

Perceived reliability and use of AI-generated health information among university students in south-west Nigeria

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World Journal of Biology Pharmacy and Health Sciences, 2025, 23(03), 153–160

Publication history: Received on 30 July 2025; revised on 05 September 2025; accepted on 07 September 2025

Article DOI: <https://doi.org/10.30574/wjbphs.2025.23.3.0819>

Abstract

Background: Artificial intelligence (AI) tools are increasingly used for health communication, yet concerns about their reliability and trustworthiness remain, especially in low-resource settings. University students, as early adopters of digital technologies, are an important group for understanding perceptions of AI-generated health information.

Objective: This study assessed the perceived reliability and use of AI-generated health information among university students in South-West Nigeria.

Methods: A descriptive cross-sectional online survey was conducted among 204 students using a structured questionnaire. Data were analyzed with SPSS version 27, applying descriptive statistics, chi-square tests, and Fisher's exact tests, with significance set at $p < 0.05$.

Results: The majority of respondents were young adults (mean age 23.3 years) and predominantly female (59.3%). Most students rated AI tools as either moderately reliable (44.1%) or reliable (40.7%), though only 4.4% trusted AI more than health professionals. Age was significantly associated with perceptions of reliability ($p = 0.010$), while gender and level of study showed no significant association. No significant relationship was found between AI use and perceived reliability ($p = 0.515$).

Conclusion: University students in South-West Nigeria generally perceive AI-generated health information as moderately to highly reliable but continue to place greater trust in human health professionals. Younger students demonstrated greater confidence in AI than older counterparts. These findings highlight the need for digital health literacy interventions, transparent AI systems, and human oversight to ensure safe integration of AI into health communication.

Keywords: Artificial Intelligence; Health Information; Perceived Reliability; University Students; Nigeria

1. Introduction

The advancement of Artificial Intelligence (AI) technologies has significantly transformed the health information landscape globally. AI-powered tools such as chatbots, virtual assistants, and predictive models now offer health advice, symptom assessments, and medical recommendations with unprecedented speed and accessibility [1]. These

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technologies promise to democratize healthcare information, especially among populations with limited access to traditional health services.

University students, particularly those aged 15–35 years, represent a digitally connected demographic that heavily utilizes online platforms to seek health information. In South-West Nigeria, increased internet penetration, smartphone usage, and digital literacy have accelerated students' exposure to AI-generated health content [2]. This region, comprising states such as Lagos, Oyo, Ogun, Ondo, Osun, and Ekiti, is a hub for tertiary institutions and youthful populations.

Despite these advancements, concerns about the accuracy, trustworthiness, and ethical implications of AI-generated health information persist [3]. Misinterpretation of AI outputs or reliance on inaccurate data could have serious health consequences, particularly in regions where healthcare infrastructure is already challenged. Thus, understanding the perceptions and usage patterns of AI-generated health information among university students in South-West Nigeria is crucial for informing educational interventions, public health policies, and AI system development.

1.1. Artificial Intelligence (AI)

Artificial Intelligence refers to computer systems' ability to perform tasks typically requiring human intelligence, such as learning, reasoning, problem-solving, perception, and language understanding [4].

1.2. AI-Generated Health Information

AI-generated health information encompasses medical advice, symptom analysis, health recommendations, and other health-related outputs produced by AI algorithms without direct human clinician input [3]. These tools include applications like symptom checkers, diagnostic chatbots, and AI health companions.

1.3. Perceived Reliability

Perceived reliability refers to the extent to which users trust and deem information from a source as accurate, credible, and dependable [5]. In the context of AI, it involves subjective evaluations of the quality and trustworthiness of machine-generated content.

1.4. Emergence of AI in Health Communication

The healthcare sector has witnessed a surge in AI applications aimed at enhancing information dissemination, patient engagement, and healthcare delivery. AI-based platforms such as WebMD's Symptom Checker, Ada Health, Babylon Health, and even conversational agents like ChatGPT provide users with preliminary health advice [1].

While these tools offer convenience and wider access, concerns remain regarding the quality and contextual appropriateness of the health information they provide. Cases of misinformation, algorithmic bias, lack of cultural competence, and hallucination (fabricated but realistic-sounding responses) have been documented [6]. As AI continues to integrate into healthcare, evaluating its trustworthiness and acceptance among specific populations becomes increasingly important.

1.5. University Students as Early Adopters of AI Technology

University students are generally considered early adopters of new technologies due to their high digital literacy, frequent internet use, and openness to innovation. In South-West Nigeria, factors such as limited access to affordable healthcare, long waiting times at hospitals, and the need for privacy (especially concerning stigmatized conditions) drive students to seek health information online [7]. This group's technological savviness positions them as a critical cohort for studying the uptake and trust in AI-generated health information. Their experiences could offer insights into broader youth engagement with emerging health technologies in low- and middle-income settings.

1.6. Trust and Skepticism Toward AI-Generated Health Information

Trust is a fundamental determinant of whether individuals rely on AI-generated health content. Several factors influence perceived trustworthiness, including the professionalism of the interface, perceived competence of the AI, clarity of communication, and prior positive experiences with digital health tools [8]. However, scepticism also exists, fueled by fears of misinformation, data breaches, lack of accountability, and a general understanding that AI may lack nuanced human judgment. In low-resource settings like Nigeria, where misinformation can have serious health implications, understanding the balance between trust and scepticism among university students is essential.

1.7. Patterns of Use Among University Students

University students use AI-generated health information in various ways, including Self-diagnosis for minor symptoms, seeking mental health support, obtaining fitness, nutrition, and wellness advice, keeping updated on public health issues like COVID-19, assisting with academic research on health topics [1].

In South-West Nigeria, anecdotal evidence and preliminary studies suggest that students frequently consult AI tools before deciding whether to visit healthcare professionals, a practice that could either aid or delay appropriate medical intervention [2].

1.8. Context of South-West Nigeria

South-West Nigeria, comprising six states, is home to several prominent tertiary institutions with a large youth population. The region's relatively higher levels of literacy, urbanization, and technological infrastructure compared to other parts of Nigeria position it as a leader in digital adoption [7].

However, systemic issues such as healthcare underfunding, cultural health beliefs, and socioeconomic disparities complicate students' health-seeking behaviours. While digital tools offer alternative health information sources, students' interpretation and trust in these sources remain influenced by these broader contextual factors.

1.9. Rationale for the Study

Given the growing presence of AI in healthcare communication, there is a pressing need to understand how youths, particularly university students, perceive and interact with AI-generated health content.

This study is important because

- It will provide insights into the acceptance and scepticism of AI health systems among future leaders and decision-makers.
- It can inform educational programs aimed at improving digital health literacy.
- It may guide policymakers and tech developers in creating culturally sensitive, user-friendly, and trustworthy AI health tools.
- It can highlight potential areas of misuse or misunderstanding that could have public health consequences.

Aim of the Study

This study aims to assess the perceived reliability and use of AI-generated health information among university students in South-West Nigeria, with a view to understanding the trust factors, patterns of utilization, and implications for personal health management among this population.

2. Materials and Methods

2.1. Study Design

This study employed a descriptive cross-sectional design using an online questionnaire to collect data on the use and perceived reliability of AI-generated health information among university students in south-west Nigeria.

2.2. Study Population

The target population consisted of undergraduate and postgraduate students enrolled in Nigerian universities during the period of data collection. A convenience sampling method was used due to the online nature of the survey and the need for rapid data collection within a limited timeframe. The inclusion criteria were students (undergraduates or postgraduates) who had access to the internet and consented to participate.

2.3. Sample Size Estimation

The sample size was calculated using the single-proportion formula, where (for 95% confidence), (assumed prevalence), and (margin of error). Substituting these values gave a required sample size of approximately 384 participants. In the absence of prior prevalence data for this topic in the study population, a conservative estimate of 50% was used because it yields the maximum sample size, ensuring adequate precision for a wide range of true prevalence values [9]. Due to resource and logistical constraints, a final sample of 204 students was obtained, which

provides a margin of error of approximately $\pm 7\%$. This sample size was considered adequate for an exploratory study, particularly as this is the first investigation of perceived reliability and use of AI-generated health information among university students in Nigeria.

2.4. Data Collection Tool

A structured, self-administered questionnaire was designed using Google Forms. The questionnaire included both closed-ended and Likert-scale questions divided into four sections:

- Socio-demographic Information: Age, gender, level of study, institution, and field of study.
- Use of AI Tools for Health Information: Awareness, frequency of use, type of AI tools used and common health topics searched.
- Perceived Reliability: A 5-point Likert scale assessing trust in AI-generated health content, compared to traditional sources.
- Influence on Health Behavior: Questions on whether AI-generated responses influenced decisions about medication, lifestyle changes, or whether users sought further verification.

The questionnaire was pretested among 10 students to ensure clarity and reliability. Necessary modifications were made prior to the final data collection.

2.5. Data Collection Procedure

The survey link was distributed via email, WhatsApp groups, Telegram channels, and student forums. Participation was voluntary, and students were informed that responses would remain anonymous and used solely for research purposes. No incentives were offered.

2.6. Ethical Considerations

Informed consent was obtained digitally before participants could access the questionnaire. Respondents were assured of confidentiality and the right to withdraw at any stage without penalty.

2.7. Data Analysis

Data collected via Google Forms were exported to Microsoft Excel and analyzed using SPSS version 27. Descriptive statistics such as frequencies, percentages, and means were used to summarize the data. Associations between use of AI and perceived reliability scores were tested using chi-square tests or Fischer's exact test where appropriate. Statistical significance was set at $p < 0.05$

3. Results

Table 1 a Socio demographic Information N=204

Variables	Category	Frequency	Percentages
Age	Young Adults	199	97.5
	Older Adults	5	2.5
Gender	Male	83	40.7
	Female	121	59.3
Education Level	Undergraduate	115	56.4
	Postgraduate	89	43.6

Table 1 b Descriptive Statistics for Age of Respondents

Variable	Mean ($\pm$ s.d)	Minimum	Maximum
Ages of respondents	23.25($\pm$ 3.498)	17	40

Table 1a presents the socio-demographic characteristics of the respondents. The majority were young adults (97.5%), while only 2.5% were categorized as older adults. More than half of the respondents were female (59.3%) compared to males (40.7%). In terms of education, 56.4% were undergraduates, whereas 43.6% were postgraduate students. Table 1b further shows the descriptive statistics for age, with respondents having a mean age of 23.25 years (± 3.50), ranging from 17 to 40 years.

Table 2 Perceived reliability and trust in AI tools for health information N=204

Variable	Category	Frequency (n)	Percentage (%)
Perceived reliability on AI tools	Not reliable	31	15.2
	Moderately reliable	90	44.1
	Reliable	83	40.7
Trust in AI tools over health workers	Less	113	55.4
	About the same	82	40.2
	More	9	4.4

Table 2 presents respondents' perceptions of reliability and trust in AI tools for health information. Almost half of the respondents (44.1%) considered AI tools to be moderately reliable, while 40.7% rated them as reliable, and only 15.2% regarded them as not reliable. When asked to compare their level of trust in AI tools with health workers, a majority (55.4%) expressed less trust in AI, while 40.2% reported trusting AI tools about the same as health professionals. Only a small minority (4.4%) indicated that they trusted AI tools more than health workers.

Table 3 Association between Sociodemographic variables and Perceived reliability N=204

Variables	Categories	Reliable (%)	Not reliable (%)	X ²	P value
Age	Young Adults	78 (38.2%)	121 (59.3%)	Fischer's Exact	0.010
	Older Adults	0 (0%)	5 (0.02%)		
Gender	Male	40 (19.6%)	43 (21.1%)	3.267	0.071
	Female	43 (21.1%)	78 (38.2%)		
Level of Study	Undergraduate	44 (21.6%)	71 (34.8%)	0.643	0.423
	Postgraduate	39 (19.1%)	50 (24.5%)		

The association between socio-demographic characteristics and perception of reliability was examined using Chi-square and Fisher's Exact tests. As shown in Table 3, age was significantly associated with perception of reliability. A greater proportion of young adults (38.2%) considered the source reliable compared to older adults, none of whom rated the source as reliable. Fisher's Exact Test confirmed a significant relationship between age and perception of reliability ($p = 0.010$).

In contrast, gender did not show a significant association with perception of reliability. Among males, 19.6% rated the source as reliable and 21.1% as not reliable, while 21.1% of females considered it reliable and 38.2% did not. The Chi-square test indicated no statistically significant difference ($X^2 = 3.267$, $p = 0.071$).

Similarly, no significant association was found between level of study and perception of reliability. Among undergraduates, 21.6% considered the source reliable and 34.8% did not, while 19.1% of postgraduates rated it reliable and 24.5% did not. The Chi-square test showed no significant difference ($X^2 = 0.643$, $p = 0.423$).

Table 4 Association between use of AI and reliability and AI generated health information N=204

AI use	Reliability on ai generated health information		Fischer's exact	Correlation coefficient (r)
	Reliable	Not Reliable		
Yes	119	83	0.515	-0.082
No	2	0		

Table 4 shows the association between AI use and perceived reliability of AI-generated health information. Among respondents who reported using AI for health information, 119 considered it reliable, while 83 considered it not reliable. In contrast, only two respondents who did not use AI reported it as reliable, and none considered it unreliable. Fisher's Exact Test indicated that this association was not statistically significant ($p = 0.515$). The correlation coefficient ($r = -0.082$) further suggests a very weak negative relationship between AI use and perceived reliability of AI-generated health information.

4. Discussion

This study assessed the perceived reliability and use of AI-generated health information among university students in South-West Nigeria. The findings revealed that the majority of respondents were young adults (mean age 23.3 years), predominantly female, and largely undergraduates. This demographic profile reflects a digitally literate population that is generally open to new technologies, consistent with earlier work identifying university students as early adopters of digital health tools in Nigeria [2,7].

A significant proportion of respondents (84.8%) perceived AI tools to be at least moderately reliable, with 44.1% rating them as moderately reliable and 40.7% as reliable. However, 15.2% considered AI to be not reliable. This suggests that while AI technologies are increasingly accepted as sources of health information, skepticism remains. These results are in line with global literature showing that AI systems, such as chatbots and large language models, can generate useful and accurate health information but are also prone to factual errors, bias, or hallucinations [1,3]. Perceptions of reliability may therefore reflect a balance between the convenience of AI and awareness of its limitations.

Despite relatively high ratings of reliability, most students (55.4%) reported less trust in AI compared with health professionals, while only 4.4% expressed more trust in AI. This distinction between reliability and trust has also been observed in other studies, where users may find AI-generated responses useful but still prefer the judgment and accountability of human clinicians [6]. For instance, Ayers et al. (2023) [10] found that patients rated chatbot responses as more empathetic than physicians' responses, yet trust in AI as a decision-maker remained limited. In the Nigerian context, this skepticism may be reinforced by broader concerns about misinformation, data privacy, and weak regulatory oversight of digital health technologies [2,8].

Age was the only significant factor influencing perceptions, with a greater proportion of young adults rating AI information as reliable compared to older adults, none of whom reported it as reliable ($p = 0.010$). This finding suggests that younger populations may be more comfortable with and trusting of emerging health technologies, consistent with studies showing that digital natives are more open to AI integration in health care [2,7]. Conversely, gender and level of study were not significantly associated with perceived reliability, indicating that trust in AI tools is relatively consistent across these demographic categories. These results imply that age-specific approaches may be necessary when designing health literacy interventions or AI-driven health campaigns.

Analysis further showed no statistically significant association between AI use and perceived reliability ($p = 0.515$, $r = -0.082$). While 119 users described AI information as reliable and 83 as not reliable, only two non-users rated it as reliable, and none rated it as unreliable. The lack of significance may be due to the very small number of non-users, which limited statistical power, as well as the use of a single-item measure of reliability. Prior research suggests that health literacy and user experience play a stronger role in shaping perceptions of AI than simple frequency of use [5,11]. This indicates that exposure to AI tools alone does not necessarily translate into higher trust or perceived reliability.

The findings carry important implications. First, AI should be positioned as a complementary tool rather than a substitute for human health professionals. Students may benefit from using AI for preliminary information, but final decision-making should remain clinician-guided. This approach aligns with WHO's recommendation for human

oversight and accountability in AI for health [12]. Second, improving digital health literacy is critical to help students evaluate AI outputs critically, verify information, and recognize limitations. Third, policymakers and developers should address issues of transparency, explainability, and bias in AI systems to strengthen public confidence [6,8].

This study has some limitations. The cross-sectional design prevents causal inference between AI use and perceptions. The sample, though adequate for an exploratory study, was limited to 204 students and may not be representative of all Nigerian university populations. Reliance on self-reported measures and the use of a single-item question for reliability also limit the depth of interpretation. Finally, the very small number of non-users reduced the ability to detect associations.

Future research should employ larger samples, use validated multi-item scales for measuring reliability and trust, and include qualitative methods to better understand why users differentiate between reliability and trust. It would also be useful to compare perceptions across regions and cultural contexts within Nigeria to capture broader variability.

5. Conclusion

This study shows that university students in South-West Nigeria generally view AI-generated health information as moderately to highly reliable but continue to place greater trust in human health professionals. Age significantly influenced perceptions, with younger students showing more trust in AI content, while gender and level of study had no effect. The lack of association between AI use and reliability suggests that exposure alone does not build trust. Tailored digital health literacy programs, transparency in AI systems, and human oversight are essential to ensure safe and effective adoption of AI health tools.

Compliance with ethical standards

Acknowledgments

The authors sincerely thank all the university students who voluntarily participated in this study and contributed their time and perspectives. This study did not receive any form of external funding; all costs were borne by the researchers.

Disclosure of conflict of interest

The authors declare no conflicts of interest related to this study.

Ethical approval details

Ethical approval was obtained from the institutional ethical review committee before the commencement of the study.

Statement of informed consent

Informed consent was obtained from all individual participants before they were included in the study.

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