



**ASSESSMENT OF KNOWLEDGE, ATTITUDES AND USAGE OF AI-DRIVEN
HEALTHCARE TOOLS AND HEALTH OUTCOMES AMONG
UNDERGRADUATES IN OSUN STATE, NIGERIA**

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ABSTRACT

Introduction: AI is proving to be a transformative technology in recent years, and in the healthcare industry, there are innovative and extraordinary applications in disease diagnosis, treatment customization, patient monitoring, and communication. From disease diagnosis to personalized medicine, patient monitoring to healthcare communication, AI is making a mark in the healthcare industry. This research, therefore, investigated the knowledge, attitude, and receiving of AI in health care among Osun state undergraduate students and its correlation with health outcomes.

Method: The method used in the study was descriptive cross sectional study. Twenty-four students from the undergraduate science class of Osun State University were used for the study. Data gathered were analyzed descriptively and inferentially using frequencies and percentage, and t-test analysis.

Result: The findings revealed that the understanding of AI among the undergraduate students in the hospital was ranging between moderate to high with 60% of students being aware of the role of AI in healthcare. There was a positive perception of AI, with 80% of users saying that AI technologies would help society with healthcare. This optimism is not without its challenges, as just one out of five of them have formal exposure to AI education. The adoption of AI healthcare tools was somewhat prevalent, with the majority of students using these tools weekly or monthly, and a smaller portion using them daily. Health-related outcomes, the most of the participants reported their good cognitive functioning, decision making ability, and their self-efficacy. However, high levels of emotional distress were seen such as sleep difficulties related to anxiety, reduced confidence and unhappiness. The statistical analysis did not reveal any significant correlation between the use of an AI tool and health outcomes among undergraduate students.



Recommendation: Digital health technologies should be introduced into the curriculum of education system; ethical guidelines of AI education should be established; and a balanced distribution of digital health technologies among undergraduate students should be achieved. Furthermore, special attention must be paid to the mental health support of students, which should be centered on students, including the use of AI-driven tools for early detection, monitoring and intervention on university campuses.

Keywords: AI-healthcare tools, health outcomes, Undergraduate students.

INTRODUCTION

Artificial Intelligence (AI) is defined as the ability of the machines to execute actions that usually need human qualities of cognitive processing, including reasoning, learning, and resolution. (Kaplan and Haenlein, 2019; Russell and Norvig, 2020). AI is becoming a widely used tool in organizations, and one of the large study areas in education, healthcare, and information systems (Dwivedi et al., 2021). AI has significantly transformed multiple sectors, with healthcare emerging as one of the most impacted domains (Faiyazuddin et al, 2025; Okemba & Onwuegbuchulam, 2025).

The development of Artificial Intelligence (AI) has brought tremendous changes to the healthcare information environment on the planet. AI powered diagnostic applications are increasingly being integrated into health systems worldwide. (Fahim, et al, 2025). AI-assisted Chatbot to assist and engage with patients are some of the examples of AI application in health(Chen et al., 2020) virtual assistants, and predictive models are some of the most recent AI goods that provide health advice, symptom checkers, and medical advice with greater speed and accessibility than ever before (Mesko, 2023). Computer aided detection of medical imaging (Jiang et al., 2021), machine learning-based prediction of patient outcomes (Rajkomar et al., 2019). The applications can aid in enhancing the quality of the diagnosis, facilitating clinical processes and most importantly improving patient care. These technologies have demonstrated the potential to improve diagnostic accuracy, enhance treatment outcomes, promote preventive care, and expand access to health information (Olawade et al, 2024).

Medical practitioners are becoming more conscious of the use of AI in disease diagnosis and patient care (Jiang et al., 2021). In addition, the public is becoming increasingly aware, although not yet fully, while most do not understand the capabilities and limitations of AI deeply (Zhang et al., 2022). Among undergraduate students, particularly those in higher institutions, there is growing exposure to digital health technologies. Students of the universities, especially those between the ages of 15-35 years are a digitally inclined population, which widely make use of online resources in the quest to find health information. The proliferation of smart phones, internet access, and health-related applications has made AI-driven tools more accessible than ever before. Students frequently utilize tools such as symptom checkers, mental health Chatbot, fitness trackers, and telemedicine platforms to manage their health (Morelli & Giansanti, 2025). The penetration

of internet, smart phone and digital literacy in South-West Nigeria have intensified access of students to AI-generated health information (Adebayo and Hassan, 2023).

Consequently, Olanrewaju and Hassan, (2023) observed that in the South-West Nigeria, the lack of access to affordable care, lengthy waiting times in medical facilities, and the privacy component (especially in relation to stigmatized illnesses) are the reasons that prompt students to seek health information online. A study done by Enebechi et al. (2025) reported 95% usage of AI tools among Nigerian students. Also, Hassan & Harande et al. (2025) documented 82% while another research carried out in Osun state by Onyeka et al. revealed 59.2% of AI technology usage among undergraduate students.

University students apply AI-generated health data in different ways: such as self-diagnosis of minor symptoms, seeking mental health help, fitness, nutrition and wellness information, updated on public health concerns such as COVID-19, and academic research on health matters (Mesko, 2023). Anecdotally and under preliminary research on the subject has stated that students in Southwest Nigeria often rely on AI devices prior to their decision on whether to seek medical consultations, a behaviour that may potentially facilitate or stall timely medical care (Adebayo & Hassan, 2023). However, despite this increasing interaction, there remains variability in students' knowledge of AI, their attitudes toward its use in healthcare, and the extent to which they adopt these tools in real-life health decision-making.

Knowledge is critical in shaping how individuals understand and interact with emerging technologies. Adequate knowledge of AI driven healthcare tools may enhance confidence and promote appropriate usage (Udegbe et al, 2024). Similarly, attitudes whether positive or negative can influence acceptance, trust, and willingness to engage with such technologies (Daly et al, 2025). Usage, on the other hand, reflects actual behavioural engagement and determines the real-world impact of AI on health outcomes.

Health outcomes among undergraduate students are influenced by multiple factors including health behaviours, access to care and health seeking practices. The integration of AI-driven tools has the potential to positively influence these outcomes by promoting early detection of illnesses, encouraging healthy lifestyles, and improving mental health support (Thakkar et al, 2024; Yeasmin et al, 2026). However, concerns such as misinformation, data privacy, ethical issues, and over-reliance on technology may prone students to risk.

In developing countries like Nigeria, where healthcare access challenges persist, AI-driven healthcare tools present a promising alternative for bridging gaps in service delivery (Okwukwu et al, 2025; Alaran et al, 2025). Consequently, the effectiveness of these tools depends largely on users' knowledge, attitudes, and patterns of use. Therefore, assessing these factors among undergraduate students is essential for understanding how AI can be maximized to improve health outcomes within students' population.

STATEMENT OF THE PROBLEM

There is limited empirical evidence on how undergraduate students understand, perceive, and utilize AI-driven healthcare technologies, particularly in developing countries such as Nigeria, despite the increasing availability and potential benefits of these tools. Although students are often assumed to be digitally literate, this does not necessarily translate into adequate knowledge of AI applications in healthcare or the ability to use them effectively and safely. Insufficient knowledge may lead to misuse or underutilization of AI-driven tools, thereby limiting their potential benefits. Furthermore, negative attitudes such as distrust in AI accuracy, fear of data breaches, or preference for traditional healthcare systems may hinder adoption. (Alqaissi&Qtait, 2025). In addition, excessive reliance on AI without proper understanding may result in self-diagnosis errors, delayed professional consultation, or exposure to misleading health information (Sheker et al., 2024; Liu et al., 2025). It is observed that also remains a lack of understanding about the relationship between using AI tools in health care functions and actual health outcomes of undergraduate students. The benefit of using these tools for health management is that they can be used to improve health, but it is not known if their use has a significant impact on physical or mental health outcomes. Within the Nigerian context where healthcare resources are constrained, healthcare workers are scarce, and access to healthcare is difficult, AI-powered tools possess tangible potential to improve the health outcomes of the country (Adedinsewo et al., 2025). However, if these technologies can be successfully integrated, it's unclear because it's hard to know what students know, how they feel about the technologies, and how they are being used. Thus, this research seeks to understand the knowledge, attitudes, and the utilization of AI tools in health care and its relationship with health outcomes of the students who are in their undergraduate studies, to fill the gap in literature and guide policy and practice.

The aims of the research include:

1. To determine the level of knowledge of AI healthcare technologies among undergraduate students
2. To assess students' attitudes and perceptions toward AI-driven healthcare tools
3. To evaluate the frequency and purpose of AI tool usage, and
4. To investigate the influence of AI usage on students' health outcomes.

The study is based on the theory of Social Construction of Technology (SCOT) that was developed by Pinch and Bijker in the 1980s. Djordjevic et al. (2016) propose that technology does not evolve on its own but is influenced by social groups, cultural meanings, political interests and human relations. It highlights the fact that technologies are socially constructed, thus meaning that technologies are interpreted and used in various ways due to differing experiences and contexts.

When applied to this case study, the notion of a neutral AI tool in the healthcare sector has been replaced by a concept of an AI tool that is socially shaped during its development, interpretation, and use (SCOT) (Siyab & Saira, 2024; Swidan et al., 2025).

The perception of undergraduate students differs with their discipline, exposure and cultural background. Some people might think that AI tools are efficient and modern, but others might not be too fond of the idea of using it, especially in the healthcare context. SCOT also underscores how technological frames made up of the individual's assumptions, knowledge and expectations (Prell, 2009) affect the way they understand AI health systems.

In African countries such as Nigeria where access to healthcare can be difficult, students might be attracted to the use of AI with positive intent, for convenience and cost-effectiveness. There may be barriers to acceptance due to cultural beliefs and faith in healthcare providers, however. Finally, SCOT can help show that access to a technology is not the only thing that matters for its health effects; the social meanings of how it is used can as well. Positive perceptions may help to improve preventive health behaviors and health awareness; negative perceptions may impact utilization and minimize health benefits.

MATERIALS AND METHODS

The study adopted a descriptive cross-sectional research design.

Study area This study was carried out in Osun State University located in Osogbo, Osun State, Nigeria. Osun State University has been established as a conventional multi-campus University with a mandate to produce high quality well-rounded graduates with global competencies.

Osun State University (UNIOSUN) was founded by Osun State Government in tandem with the University Establishment Law passed by the State House of Assembly in December, 2006. The university was approved and recognized as the 80th in Nigeria and 30th State University by NUC.

Study design The descriptive research design method was adopted in the study.

Study population The study's population comprised of undergraduate students of Osun State University. The undergraduates were used in this study because the primary objective of the study is to evaluate the knowledge, attitude and application of AI powered healthcare applications by the undergraduates.

Sample Population and Sampling Technique For this study, stratified sampling technique was used. Population was initially split into 7 strata by the field of study. Cochran's (1977) formula for unknown population size was used to calculate the sample size. Then proportionate allocation was used to obtain respondents from each stratum, giving approximately equal numbers in each discipline.

Using Cochran's (1977) formula

$$n = \frac{Z^2 pq}{e^2}$$

Where:

- n = required sample size
- Z = standard normal deviate at 95% confidence level (1.96)
- p = estimated proportion of the population (0.5)
- $q = 1 - p$ (0.5)
- e = margin of error (0.065)

With a 95% confidence level and a margin of error of about 6.5%, a minimum sample of 230 respondents was obtained using Cochran's (1977) formula for unknown population size. The size of the sample was inflated to offset for non-response and incomplete questionnaires, a final target sample size of 240 was set. The faculties chosen include Health sciences, Engineering, Computer Science/Information Technology, Pure and Applied Sciences and Social Sciences and Arts. Allowance was given for other faculties to be selected and was termed as “others” during the analysis. The method used was adapted in order to make sure that every subject area was properly sampled.

Sample allocation The sample size was proportionately distributed across the strata identified using a stratified sampling technique. Since the sizes of the strata are fairly comparable, about the same number of respondents was taken from each field of study. As a result, the samples ranged from 33 to 36 within each stratum giving a percentage representation between 13.8% and 15.0% per discipline. This method helped to be fair, representative and comparable between the different fields of study. The final sample consisted of 240 respondents distributed as follows: Health Sciences (34; 14.2%), Engineering (35; 14.6%), Computer Science/Information Technology (36; 15.0%), Pure and Applied Sciences (34; 14.2%), Social Sciences (34; 14.2%), Arts (34; 14.2%), and others (33;13.8%).

Data collection procedure A questionnaire was used to assess the knowledge, attitudes, and the usage of AI driven healthcare tools among undergraduates. The questionnaire was distributed to the undergraduate students on their campuses. The questionnaire was partitioned into the objectives of the study for easy organization and effective data collection from the respondents of the study. Informed consent was obtained from the research participants before their data was collected. Finally, all the data collected was kept securely and anonymity was ensured throughout the study as the respondents were assured that any information provided was used for academic purposes only.



Instrument A structured questionnaire with five sections was used as an instrument for data collection. Interviews were conducted in section A and demographic data like age, gender, year of study, faculty and digital literacy were collected for subgroup analysis. Items were designed to measure awareness of AI concepts, chatbots, wearable devices, and diagnostic platforms to measure knowledge about AI healthcare tools in section B. Section C investigated attitudes and perceptions such as trust, perceived usefulness, emotional comfort and ethical issues, measured on a 5 point Likert scale. In Section D, participants shared their usage patterns, including frequency of use, intent of use, and top AI applications like symptom checkers, fitness, and psychological assistance. The health outcomes were measured in section E by the precipitated Gold; burg validated GHQ-12 developed in 1972 to measure health outcomes. This instrument was pre-tested with 30 students to confirm the instrument was clear, reliable and valid.

Data Analysis SPSS version 27 was used for analyzing the data. Inferential statistics was utilized to analyze data collected such as frequency, percentages and T-test. The data was then analyzed to address each of the objectives.

RESULTS/ FINDINGS

Table 1: Frequency and Percentage Distribution of Demographic Characteristics

Demographic Variable	Category	n	%
Age Group	15–17	56	23.3
	18–20	63	26.3
	21–23	65	27.1
	24–26	56	23.3
Gender	Male	120	50
	Female	120	50
Field of Study	Health Sciences	34	14.2
	Engineering	35	14.6
	Computer Science / Information Tech.	36	15
	Pure and Applied Sciences	34	14.2
	Social Sciences	34	14.2
	Arts	34	14.2
	Others	33	13.8
	Year of Study	100	34
200		36	15



	300	35	14.6
	400	35	14.6
	500	34	14.2
	600	33	13.8
	700	33	13.8
Type of Institution	Public	120	50
	Private	120	50
Monthly Allowance	₦1 – ₦50,000	49	20.4
	₦51,000 – ₦100,000	48	20
	₦101,000 – ₦150,000	48	20
	₦151,000 – ₦200,000	47	19.6
	₦201,000 – ₦250,000	48	20
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Ethnicity/Cultural	Igbo	59	24.6
Background	Hausa	60	25
	Yoruba	60	25
	Others	61	25.4
	Christian	60	25
Religious Affiliation	Muslim	60	25
	Traditionalist	60	25
	Others	60	25
	Urban	120	50
Residence	Rural	120	50
	Yes	180	75
Digital Literacy	No	60	25
	Yes	130	54.2
Previous Experience with Healthcare Tech	No	110	45.8
Trust in Technology	Yes	140	58.3
	No	100	41.7
School Health Insurance Status	Insured	80	33.3
	Uninsured	80	33.3
	Unknown	80	33.3
Access to Internet/Technology	Home Wi-Fi	48	20

	Smartphone	48	20
	Laptop	48	20
	Public Internet Access	48	20
	Café	48	20
Primary Source of Health Information	Internet	40	16.7
	Family	40	16.7
	Friends	40	16.7
	Healthcare Professionals	40	16.7
	Social Media	40	16.7
	None	40	16.7

Source: Field Survey (2025)

The age breakdown indicated that most of the respondents (53.4%) were 18-23 years followed by 15-17 age group and 24-26 age group with 23.3% each respectively, which is in the typical age range of undergraduate students (National Bureau of Statistics, 2023). 50% of the participants were male while 50% were female. The fields of study were also well represented with over 14% of respondents from the fields of Health Sciences, Engineering, Computer Science/IT, Pure and Applied Sciences, Social Sciences, Arts and Other field which encompasses including HRM and BBM.

The distribution of monthly allowance was evenly spread across five income brackets ranging from 20.0–20.4%, indicating low income bias, and provides the opportunity to evaluate the link that exists regarding financial capacity and access to AI tools. Ethnic and religious distribution were also equal with four categories each accounting for about 25% which are related to the major sociocultural groups of Nigeria.

Digital literacy was high (75.0%) but 25.0% were lacking in sufficient skills representing a vulnerable sub-group. The majority (54.2%) had had experience with healthcare technology, and 58.3% said that they had a general trust in technology. The distribution of access to digital tools was fairly balanced: 20% via Wi-Fi, 20% via smart phone, 20% via laptop, 20% via public internet and 20% via cafés. There was diversity around the health information sources, with the internet, healthcare professionals, family, and friends all equally important (16.7% each), and reflecting the complex health contexts in which choices are made.

Objective 1: Determining the level of knowledge of AI healthcare technologies among undergraduate students

Table 2: Frequency and Percentage Distribution for Knowledge of AI Healthcare Tools (N = 240)

Statement	SA n	A n	U n	D n	SD n	SA %	A %	U %	D %	SD %
1. I understand how AI is used in the healthcare field.	48	96	36	36	24	20.0%	40.0%	15.0%	15.0%	10.0%
2. I can identify at least one example of an AIbased healthcare tool.	36	84	24	60	36	15.0%	35.0%	10.0%	25.0%	15.0%
3. AI can analyze large medical data faster than human doctors.	72	108	24	24	12	30.0%	45.0%	10.0%	10.0%	5.0%
4. AI tools are used in real hospitals and clinics today.	60	96	36	36	12	25.0%	40.0%	15.0%	15.0%	5.0%
5. AI can assist in early diagnosis of diseases like cancer or heart conditions.	24	72	48	60	36	10.0%	30.0%	20.0%	25.0%	15.0%
6. I have attended a seminar, workshop, or course that talked about AI in healthcare.	12	36	48	84	60	5.0%	15.0%	20.0%	35.0%	25.0%

Source: Field Survey (2025)

The general awareness of AI in healthcare is moderate to high as 60% participants said they are aware of AI and 25% were not sure or disagreed, revealing a significant gap in knowledge. There was less confidence that participants had experience of identifying specific

AI-based healthcare tools, with only 50% agreeing or strongly agreeing, 40% being neutral or disagreeing, and 15% strongly disagreeing.

Trust in AI ability was more positive. Approximately 75% stated that AI is able to process larger volumes of data quicker than any human can, while 65% recognized its use in the clinical environment, with 15–20% showing a lack of confidence or knowledge. But a mere 40% felt that AI assists in early detection of serious diseases – the other 60% were thinking otherwise or were unsure. This data suggests that there exist little awareness of AI's potential in clinical diagnostics.

Only 20% had received formal education in Artificial Intelligence, 80% had not. The absence of formal education in this field may partly account for the knowledge deficits and the students' limited understanding of the AI applications in healthcare, which are often gained through informal channels, and thus superficial or incomplete.

Objective 2: Assessing students' attitudes and perceptions toward AI-driven healthcare tools.

Table 3: Frequency and Percentage Distribution for Attitudes Towards AI Healthcare

Statement	SA n	A n	U n	D n	SDn	SA %	A %	U %	D %	SD %
1. AI in healthcare will benefit society.	72	120	24	17	7	30.0%	50.0%	10.0%	7.1%	2.9%
2. I trust AI-based tools for medical recommendations.	48	96	48	36	12	20.0%	40.0%	20.0%	15.0%	5.0%
3. I feel comfortable using an AI-based health assistant.	60	108	36	24	12	25.0%	45.0%	15.0%	10.0%	5.0%
4. AI should always be supervised by a human doctor.	120	72	24	19	5	50.0%	30.0%	10.0%	7.9%	2.1%
5. I am worried about privacy when using AI healthcare tools.	96	72	36	24	12	40.0%	30.0%	15.0%	10.0%	5.0%
6. I believe AI can make healthcare more accessible in rural areas.	84	108	24	19	5	35.0%	45.0%	10.0%	7.9%	2.1%

Source: Field Survey (2025)

The attitude results show a generally positive attitude among the undergraduate sample to AI-driven healthcare. A large part of the respondents (80%) strongly agree or agree that the opportunities AI will open up in health care will be positive for society, reflecting a positive view. This is comparable to the majority of the literature that shows populations who have been impacted by digital health innovations tend to perceive the benefits of greater efficiency and patient outcomes in society (Obermeyer & Emanuel, 2016). Relatively few people (10% undecided and 10% disagree/strongly disagree) expressed some doubt regarding this, possibly

because it comes with little personal experience or concerns and possible side effects. In general, there is a positive context for future programs of adoption and education as a result of the high perceived benefit.

Objective 3: Evaluating the Frequency and Purpose of AI Tool Usage among undergraduates

Table 4: Frequency of AI Healthcare Tool Usage (N = 240)

Usage Frequency	N	%
Daily	47	19.6
Weekly	73	30.4
Monthly	61	25.4
Rarely	36	15.0
Never	23	9.6

Source: Field Survey (2025)

Table 5: Main Purpose for Using AI Healthcare Tools (N = 240)

Main Purpose	N	%
Monitoring fitness/steps	60	25.0
Checking symptoms	48	20.0
Managing diet/calories	36	15.0
Mental health/self-care	37	15.4
Scheduling appointments	24	10.0
Other	35	14.6

Source: Field Survey (2025)

The frequency data shows that a large number of the students at the undergraduate level are using AI health care tools on a weekly (or more frequent) basis, with a considerable number using them on a daily basis. However, these utilizations have impacted the students' daily

lives, but have not over-taken lives when used on a weekly (30.4%) and monthly (25.4%) basis. An inbuilt sub-group that is using AI-based tools daily is Daily use, at 19.6%, for fitness data or mental health assessments, to name just a couple of examples. In contrast, 15.0% use AI-powered health apps rarely or not at all and 9.6% do not use the apps at all, which could indicate that either awareness or accessibility or perceived relevance is a challenge.

Evaluating fitness and taking steps is the most common use appeal (25.0%), as is exploring of symptoms (20.0%). These findings point to the double edges of AI tools in preventive health—which can be used effectively and swiftly for basic diagnostics, as well as for preventative care—which is a key insight. The high visibility of fitness tracking is consistent with young adults' wellness goals, and symptom checkers provide easy-to-use, real-time self-assessments (Semigran et al., 2015; Piweck et al., 2016). Also high, are dietary advice/counting, as well as mental health / self-care, which are clustered at 15.0% and 15.4%, respectively, with nutrition tracking including coupled with mindfulness and mood tracking in comprehensive wellness platforms. An even smaller proportion of these say they currently use it to help them schedule appointments indicating future service-oriented capabilities (10.0%). “Other” demonstrates 14.6% of the non-classified are unique or creative uses that may come later once the potential of the tools is broadened to include more features, such as medication reminders or chronic disease management.

Objective Four: To Determine the Relationship between AI Tool Usage and Health Outcomes

Table 6: Frequency Distribution of Health Outcomes among Students

Statement	Always	Often	Sometimes	Never	Always	Often	Sometimes	Never
Able to concentrate	121	73	37	9	50.4	30.4	15.4	3.8
Loss of sleep over worry	36	32	91	81	15	13.3	37.9	33.8
Playing a useful Part	111	81	34	14	46.2	33.8	14.2	5.8
Capable of making decisions	100	85	51	4	41.7	35.4	21.2	1.7
Felt constantly under strain	34	64	84	58	14.2	26.7	35	24.2
Couldn't overcome Difficulties	28	61	81	70	11.7	25.4	33.8	29.2
Able to enjoy day-to-day activities	103	78	37	22	42.9	32.5	15.4	9.2
Able to face Problems	95	84	38	23	39.6	35	15.8	9.6
Feeling unhappy and depressed	36	53	90	61	15	22.1	37.5	25.4
Losing confidence	27	43	106	64	11.2	17.9	44.2	26.7
Thinking of self as worthless	24	46	94	76	10	19.2	39.2	31.7
Feeling reasonably happy	127	68	26	19	52.9	28.3	10.8	7.9

Source: Field Survey (2025)



The findings obtained from the GHQ-12 questionnaire administered reveals overall a positive health outcome and good functional wellbeing for the majority of the school students. Most showed fairly good cognitive function, with 50.4% able to concentrate at all times, and 30.4% concentrating most of the time. Likewise, 46.2% of them always feel that they are contributing in a useful way, and 41.7% feel they are always able to make decisions, both indicative of a high level of self-efficacy and psychological resilience.

But the symptoms of emotional turmoil are still apparent. More than one-third (37.9%) sometimes lose sleep due to anxiety and 33.8% report that they never get good sleep. A similar small number (35-40%) sometimes feel unhappy, are unsure of themselves, have poor self esteem and so show some emotional strain.

Coping (45.0%) is considered adaptive, as well as being able to cope with challenges (39.2%) and these are present in the majority of students. Few feel that they are "never reasonably happy"; this is a relatively high level of optimism, 5.8%. More than 40% however, experience this "sometimes" and 20-25% experiences it "often", signifying a significant mental cost, to this.

Overall, while most pupils are doing well, there are some particularly pupils who are expressing signs of distress that do require some form of intervention. It requires early interventions, data-driven, and student-centered mental health strategy and the use of AI-based solutions for timely identification, tracking, and intervention.

Table 7: Group Statistics

AI Tool Usage	N	Mean	Std. Deviation	Std. Error Mean
No	97	15.15	5.87	0.492
Yes	143	14.60	5.68	0.577

Source: Field Survey (2025)

Table 8: Independent Samples Test

Levene's Test for Equality of Variances.	F	Sig.	T	Df	Sig. (2tailed)	Mean Difference	Std. Error Difference	95% CI Lower	95% CI Upper
Equal variances assumed	NaN	NaN	0.727	238	0.468	0.55	0.76	-0.94	2.05
Equal variances not assumed	NaN	NaN	0.727	238	0.468	0.55	0.76	-0.94	2.05

Source: Field Survey (2025)

T-test was used to find out if there is a difference between health outcomes of students who used the health care tool and those who did not use the AI healthcare tool. between those students who used a healthcare tool that incorporated AI and those who did not use the tool. Students who reported not using AI tools (n = 97) had a slightly higher mean GHQ score of 15.15 (SD = 5.87) compared to students who reported using AI tools (n = 143) with a mean GHQ score of 14.60 (SD = 5.68). The difference can be seen in the psychological distress reported by the non-AI tool users; however, the T- test showed no significant difference, $t(238) = 0.73, p = .468$ (2-tailed). A 95% confidence interval for the mean difference is: (-0.94, 2.05) which contains zero.

The results do not provide sufficiently strong evidence to make a conclusion regarding whether using AI-based health tools may be linked to better or worse health outcomes of undergraduates.

Finally, descriptive data indicated some differences between the health outcomes of the two groups, however, the inferential data did not give any evidence to support an inferential relationship between use of AI healthcare tools and health outcome for this sample of Nigerian undergraduate students.

DISCUSSION

Objective 1: Determining the Level of Knowledge of AI Healthcare Technologies among Undergraduates

Finding revealed that the respondents have moderate awareness of AI applications in health care, especially when it comes to how AI can processes big medical data and when AI can be used in medical practice. Nevertheless, low levels of recognizing particular AI-based healthcare tools and the lack of medical professionals attending training on AI issues indicate a lack of knowledge and ignorance of practical exposure. Undergraduates are conversant with AI-driven tools in healthcare, but there is no formal learning or experience. This is corroborated by literatures. However, certain studies have pointed to serious knowledge deficits in students' knowledge of AI and its real-world implications in healthcare across

Nigeria (Dere, 2024), India (Ahmed et al., 2022), Lebanon (Doumat et al., 2022), and Pakistan. Dere (2024) noted that many students learn about AI outside of class, often from the media.

Objective 2: Assessing Students' Attitudes and Perceptions toward AI-Driven Healthcare Tools

General view about AI-driven healthcare tools by the respondents was very positive, with the majority of them being sure of its positive impact in the society. Still, there is a high consensus regarding the necessity of human control and significant doubts concerning data protection which shows a reserved attitude towards the adoption of AI healthcare. Thus, undergraduates believe that AI tools are assistant health technology, even as a replacement of healthcare professionals. Also, there are ethical and trust related concerns that are significant as well.

Doumat et al (2022) reported that students' attitudes toward AI ranged from positive, seeing it as an assistive instrument that facilitates medical practice, to negative concerns regarding job loss and ethical implications. Oluwadiya et al (2023) discovered that both students and lecturers have a favourable attitude towards AI. All items related to negative attitude such as 'AI will replace humans' and 'I'm worried about AI', were given the lowest scores, reflecting the positive attitude of the respondents. Furthermore, two responses related to the regulation and oversight of AI, AI ethics should be taught and AI should be monitored – had the highest score, signifying that although these respondents' overall sentiment was positive, they were well aware of possible dangers in the absence of official regulations on AI.

This notion of automation of repetitive tasks and the creation of new opportunities for humans to be creative and free from work is in contradiction to the anxieties over job loss and the increase of socioeconomic inequalities globally (Jeffrey, 2020). AI technologies are seen as most beneficial for the older adults in areas such as healthcare and enhancing their overall quality of life, potentially transforming their health. For the rest of the world, however, the challenges of job losses and uncertainty are the focus of AI (Oluwadiya et al., 2023).

Objective 3: Evaluating the Frequency and Purpose of AI Tool Usage among Students

Consequently result obtained revealed a high level of engagement among students on a weekly basis, implying that the students perceive the use of AI health tools as a supplement to, and not a replacement for, traditional health care, using them sparingly as an additional source of information rather than a standalone replacement. Further, occasional use can be seen in, for example, using the AI tool for diet planning or reminders about appointments, suggesting that AI tools are still useful but have not completely replaced other health management approaches.

In the same vein, Prasad et al (2025) found that a large proportion of respondents(59.9%) used AI applications such as ChatGPT and Gemini Grok, with 35.1% using them frequently. This is consistent with the overall trend seen internationally – pupils growing more acquainted with the technology of AI. On the other hand, a study carried out by Swed et al (2022) reported that few respondents felt that AI could fully replace physicians.

Overall, the evidence about students' experiences in undergraduate spaces suggests multiple access of the spaces and the use of undergraduate spaces when necessary. This underscores the necessity of creating AI healthcare products that align with the weekly patterns of use, include motivational elements to encourage regular engagement, and deliver a wide range of capabilities, including fitness tracking, mental health monitoring, and more. Nearly 10% of users are not using the system and would need special measures to improve access and build trust in this group. It provides developers, educators, and policymakers with valuable insights to help them improve (AI) based healthcare solutions for young adults.

Objective 4: Investigating the influence of AI usage on students' health outcomes

Several methodological, sociological, behavioural and contextual perspectives can be used to explain the lack of a statistically significant difference in health outcomes between learners who used AI-based healthcare tools and those who did not in their undergraduate studies.

All descriptive data reported that the mean GHQ score for the non-users of AI healthcare tools was marginally higher, suggesting a slightly higher level of psychological distress, however, this difference was not statistically significant. This suggests that adopting AI tools for students' health outcomes might not be enough in the educational environment of Nigeria.

A possible reason for that is that while AI-based health care tools can be used, health care outcomes are not necessarily better as a result. The health outcome is complex and influenced by a combination of biological, psychological, social, cultural and environmental factors. While it is acceptable for undergraduate students to use AI health tools to seek information, check symptoms, track fitness, or seek mental health counseling, this use is not always connected to behavioral changes, maintenance of healthy habits, or medical intervention. Therefore, while students might have access to AI tools, the use of such tools without other safeguards or supports can have minimal impact on students' psychological or physical health.

CONCLUSION

This study aimed to assess the Knowledge, Attitude, Practices and outcomes of using AI tools for healthcare services among Students of Nigerian Universities. The findings indicated that the knowledge about healthcare use is moderate among students; they have a high level of



general awareness but not much practical application or formal training. Most learning occurred outside of class through social media and digital platforms etc.

Moreover, student attitudes toward AI-healthcare tools are positive. The adoption of the tools are for supportive purposes rather than replacement of medical professionals.

From an outcome perspective, there was no statistical evidence linking AI- health tools and students health outcomes. While the trend was for slightly more psychological distress among non-users, the difference was not statistically significant, indicating that the use of AI is not strongly associated with health status. Instead, the health outcomes are a result of multiple factors, such as stress, socioeconomic status, lifestyle and health care, etc.

Overall, the research highlights the need for more AI knowledge and understanding of the technology, better integration into curriculum, ethical considerations, and access to digital health resources that ensure safe and responsible use of AI.

IMPLICATIONS OF FINDINGS

Findings of this study have significant sociological implications, particularly in relation to changing health-seeking behaviours, digital inequalities, evolving doctor-patient relationships, and the influence of social networks on technology adoption. AI healthcare technologies could enhance health management, they can also present social inequities, ethical dilemmas, and disruptions to the traditional healthcare landscape. Therefore, harmonious incorporation of AI technologies into the existing social and healthcare systems is required.

AI technologies in healthcare can improve access and autonomy in healthcare management; they can also present social inequities, ethical dilemmas, and disruptions to the traditional healthcare landscape. Therefore, harmonious incorporation of AI technologies into the existing social and healthcare systems is required.

The growing prevalence of AI-powered healthcare tools suggests a move towards home based, patient-centered and technology-enabled healthcare. Digital tools, for symptom checking, mental health support and health information are increasingly used and expected by students. This may lead to patients becoming more independent; it may also lead to a reduced consultation with a medical professional, with possible negative effects of misdiagnoses or delayed patient treatment.

Each of these gaps in knowledge and use of these AI tools may signal differences in socioeconomic status, access to digital technologies, technological literacy, and other potential differences. Digital inequalities in access to low-cost, stable internet and smartphones, coupled with a lack of digital skills will place people in key positions facing greater challenges to capitalize on available AI for healthcare services, thereby increasing existing health and social disparities.



Students' feelings about the use of AI tools can stem from issues of data security, data privacy, and surveillance. This raises broader and related sociological questions on trust and digital systems and institutions.

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