8%) were excluded because of incomplete responses. Clinical Sciences contributed 69 complete questionnaires after one incomplete questionnaire was excluded; Basic Medical Sciences contributed 282 after 73 incomplete questionnaires were excluded; and all 75 questionnaires from Basic Clinical Sciences were complete. The final analytical sample was therefore 426 students. The completion rates were approximately:

- Clinical Sciences: 98.6%
- Basic Medical Sciences: 79.4%5
- Basic Clinical Sciences: 100%

### Study instruments

The SMD-9 comprises nine dichotomous items assessing problematic social-media-use symptoms. The study classified respondents as normal users (0–1), at-risk users (2–4), or problematic users (≥5).[1] The RSES was used to assess global self-esteem, with the study categorising scores below 15 as low and scores of 15–30 as normal/high.[13] Depressive symptoms were assessed with the PHQ-9, scored from 0 to 27 and categorised as minimal (0–4), mild (5–9), moderate (10–14), moderately severe (15–19), and severe (20–27).[14] Suicidal behaviour was assessed using the four-item SBQ-R; a score of ≥7 was treated as indicating elevated suicide risk in community populations.[15] Quality of life was assessed using the WHOQOL-BREF, comprising physical, psychological, social-relationship and environmental domains.[10] Internal consistency coefficients reported in the study were 0.93 for PHQ-9, 0.89 for SBQ-R and 0.91 for WHOQOL-BREF.

### Data analysis

Data were analysed using SPSS version 21. Categorical variables were summarised using frequencies and percentages, while continuous variables were summarised using means and standard deviations. Chi-square tests were used to assess associations between social media-use category and categorical measures of self-esteem, suicidal behaviour and depressive symptoms. A multinomial logistic regression model was used with social media-use category as the outcome and depression category, self-esteem category and suicidal-behaviour category as predictors. Model fit was assessed using the likelihood-ratio chi-square and pseudo-$R^2$ statistics, and classification accuracy was reported. Statistical significance was set at $p<0.05$.

Quality-of-life domain scores were compared across the three social-media-use categories using one-way analysis of variance (ANOVA).

### Ethical considerations

Ethical approval was obtained from the Osun State University Research Ethics Committee. The reference number is (UNIOSUNHREC2025/PBH/122)

Written informed consent was obtained from participants, and anonymity, confidentiality and voluntary participation were maintained.

The sampling framework and final analytical sample are shown in Figure 1.

# Results

The study analysed 426 completed questionnaires from 500 distributed, representing a usable response rate of 85.2%. The mean age was 21.12 ± 2.11 years, with a reported range of 18–27 years. Females constituted 340 (79.8%) respondents and males 86 (20.2%). Most respondents were Christian (331, 77.7%) and Yoruba (335, 78.6%).

The sociodemographic characteristics of the respondents are presented in Table 1.

Table 1
Sociodemographic characteristics of respondents (N = 426)

| Variable | Frequency (n) | Percentage (%) |
|---|---|---|
| Age, mean ± SD (years) | 21.12 ± 2.11 | — |
| Age range (years) | 18–27 | — |
| Male | 86 | 20.2 |
| Female | 340 | 79.8 |
| Christianity | 331 | 77.7 |
| Islam | 95 | 22.3 |
| Yoruba | 335 | 78.6 |
| Igbo | 91 | 21.4 |

Regarding psychosocial measures, 170 (39.9%) respondents met the study criterion for problematic social media use, 171 (40.1%) were classified as at risk, and 85 (20.0%) were classified as normal users. Positive indicators of suicidal behaviour were identified in 76 (17.8%), while 350 (82.2%) were classified as absent. Low self-esteem was identified in 27 (6.3%), and 399 (93.7%) had normal/high self-esteem. On the PHQ-9 categories, 171 (40.1%) had no depressive symptoms, 85 (20.0%) had mild symptoms, and 170 (39.9%) had moderate symptoms; no moderately severe or severe cases were reported.

The distribution of the principal psychosocial variables is summarised in Table 2.

Table 2
Distribution of psychosocial variables among respondents (N = 426)

| Variable/category | Frequency (n) | Percentage (%) |
|---|---|---|
| Suicidal behaviour: absent | 350 | 82.2 |
| Suicidal behaviour: positive | 76 | 17.8 |
| Social media use: normal | 85 | 20.0 |
| Social media use: at risk | 171 | 40.1 |
| Social media use: problematic | 170 | 39.9 |
| Self-esteem: low | 27 | 6.3 |
| Self-esteem: normal/high | 399 | 93.7 |
| Depression: none | 171 | 40.1 |
| Depression: mild | 85 | 20.0 |
| Depression: moderate | 170 | 39.9 |

The association between problematic social media-use category and self-esteem was statistically significant ($\chi^2$=43.410, df = 2, $p < 0.001$). All 27 respondents classified as having low self-esteem were in the problematic-use group. Among respondents with normal/high self-esteem, 85 (21.3%) were normal users, 171 (42.9%) were at risk and 143 (35.8%) were problematic users (Table 3).

Social media-use category was also significantly associated with suicidal behaviour ($\chi^2$=116.179, df = 2, $p < 0.001$). Among respondents with positive suicidal-behaviour indicators, 72 (94.7%) were classified as problematic users, 4 (5.3%) as at-risk users and none as normal users. Among those without positive indicators, 85 (24.3%) were normal users, 167 (47.7%) were at risk and 98 (28.0%) were problematic users (Table 3).

A statistically significant association was observed between depressive-symptom category and social media-use category ($\chi^2$=319.504, df = 4, $p < 0.001$) with categories; no depressive symptoms—0 normal, 86 at risk, 85 problematic; mild depressive symptoms—0 normal, 0 at risk, 85 problematic; and moderate depressive symptoms—85 normal, 85 at risk, 0 problematic.

The detailed cross-tabulations are presented in Table 3.

Table 3
Associations between social media-use category and self-esteem, suicidal behaviour and depressive symptoms

| Variable/category | Normal n (%) | At risk n (%) | Problematic n (%) | $\chi^2$ | df | Cramer's V | p |
|---|---|---|---|---|---|---|---|
| Self-esteem: low | 0 (0.0) | 0 (0.0) | 27 (100.0) | 43.410 | 2 | 0.319 | < 0.001 |
| Self-esteem: normal/high | 85 (21.3) | 171 (42.9) | 143 (35.8) | | | | |
| Suicidal behaviour: absent | 85 (24.3) | 167 (47.7) | 98 (28.0) | 116.179 | 2 | 0.522 | < 0.001 |
| Suicidal behaviour: positive | 0 (0.0) | 4 (5.3) | 72 (94.7) | | | | |
| Depression: none | 0 (0.0) | 86 (50.3) | 85 (49.7) | 319.504 | 4 | 0.612 | < 0.001 |
| Depression: mild | 0 (0.0) | 0 (0.0) | 85 (100.0) | | | | |
| Depression: moderate | 85 (50.0) | 85 (50.0) | 0 (0.0) | | | | |

**Note**: *interpretation of effect size (Cramer's) was moderate for PSMU vs Self-Esteem and large for PSMU vs suicidal behaviour and depression.*

The multinomial logistic regression model was statistically significant compared with the intercept-only model ($\chi^2$=491.605, df = 8, $p < 0.001$). The reported pseudo-$R^2$ values were 0.685 (Cox and Snell), 0.779 (Nagelkerke) and 0.547 (McFadden). Depression category contributed significantly to the model (likelihood-ratio $\chi^2$=358.041, df = 4, $p < 0.001$), as did suicidal behaviour (likelihood-ratio $\chi^2$=46.556, df = 2, $p < 0.001$). Self-esteem could not be reliably estimated because of quasi-complete separation. Overall classification accuracy was 69.5%, with category-specific accuracy of 100.0% for normal use, 52.6% for at-risk use and 71.2% for problematic use. However, these figures should be interpreted cautiously because of separation and sparse cells.

The multinomial regression findings are summarised in Table 4.

Table 4
Multinomial logistic regression model predicting social media-use category

| Predictor | Category distribution, n (%) | Likelihood-ratio $\chi^2$ | df | p |
|---|---|---|---|---|
| Depression | None 171 (40.1); Mild 85 (20.0); Moderate 170 (39.9) | 358.041 | 4 | < 0.001 |
| Self-esteem | Low 27 (6.3); Normal/high 399 (93.7) | Not estimable* | 2 | — |
| Suicidal behaviour | Absent 350 (82.2); Positive 76 (17.8) | 46.556 | 2 | < 0.001 |
| Overall model | N = 426 (100.0) | 491.605 | 8 | < 0.001 |

Model fit: *Cox and Snell $R^2$=0.685; Nagelkerke $R^2$=0.779; McFadden $R^2$=0.547. Overall classification accuracy = 69.5% (normal 100.0%, at risk 52.6%, problematic 71.2%). *Self-esteem was not reliably estimable because of quasi-complete separation.*

Quality-of-life domain scores differed significantly across social media-use categories. Normal users had the highest reported physical-health score (16.00), at-risk users 14.50 ± 0.50 and problematic users 15.50 ± 0.50. Psychological-domain scores were 17.00 ± 0.53 for normal users, 11.02 ± 4.01 for at-risk users and 9.17 ± 1.36 for problematic users. Social-relationship scores were 10.64 ± 0.48, 9.19 ± 1.96 and 5.84 ± 1.68, respectively. Environmental-domain scores were 18.00 ± 0.20, 19.04 ± 6.02 and 16.00 ± 4.01, respectively. The ANOVA results were: physical health, $F(2,423) = 379.072$, $p < 0.001$; psychological, $F(2,423) = 154.929$, $p < 0.001$; social relationships, $F(2,423) = 299.297$, $p < 0.001$; and environment, $F(2,423) = 19.083$, $p < 0.001$.

The WHOQOL-BREF domain means and omnibus ANOVA results are presented in Table 5.

Table 5
WHOQOL-BREF domain scores by social media-use category

| Domain | Normal | At risk | Problematic | F (2,423) | p | $\eta^2$ |
|---|---|---|---|---|---|---|
| Physical health | 16.00 ± 0.41 | 14.50 ± 0.50 | 15.50 ± 0.50 | 379.072 | < 0.001 | 0.642 |
| Psychological | 17.00 ± 0.53 | 11.02 ± 4.01 | 9.17 ± 1.36 | 154.929 | < 0.001 | 0.423 |
| Social relationships | 10.64 ± 0.48 | 9.19 ± 1.96 | 5.84 ± 1.68 | 299.297 | < 0.001 | 0.586 |
| Environment | 18.00 ± 0.20 | 19.04 ± 6.02 | 16.00 ± 4.01 | 19.083 | < 0.001 | 0.083 |

**Note**: *The reported p values are omnibus one-way ANOVA results; no post-hoc pairwise comparisons were reported. However, the $\eta^2$ (eta squared) effect-size measure used with ANOVA was very large for the physical, psychological and social domain but large for environment domain.*

# Discussion

This study provides an integrated assessment of problematic social media use alongside suicidal behaviour, self-esteem, depressive symptoms and quality of life in a Nigerian health-sciences student population. The principal finding is not simply that problematic social media use was common, but that it was strongly clustered with indicators of psychological distress. This pattern is consistent with the broader literature while also illustrating why problematic use should be distinguished from high-frequency but potentially adaptive social media engagement.[3,4,5,6]

The prevalence of problematic use in this study (39.9%) is high when compared with pooled estimates from studies using other instruments and thresholds, although direct comparisons should be made cautiously. A meta-analysis of 51 studies involving 35,520 university students estimated a pooled prevalence of social-media addiction of 18.4%, with substantial heterogeneity across studies.[16] A systematic review of university students similarly found marked variation in terminology, measurement instruments and prevalence estimates.[17] In Nigeria, Afe et al. reported that 46.3% and 56.3% of pre-university students met the SMD criterion in two samples, supporting the possibility that high levels of problematic use may occur among Nigerian young people.[2] Differences in age, sampling frame, instrument, cut-off and cultural context mean that the present 39.9% estimate should be interpreted as a study-specific prevalence rather than a national estimate.

The strong association between social media-use category and depressive symptoms is clinically relevant. The present data showed a marked concentration of respondents with depressive symptoms within the problematic-use category. This is consistent with systematic-review evidence showing that PSMU is more consistently associated with depression than social-media use measured solely by duration.[5,6] Research among Ugandan medical students similarly found that problematic online behaviours contributed to depression severity, although life stressors had a larger contribution.[18] The present cross-sectional design cannot establish whether depressive symptoms promote problematic use, problematic use contributes to distress, or both reflect shared vulnerabilities.

The association with suicidal-behaviour indicators warrants particular attention. Most all respondents who screened positive for suicidal behaviour were classified as problematic users. This finding is consistent with evidence linking problematic internet/social-media use with suicidal behaviour.[8] A recent study among Nigerian undergraduates also demonstrated important relationships between suicidal ideation/attempts and depression-related psychosocial factors.[7] Several mechanisms may plausibly contribute, including social comparison, cyberbullying, exposure to harmful content, sleep disruption and use of online environments as a coping strategy.[4,8] Nevertheless, the present study should not be interpreted as showing that social media use causes suicidality. Positive screening on the SBQ-R also does not constitute a clinical diagnosis or prediction of suicide.

The association between self-esteem and social media-use category is also noteworthy, with all 27 respondents classified as having low self-esteem falling within the problematic-use group. Existing research suggests that social-media motives, psychological well-being and self-esteem are related to

problematic use, with validation-seeking and negative affect among potential correlates.[9] Nevertheless, self-esteem could not be reliably estimated in the multinomial model because of quasi-complete separation. This statistical limitation should not be interpreted as absence of an association.

Quality of life showed a broader pattern of disadvantage among respondents with unhealthy social media-use patterns, particularly in the psychological and social-relationship domains. This is conceptually consistent with the WHOQOL-BREF framework, which treats quality of life as multidimensional rather than reducible to symptoms of a single disorder.[10] Recent systematic evidence indicates that problematic social media use is associated with poorer well-being, while the direction and magnitude of effects vary according to context and measurement.[6]; [19] The present findings therefore suggest that the potential impact of problematic social media use may extend beyond psychiatric symptoms to everyday functioning and perceived well-being. However, the direction of these relationships remains uncertain because the cross-sectional design of the study.

The findings have practical implications for universities. Screening should not be based on hours of social media use alone; rather, attention should be paid to loss of control, interference with daily activities, psychological distress and functional consequences. Student counselling and mental-health services could incorporate brief assessment of problematic digital behaviours when students present with depression, suicidal thoughts, sleep problems or deteriorating academic/social functioning. Preventive programmes should emphasise balanced digital use, sleep hygiene, offline social connection and early help-seeking rather than blanket prohibition of social media.[3,6]

This study found that PSMU was common among undergraduate students in a Nigerian College of Health Sciences, with 39.9% classified as problematic and a further 40.1% as at risk. This estimate is higher than pooled estimates from other university-student studies, although direct comparisons are limited by heterogeneity in terminology, instruments and thresholds.[16,17] A Nigerian validation study of the SMD-9 also found high screening positivity among pre-university students, with 46.3% and 56.3% meeting the study criterion in two samples.[2] The present estimate should therefore be interpreted as study-specific rather than as a national prevalence.

**Strengths**

• The study used a relatively large final analytical sample of 426 students.

• The sampling strategy incorporated faculty and departmental stratification followed by random selection within departments.

• The study used established instruments assessing problematic social media use, self-esteem, depressive symptoms, suicidal behaviour and quality of life.

• The study examined several interrelated psychosocial outcomes rather than a single mental-health endpoint.

**Limitations**

• The cross-sectional design prevents determination of temporal or causal relationships.

• All principal measures were self-reported and may be affected by recall, response or social-desirability bias, particularly for depression and suicidal behaviour.

• The study was conducted within one university and specifically within its College of Health Sciences; generalisation to other universities, disciplines and regions of Nigeria should therefore be cautious.

• Important potential confounders such as social support, sleep quality, cyberbullying, substance use, previous psychiatric history and socioeconomic factors were not included in the reported analysis.

• The self-esteem category demonstrated quasi-complete separation in multinomial regression, limiting reliable estimation of its independent effect.

- Also, differential completion across academic divisions (more from BMS) may have introduced selection/non-response bias, as characteristics of incomplete questionnaires were unavailable for comparison

# Conclusion

Problematic social media use was common among undergraduate students in the College of Health Sciences and was strongly associated with depressive symptoms, suicidal-behaviour indicators and self-esteem category. Problematic use was also associated with differences in quality-of-life domains. These findings support a university mental-health approach that recognises maladaptive digital behaviour as a potential marker of psychological vulnerability. However, the cross-sectional design prevents causal inference, and the results should not be interpreted as demonstrating that social media use causes depression or suicidal behaviour.

**Recommendations**

• Universities should strengthen accessible student counselling and mental-health services, including pathways for prompt assessment of suicidal thoughts and depressive symptoms.

• Student wellness programmes should include education on balanced social media use, sleep, offline social connection and recognition of problematic digital behaviour.

• Students presenting with depression, suicidal thoughts or significant functional impairment should be assessed for problematic social media use as part of a broader psychosocial assessment.

• Future studies should use longitudinal designs and include sleep, social support, cyberbullying, substance use, socioeconomic factors and previous psychiatric history to clarify potential pathways.

• Future analyses should retain social-media-use categories or use continuous scores where appropriate, and should address separation using suitable modelling approaches when sparse cells occur.

# Declarations

### Ethics approval and consent to participate

Ethical approval was obtained from the Osun State University Research Ethics Committee. Written informed consent was obtained from all participants, and participation was voluntary with assurance of confidentiality and anonymity.

### Consent for publication

Not applicable; no individually identifiable participant information or clinical images are presented.

### Availability of data and materials

The dataset is available on reasonable request, subject to institutional ethical and data-protection requirements.

### Competing interests

We have no competing interests.


### Funding

This research received no external funding.


### Authors' contributions

**KOA**: Conceptualized and designed the study, supervised data collection, and drafted the initial manuscript, literature review, and critical revision of the discussion

**JF**: Contributed to the conceptualization framework, data visualization, literature synthesis, and final technical proofreading.

**RL**: Contributed to the study design, coordinated clinical data collection, and managed data curation.

**MO**: Contributed to the methodology framework, literature review, and critical revision of the discussion.

**OLNB**: Provided clinical oversight, assisted in interpretation of psychiatric data, and critically reviewed the manuscript, literature review, and critical revision of the discussion.

All authors have read and approved the final version of the manuscript for submission.


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## Figures

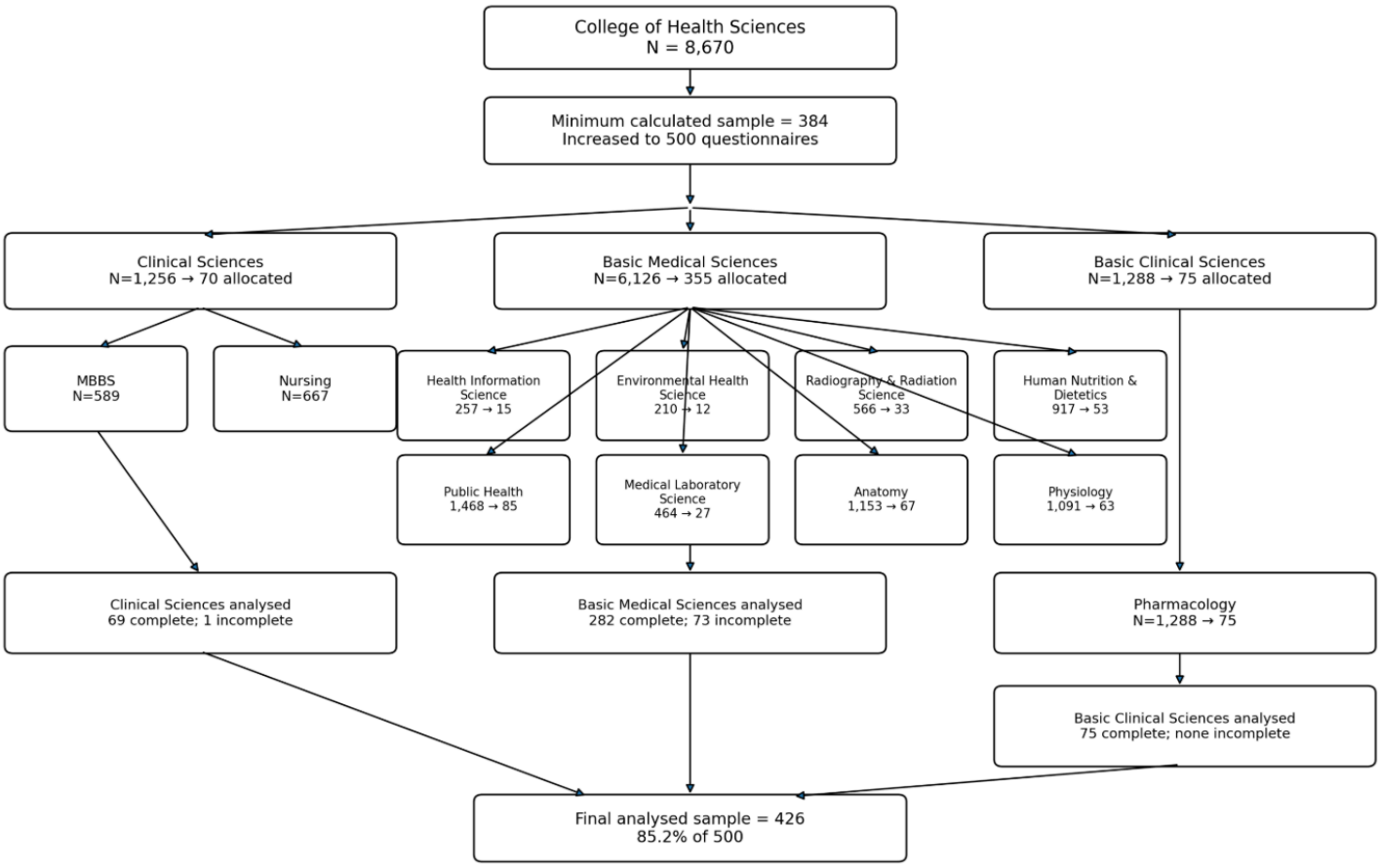



**Figure 1**

*Multistage stratification, departmental allocation and final analytical sample. Departmental allocations in Basic Medical Sciences were proportional; Clinical Sciences was approximately equally allocated between MBBS and Nursing.*