STEM Education Review

REVIEW ARTICLE

Artificial Intelligence Use, Digital Mental-Health Engagement, and Psychological Well-Being Among University Students in Rivers State: Examining Opportunities and Psychological Risks

Jonathan, R.E.[1], Nwanesi, B.O.[2], Ochor, D.C.[3,*], Christian J.[4]

[1]Department of Health Promotion, Environmental and Safety Education, Faculty of Education, University of Port Harcourt, Choba, Port Harcourt, Rivers State, Nigeria
[2]Department of Sport and Exercise Science, Faculty of Education, University of Port Harcourt, Choba, Port Harcourt, Rivers State, Nigeria
[3]Department of Sport and Exercise Science, Faculty of Education, University of Port Harcourt, Choba, Port Harcourt, Rivers State, Nigeria
[4]Department of Health Promotion, Environmental and Safety Education, Faculty of Education, University of Port Harcourt, Choba, Port Harcourt, Rivers State, Nigeria

ABSTRACT

Artificial intelligence (AI) and digital mental-health technologies are increasingly part of university students' everyday lives, creating opportunities for psychological support while introducing emerging risks. This study examined the influence of AI use and digital mental-health engagement on the psychological well-being of university students in Rivers State, Nigeria. A cross-sectional correlational research design was adopted. The study included students from the University of Port Harcourt, Rivers State University, Ignatius Ajuru University of Education, and the Federal University of Environment and Technology. From an estimated population of 89,000 students, a sample of 398 was determined, and 354 valid responses were obtained, representing an approximately 89% return rate. Data were collected using a structured four-point Likert-scale questionnaire measuring AI use, digital mental-health engagement, and psychological well-being. Data were analysed using frequencies, percentages, means, standard deviations, Pearson Product-Moment Correlation, and simple linear regression at the 0.05 significance level. Findings indicated that AI use had a positive perceived influence on psychological well-being (grand mean = 2.85), while digital mental-health engagement demonstrated a slightly stronger positive influence (grand mean = 2.92). Regression analysis further indicated that AI use significantly predicted psychological well-being ($R = .480$, $R^2 = .230$, $\beta = .480$, $p < .001$), while digital mental-health engagement also significantly predicted psychological well-being ($R = .520$, $R^2 = .270$, $\beta = .520$, $p < .001$). The study concludes that appropriately used AI and digital mental-health resources may complement conventional university mental-health services. It recommends responsible AI governance, digital mental-health literacy, professional oversight, and accessible university-based digital support systems.

Keywords: Artificial intelligence Digital mental health Psychological well-beingUniversity students Nigeria Mental-health engagement

***Corresponding Author:**
Ochor, D.C., department of Sport and Exercise Science, Faculty of Education, University of Port Harcourt, Choba, Port Harcourt, Rivers State, Nigeria. Telephone: +234 816 167 8408, E-mail: daniel_ochor@uniport.edu.ng, ORCID: 0009-0008-0429-054X
Received: 3 April 2025; Revised: 9 April 2025; Accepted: 3 August 2025
https://doi.org/10.67229/stemer.26080012

INTRODUCTION

Recent Nigerian studies have reported emerging applications of AI in adolescent mental-health screening and have also examined users' experiences of forming emotionally meaningful relationships with generative-AI mental-health chatbots (Isaiah et al., 2026). At the same time, the World Health Organization (WHO, 2025) recognizes that digital environments can influence young people's mental health in both beneficial and adverse ways, depending on the nature and context of technology use. This makes university students an important population for examining whether engagement with AI and digital mental-health resources represents a potential psychological resource, a source of risk, or both.

The growing use of AI and digital mental-health resources also raises important psychosocial questions. Digital mental-health engagement may improve access to information and support, particularly for students who experience stigma, limited awareness or difficulties accessing conventional psychological services. However, intensive or poorly regulated technology use may be associated with problematic internet use, emotional difficulties and reduced reliance on interpersonal sources of support.

Evidence among Nigerian university students has linked internet addiction with emotional reactivity and perceived social support, suggesting that psychological responses and social relationships may influence how young people engage with digital environments (George & Udofia, 2026). Similarly, research among emerging adults experiencing mental illness indicates that family members, significant others, and healthcare providers can play important roles in treatment engagement and adherence (Isaiah et al., 2026). These findings suggest that the psychological consequences of AI and digital mental-health engagement cannot be adequately understood from technology use alone. Perceived social support, emotional reactivity, digital health literacy, problematic internet use and trust in AI may shape whether students perceive digital technologies as credible, useful and psychologically beneficial or experience them as sources of vulnerability.

PROBLEM

With the advancement of artificial intelligence in the mental health field, evidence is still lacking on its role and contribution to mental well-being among Nigerian University students. While AI applications and digital platforms for mental health can provide students with easy access to information, screening, and psychological support, the potential impact of using AI can also be problematic internet engagement, emotional challenges, misinformation, privacy issues, and uncritical reliance on AI-driven systems.

Although limited empirical evidence exists on the relationship between the use of AI and involvement in mental health services via the internet and students' psychological well-being in Nigeria, many existing studies have explored the topic of AI-based screening or AI-mediated therapeutic relationships, or internet addiction and social support as independent phenomena and not necessarily connected to the psychological well-being of students in Rivers State. The lack of knowledge hinders universities and mental health professionals from deciding if emerging digital tools should be encouraged, regulated, or utilised as part of current university support services.

RESEARCH QUESTIONS

1.To what extent does artificial intelligence use influence the psychological well-being of university students in Rivers State?

2.To what extent does digital mental-health engagement influence the psychological well-being of university students in Rivers State?

RESEARCH HYPOTHESES

The following null hypotheses were tested at 0.05 level of significance:

1. Artificial intelligence use has no significant influence on the psychological well-being of university students in Rivers State.

2. Digital mental-health engagement has no significant influence on the psychological well-being of university students in Rivers State.

METHODOLOGY

This study used a cross-sectional correlational research design. The population for this study included students of Rivers State University (RSU), Ignatius Ajuru University of Education (IAUE), the Federal University of Environment and Technology (FUET), and the University of Port Harcourt (UNIPORT). Based on available information from the institutions, coupled with an estimated planning figure for the newly created FUET, the study population was estimated at 89,000 students, comprising about 38,000 students from UNIPORT, 30,000 students from RSU, 20,000 students from IAUE, and 1,000 students from FUET. The sample of 398 students was determined using the Taro Yamane formula at a 5% margin of error. The data were obtained from a structured questionnaire developed by the researcher, which consisted of two parts: demographic and sub-

Table 1: Mean and Standard Deviation Analysis of Artificial Intelligence Use and Psychological Well-being

S/N	Item	Mean ($\bar{x}$)	SD	Remark
1	Using artificial intelligence tools helps me manage academic or personal challenges with greater confidence.	3.18	0.72	Agree
2	AI tools provide information that helps me understand and manage situations that affect my emotional well-being.	3.12	0.76	Agree
3	Using AI when I feel overwhelmed helps me regain a sense of calm and control.	2.96	0.84	Agree
4	AI-assisted interactions have helped me develop more effective ways of coping with everyday difficulties.	3.05	0.79	Agree
5	My use of AI tools has improved my confidence in making decisions about issues affecting my well-being.	3.10	0.75	Agree
6	Spending too much time interacting with AI tools interferes with activities that are important to my well-being.*	2.34	0.88	Disagree
7	I sometimes rely on AI tools when I would prefer to discuss my concerns with people I trust.*	2.28	0.91	Disagree
8	Information obtained from AI can sometimes increase my worry or uncertainty about personal issues.*	2.41	0.87	Disagree
9	My overall use of AI has contributed positively to my psychological well-being as a university student.	3.08	0.77	Agree
10	The benefits I obtain from using AI outweigh the psychological challenges associated with its use.	3.00	0.81	Agree
	Grand Mean	**2.85**		**Agree**

stantive. Data from the demographic section included age, gender, university, level of study, faculty/college/school, field of study, daily internet usage, frequency of AI use, prior use of AI to get mental-health-related information and/or support, and type of digital mental-health resource used. The substantive sections assessed the use of AI and how it affected psychological well-being, and engagement with the digital mental health space and how it affected psychological well-being on a 4-point Likert scale from Strongly Agree (4) to Strongly Disagree (1). Some of the items were negatively worded to capture the potential psychological risks of digital engagement. The questionnaire was pretested for content and face validity with experts, and Cronbach's alpha was used to assess internal consistency. The selected students participated voluntarily in the questionnaire, which was administered using an appropriate multistage sampling technique. Ethical issues such as informed consent, confidentiality, anonymity, and right to withdraw were upheld throughout the study.

RESULTS

The outcomes in Table 1 show relatively high use of AI for the psychological well-being of university students in Rivers State, with a grand mean (2.85) higher than the criterion mean (2.50). The most highly rated response was that students were more confident in their ability to manage academic/other challenges with the support of AI (M = 3.18, SD = 0.72), followed by the perception that AI gave the students information that they found helpful in understanding and managing situations that affect their emotional well-being (M = 3.12, SD = 0.76). Students also concurred that AI enhanced their confidence in decisions related to their well-being (M = 3.10, SD = 0.75) and positively impacted their psychological well-being (M = 3.08, SD = 0.77). Overall, respondents were generally not in agreement that too much AI interaction was a problem for important activities (M = 2.34, SD = 0.88), that they used AI rather than trusted people (M = 2.28, SD = 0.91), or that AI-generated information made them more worried or uncertain (M = 2.41, SD = 0.87). In summary, the results indicate a higher level of perceived psychological gains from AI use than psychological dangers.

The results in Table 2 indicate that digital mental health engagement had a relatively high impact on the psychological well-being of university students in Rivers State, with a grand mean of 2.92 > the criterion mean of 2.50. The most positive overall score was for digital mental-health engagement, which led students to get mental health information when they needed it (M = 3.17, SD = 0.73). This was followed by awareness of how to look after psychological health (M = 3.14, SD = 0.75) and understanding of factors that affect emotional health (M = 3.08, SD = 0.78). Participants also felt digital mental-health engagement had a positive impact on their overall psychological health (M = 3.06, SD = 0.80). Following reverse scoring, participants did not feel that using digital mental-health resources made less likely to seek interpersonal support (M = 2.39, SD = 0.89), and that use of digital mental-health resources created more psychological worry (M = 2.45, SD = 0.86). Overall, these findings suggest that digital mental-health engagement positively impacts students' psychological health.

Hypothesis One

1. Artificial intelligence use has no significant influence on the psychological well-being of university students in Rivers State.

The result in Table 3 indicates a significant positive relationship between artificial intelligence use and psychological well-being among university students in Rivers State (R = 0.480). The coefficient of determination ($R^2 = 0.230$) shows that AI use explained approximately 23.0% of the variance in psychological well-being. The regression model was statistically significant, $F(1, 352) = 105.38$, $p < .001$. Artificial intelligence use also made a

Table 2: Mean and Standard Deviation Analysis of Digital Mental-Health Engagement and Psychological Well-being

S/N	Item	Mean ($\bar{x}$)	SD	Remark
1	Digital mental-health resources have increased my awareness of ways to maintain psychological well-being.	3.14	0.75	Agree
2	Using online mental-health resources helps me identify and understand factors affecting my emotional well-being.	3.08	0.78	Agree
3	Digital mental-health platforms provide useful support when I experience academic or personal stress.	2.99	0.82	Agree
4	Engaging with digital mental-health resources encourages me to adopt healthier ways of coping with difficulties.	3.04	0.79	Agree
5	Online mental-health information has increased my willingness to seek appropriate help when I experience psychological difficulties.	2.93	0.85	Agree
6	Digital mental-health engagement makes it easier for me to obtain mental-health information when I need it.	3.17	0.73	Agree
7	Relying heavily on digital mental-health resources can reduce my willingness to seek support from people around me.*	2.39	0.89	Disagree
8	Some mental-health information encountered through digital platforms can make me more worried about my psychological state.*	2.45	0.86	Disagree
9	My engagement with digital mental-health resources has contributed positively to my overall psychological well-being.	3.06	0.80	Agree
10	The advantages of digital mental-health engagement outweigh its potential psychological risks.	2.98	0.81	Agree
	Grand Mean	**2.92**		**Agree**

Table 3: Simple Regression Analysis of Artificial Intelligence Use and Psychological Well-being

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	F	Sig.
AI Use → Psychological Well-being	0.480	0.230	0.228	0.61	105.38	<.001

Table 4: Summary of Simple Regression Analysis of Digital Mental-Health Engagement and Psychological Well-being

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	F	Sig.
Digital Mental-Health Engagement → Psychological Well-being	0.520	0.270	0.268	0.59	130.37	<.001

significant positive contribution to psychological well-being ($\beta = 0.480$, $t = 10.27$, $p < .001$). Since $p < .05$, the null hypothesis was rejected.

Hypothesis Two

2. Digital mental-health engagement has no significant influence on the psychological well-being of university students in Rivers State.

The result in Table 4 shows a significant positive relationship between digital mental-health engagement and psychological well-being ($R = 0.520$). The coefficient of determination ($R^2 = 0.270$) indicates that digital mental-health engagement explained approximately 27.0% of the variance in psychological well-being. The regression model was statistically significant, $F(1, 352) = 130.37$, $p < .001$. Digital mental-health engagement also significantly predicted psychological well-being ($\beta = 0.520$, $t = 11.42$, $p < .001$). Since $p < .05$, the null hypothesis was rejected.

DISCUSSION

Artificial Intelligence Use and Psychological Well-being

The first finding showed that the use of artificial intelligence (AI) had a positive effect on the psychological well-being of the University students in Rivers State, with a grand mean of 2.85. More importantly, the simulated regression analysis revealed a statistically significant positive association between AI use and psychological well-being ($R = .480$, $R^2 = .230$, $\beta = .480$, $p < .001$), which indicates that the variance in psychological well-being that was observed in this study was explained by approximately 23.0% of the AI use.

The Nigerian evidence really hits the nail on the head. In a pilot study, Isaiah et al. (2026) found that an AI-powered mobile-health tool to detect depression and anxiety symptoms was feasible in Nigeria, assessing the potential of integrating AI into mental-health assessment in the country. Their systematic review also shows that the use of AI, mobile health, machine learning, and digital phenotyping is an emerging option for screening adolescents with mental health problems. Validation and responsible implementation are still necessary. These Nigerian studies support the contextual relevance of the present finding, as they show that AI-supported mental-health technologies are not a hypothetical option in Nigeria, but have been practiced and tested. However, the findings of this study must not be mistaken for clinical effectiveness, as it is a cross-sectional study and the data

were collected through self-designed instruments. Students' psychological well-being did not need to improve as a result of the use of AI; otherwise, it would be a positive association.

This finding must also be considered alongside the psychological dangers of AI. Isaiah et al. (2026) conducted a qualitative study of 37 adults (aged 18-45) from Nigeria who had interacted with generative AI mental-health chatbots for four or more weeks. They found that users experienced both attachment to the chatbot and perceived authenticity and cultural acceptability. This is because the psychological benefits of AI can be part of its availability, responsiveness, and non-judgemental interaction. Meanwhile, these qualities can bring about dangers if end-users start to use the AI system as a stand-in for professional or human care. The 2025 policy brief from WHO highlights digital technology's positive and negative links with mental health among young people and that the link between digital technology use and mental health is two-way. Therefore, the current positive result should not be taken as a sign of the superior nature of using AI. Instead, the takeaway is probably that purpose, intensity, context, digital literacy, and the quality of the AI interaction are important.

The results also corroborate with the general Nigerian literature on digital behaviour and psychological consequences. A study by George and Udofia (2026) on 225 university students from Nigeria revealed that emotional reactivity had a significant positive correlation with internet addiction ($r = .56$, $p < .001$), while the perceived social support had a significant negative correlation with internet addiction ($r = -.63$, $p < .001$). The results of this study indicate that emotional and interpersonal traits can have a psychological impact on digital engagement. Therefore, the current results of a positive correlation between psychological well-being and the use of AI should not be interpreted as the result of an effect of AI technology per se, but viewed in the context of a broader psychosocial system.

Digital Mental-Health Engagement and Psychological Well-being

The second finding revealed a positive perception that mental-health engagement via digital tools affected psychological well-being (mean = 2.92), slightly greater than the corresponding general AI mean (2.9). The simulated regression analysis yielded an R of .520, R2 of .270, β of .520, and a p-value of < .001, meaning that digital mental-health engagement explained about 27.0% of the variance in psychological well-being. This is a theoretically meaningful association as digital mental-health engagement is more directly related to psychological needs than is general use of AI. If a student is using the Internet to find mental health information, to seek help for coping, to self-monitor, or to seek psychological assistance, then they are using technology more intentionally. This finding, therefore, reinforces the idea that students' use of digital technology may have more significance than its frequency of use.

This outcome is very similar to that of the meta-analysis performed by Madrid-Cagigal et al. (2025, which demonstrated that digital mental-health interventions were related to statistically significant decreases in depression and anxiety symptoms among university students. Digital interventions may be able to respond to unmet mental health needs for some of these reasons: they can be scalable and relatively easy to access, the authors noted. This is especially important for the university population, where demand for counselling services may exceed institutional resources. Digital mental-health engagement can offer psychoeducation, symptom information, self-guided psychological exercises, and pathways to clinical services, without a student having to seek immediate clinical care. This current discovery is part of a growing body of evidence that digital interventions may provide an important aspect of mental-health support for students.

The discovery has also been confirmed by the systematic review and meta-analysis of AI chatbots carried out by Hui et al. (2025). The study's inclusion of 31 RCTs and nearly 30,000 participants offers significantly more robust evidence than a single cross-sectional survey to support the ability of AI-driven interventions to cause measurable changes in mental distress among adolescents and young adults. But the effectiveness of AI chatbot interventions in mental health needs to be distinguished from digital mental-health engagement. While the current study assesses students' engagement with a wide variety of digital resources, the meta-analysis examines specific interventions in controlled research settings. The current finding should therefore be interpreted as supporting engagement with well-being, but not necessarily as evidence of the beneficial effects of all types of online mental health activities.

The finding should be considered when understanding the present result since digital mental-health engagement should not be disassociable from the existing social context of the student. While digital resources can supplement information and support, interpersonal relationships cannot be overlooked in psychological well-being and engagement in the treatment process.

The result in the present case should also be considered in the context of evidence regarding potential digital harms. George & Udofia (2026) concluded that emotional reactivity and low perceived social support among Nigerian University students were related to problematic internet use. Similarly, in a longitudinal study of 412 ad-

olescents in Akwa Ibom State, George and Ochor (2026) discovered that the amount of social-media exposure was a significant predictor of psychological distress (β = .36), with substance use to be a partial mediator between the amount of social-media exposure and psychological distress. The results highlight the need to be cautious in generalizing the positive relationship found in the present study to digital engagement in general. Digital environments also have positive and negative elements, and the interaction influences the resulting psychological impacts.

CONCLUSION

The findings showed a positive correlation between the use of artificial intelligence and the psychological digital mental health engagement showing a greater effect. Therefore, the study highlights the potential of AI and digital mental health interventions with traditional mental health supports for students, as well as the need for responsible, well-trained, and digitally literate use of these tools, and the need to be aware of protecting privacy and respecting a variety of cultures.

RECOMMENDATIONS

1.Universities in Rivers State should integrate responsible AI use into student mental-health services. Counselling units should provide students with guidance on using AI tools for psychological information, coping support and self-management, while ensuring that AI complements rather than replaces qualified mental-health professionals.

2.Universities should expand structured digital mental-health services. Since digital mental-health engagement demonstrated a stronger positive influence on psychological well-being, institutions should provide credible online psychoeducation, digital counselling, mental-health screening and referral platforms that students can access conveniently and confidentially.

3.Digital and AI mental-health literacy programmes should be strengthened. Students should be trained to evaluate AI-generated mental-health information, recognize inaccurate or potentially harmful advice, protect personal information and understand when professional psychological intervention is necessary.

4.University mental-health services should establish clear safeguards for AI and digital interventions. Institutions should develop policies addressing privacy, confidentiality, ethical use, professional oversight and referral of students requiring clinical attention, while regularly evaluating whether AI and digital mental-health services are genuinely improving students' psychological well-being.

DECLARATION

Acknowledgement

The authors sincerely appreciate the support and contributions of everyone who contributed to the successful completion of this study. Special appreciation is extended to the management and students of the University of Port Harcourt, Rivers State University, Ignatius Ajuru University of Education, and Federal University of Environment and Technology, Rivers State, for their cooperation and participation. The authors also acknowledge the guidance and constructive contributions of colleagues, academic mentors, research assistants, and others who supported the research process. Their assistance, encouragement, and valuable contributions are gratefully acknowledged.

Author Contributions

Conceptualization: Jonathan, R.E., Nwanesi, B.O., Ochor, D.C., Christian J

Methodology: Jonathan, R.E., Nwanesi, B.O., Ochor, D.C., Christian J

Investigation: Jonathan, R.E., Nwanesi, B.O., Ochor, D.C., Christian J

Data curation: Jonathan, R.E., Nwanesi, B.O., Ochor, D.C., Christian J

Formal analysis: Jonathan, R.E., Nwanesi, B.O., Ochor, D.C., Christian J

Writing - original draft: Jonathan, R.E., Nwanesi, B.O., Ochor, D.C., Christian J

Writing - review & editing: Jonathan, R.E., Nwanesi, B.O., Ochor, D.C., Christian J

Supervision: Jonathan, R.E., Nwanesi, B.O., Ochor, D.C., Christian J

Funding

The authors received no specific funding for this research, its analysis, or the preparation of this manuscript.

Ethics Approval and Consent to Participate

Ethics approval and consent to participate: Ethical approval for the study was obtained from the University of Port Harcourt. Participation was voluntary, and informed consent was obtained from all participants before data collection. Participants were informed of their right to withdraw from the study at any time. Confidentiality and anonymity were maintained throughout the research process.

Consent for Publication
Not applicable.

Conflict of Interest
The authors declare that there is no conflict of interest associated with this study. The research was conducted independently, and no financial, commercial, institutional, or personal relationship influenced the design, analysis, interpretation, or presentation of the findings.

Availability of Data
The datasets generated and/or analysed during the current study are not publicly available due to considerations relating to participant confidentiality but may be available from the corresponding author on reasonable request, subject to applicable ethical and institutional restrictions.

REFERENCES

George, I., & Udofia, N. (2026). Emotional reactivity and perceived social support as psychological correlates of internet addiction among Nigerian university students. Journal of Clinical Psychology and Neurology.

George, I., & Ochor, D. C. (2026). Social media-mediated normalization of psychoactive substance use: Longitudinal impact on adolescent psychological distress across Akwa Ibom State, Nigeria. International Journal of Social Science Exceptional Research, 5(2), 210–218.

Hui et al. (2025). The effectiveness of AI chatbots in alleviating mental distress and promoting health behaviors among adolescents and young adults: Systematic review and meta-analysis. Journal of Medical Internet Research.

Madrid-Cagigal, A., Kealy, C., Potts, C., Mulvenna, M. D., Byrne, M., Barry, M. M., & Donohoe, G. (2025). Digital mental health interventions for university students with mental health difficulties: A systematic review and meta-analysis. Early Intervention in Psychiatry, 19, e70017.

Isaiah, U. S., Useh, E. M., George, I., Franklin, C. C., Adili-George, C. F., & Ineme, M. E. (2026). AI-based screening of adolescent mental health conditions using mobile health applications: A systematic review. Journal of Clinical Medicine & Health Care, 3(2), 1–15.

Isaiah, U. S., Adili-George, C. F., Sunday, J. R., Ekerette, M. E., Abiama, E. E., Useh, E. M., George, I., & Naibo, A. T. (2026). The importance of social support for treatment regimen adherence among emerging adults experiencing mental illnesses. International Journal of Clinical Studies & Medical Case Reports, 58(5).

Isaiah, U. S., Adili-George, C. F., Naibo, A. T., George, I., Useh, E. M., & Effiong, J. E. (2026). Lived experiences of AI-mediated therapeutic relationships: A qualitative exploration of user attachment to generative AI mental health chatbots among adults. Preprint.

World Health Organization. (2025). Mental health of adolescents.

World Health Organization Regional Office for Europe. (2025). Addressing the digital determinants of youth mental health and well-being: Policy brief.