

Adoption of Artificial Intelligence (AI) Among Healthcare Practitioners of the University College Hospital, Ibadan Oyo State Nigeria

Success O. Odu¹, Funmilola E. Akinyooye Ph.D.² and Waliyi O. Aransi Ph.D.³

^{1,2,3}Department of Adult Education, Faculty of Education, University of Ibadan, Ibadan, Nigeria.

*Corresponding Author: Waliyi O. Aransi Ph.D.³

DOI: [10.5281/zenodo.15279168](https://doi.org/10.5281/zenodo.15279168)

Abstract

Original Research Article

This study examined Adoption of Artificial Intelligence (AI) Among Healthcare Practitioners of the University College Hospital, Ibadan Oyo State Nigeria. Descriptive survey research design was employed, while purposive and simple random sampling procedures were employed to selected the sampled respondents. A self-designed questionnaire comprised AI Awareness, Usage, Benefits, Challenges and Coping Strategies subscales were used to obtain required data from the respondents. The obtained data were analysed with the aid of descriptive statistical embedded in SPSS. These consisted of simple percentage, mean and standard deviation, respectively.

The survey revealed a predominantly female participation (64%) and a Christian majority (73%). The respondents' job roles were diverse, but nurses made up the largest group (53%). In terms of experience, most respondents (52%) had worked in the health sector for 1-5 years, indicating a relatively experienced but not long-tenured workforce. Healthcare personnel showed the highest awareness of Medical Imaging Analysis (AI Algorithm) with a mean score of (\bar{x} =2.96), followed by Artificial Narrow Intelligence (\bar{x} =2.89), and lower awareness of specialized AI applications like Luscii (\bar{x} =2.51), Expert System AI (\bar{x} =2.33), and Ada Health (\bar{x} =2.31), respectively.

Artificial Narrow Intelligence was the most widely used AI application (\bar{x} =2.49), followed by Medical Imaging Analysis (\bar{x} =2.32), Ada Health (\bar{x} =2.19), Expert System AI (\bar{x} =2.16), and Luscii (\bar{x} =1.94), respectively, indicating varying levels of usage among healthcare personnel. The study revealed significant benefits of AI in healthcare, with AI-enhanced patient diagnosis and early detection scoring the highest (\bar{x} =3.50). Reducing workload for healthcare professionals (\bar{x} =3.35) and improving hospital administrative efficiency (\bar{x} =3.28) ranked second and third, respectively. Additionally, AI was found to increase job satisfaction (\bar{x} =3.13) and assist in more accurate drug prescription (\bar{x} =3.07).

The empirical results revealed significant barriers to AI adoption in healthcare, with poor AI-enhancing infrastructure ranking first (\bar{x} =2.98), closely followed by concerns about data privacy and security (\bar{x} =2.96). High maintenance costs (\bar{x} =2.87) and inadequate training on AI usage (\bar{x} =2.85) also ranked among the top four barriers, highlighting the need for robust infrastructure, data security measures, and ongoing education. Finally, the concern that AI may replace human jobs in healthcare (\bar{x} =2.84) ranked fifth, emphasizing the need for addressing workforce anxieties about automation. The empirical outcomes revealed the top strategies for addressing AI adoption challenges in healthcare, with initiating training and development opportunities ranking first (\bar{x} =3.33), followed by designing simpler AI interfaces (\bar{x} =3.19), collaborating with private companies to improve infrastructure (\bar{x} =3.12), developing comprehensive data protection policies (\bar{x} =3.12), and utilizing open-source AI tools (\bar{x} =2.95).

The study concluded that healthcare personnel acknowledged varying levels of awareness about and usage of different healthcare-oriented AI applications but attested that usage of AI application in this professional is more beneficial, while the effective usage was in part hindered by a series of challenges. The study recommended that the healthcare organisations in developing societies like Nigeria should prioritise investments in robust health-inclined AI infrastructure which aimed at enhancing the welfare of the needy citizens among others.

Keywords: Artificial Intelligence (AI), Healthcare Practitioners, University College Hospital, Ibadan

INTRODUCTION

Artificial Intelligence (AI) refers to the capability of machines to perform tasks that typically require human cognitive functioning, such as reasoning, learning, and problem-solving (Kaplan & Haenlein, 2019; Russell & Norvig, 2020). AI is increasingly adopted by organizations to innovate and has become a significant area of research in various fields, including education, healthcare, and information systems (Dwivedi *et al.*, 2021). With applications in data analysis, decision-making, and automation, AI is transforming industries and improving outcomes.

Artificial Intelligence (AI) is revolutionizing education by enhancing learning experiences through personalized learning systems and adaptive assessments, allowing for tailored instruction and improved student outcomes (Zawacki-Richter *et al.*, 2019; Akinyooye and Osamika, 2022). AI is driving innovation and improving decision-making in business through predictive analytics and automation, enabling companies to gain a competitive edge and drive growth (KPMG, 2020).

AI is improving project management and reducing costs in construction through predictive maintenance and building information modelling, enhancing efficiency and productivity in the industry (Wang *et al.*, 2022). AI is transforming healthcare by enhancing patient care through disease diagnosis, personalized medicine, and streamlined clinical workflows, ultimately leading to improved outcomes and reduced costs (Jiang *et al.*, 2021). Artificial Intelligence (AI) is transforming healthcare with various applications, including disease diagnosis, personalized medicine, and patient engagement. Some examples of AI in health include computer-aided detection systems for medical imaging (Jiang *et al.*, 2021), machine learning algorithms for predicting patient outcomes (Rajkomar *et al.*, 2019), and AI-powered chatbots for patient support and engagement (Chen *et al.*, 2020). These applications have the potential to improve diagnosis accuracy, streamline clinical workflows, and enhance patient care.

Despite the essence of AI in all facets of professions, level of awareness of the relevant AI, usage of such ones, benefits associated with it usage, challenges faced in the course of usage and likely coping strategies could differ among various user either within the same profession or different ones.

The level of awareness of Artificial Intelligence (AI) varies across industries, with high awareness among industry professionals and business leaders who recognize AI's potential to drive innovation and growth (KPMG, 2020; PwC, 2021). In healthcare, professionals are increasingly aware of AI's applications in disease diagnosis and patient care (Jiang *et al.*, 2021). However, awareness among the general public is growing but still limited, with many lacking a deep understanding of AI's capabilities and limitations (Zhang *et al.*,

2022). Overall, education and training are needed to fully harness AI's potential across industries (Ojo and Chukwudeh, 2016).

The benefits of Artificial Intelligence (AI) in healthcare include improved diagnosis accuracy, personalized medicine, streamlined clinical workflows, enhanced patient engagement, and predictive analytics (Jiang *et al.*, 2021; Rajkomar *et al.*, 2019). AI-assisted diagnosis has been shown to improve accuracy and reduce errors in medical imaging (Jiang *et al.*, 2021), while AI-powered predictive analytics can identify high-risk patients and improve outcomes (Rajkomar *et al.*, 2019). Additionally, AI-driven chatbots have improved patient engagement and satisfaction (Chen *et al.*, 2020), ultimately leading to better health outcomes. Sanni and Aransi (2024) noted that technology plays a vital role in modern society, transforming industries, improving lives, and driving economic growth, innovation, and global connectivity.

Healthcare practitioners in Nigeria face several challenges in utilizing Artificial Intelligence (AI) in their practice, including limited infrastructure, inadequate training, and data quality issues (Oluwagbemi *et al.*, 2021). Additionally, concerns about data privacy and security, high implementation costs, and limited awareness of AI applications also hinder adoption (Adeoye *et al.*, 2022). These challenges highlight the need for investments in infrastructure, training, and policy frameworks to support the effective integration of AI in healthcare in Nigeria (Akinyooye and Adesokan, 2021). Omoregie, *et al.*, (2025) reiterated that all stakeholders comprised healthcare practitioners, member of the community and government have a complimentary role to play in making the awareness, usage and benefits associated with healthcare initiatives impactful to the general public. Aransi (2019) submitted that low level of resources allocated to health sector by the government in developing societies like Nigeria could in part dictate the level of capital available and usage of healthcare gadget among healthcare practitioners.

Healthcare practitioners in Nigeria also face challenges related to algorithmic bias, lack of standardization, and limited generalizability of AI models to local contexts (Oluwagbemi *et al.*, 2021). Furthermore, the need for ongoing maintenance, updates, and technical support for AI systems poses additional challenges (Adeoye *et al.*, 2022; Akinyooye, 2021). Addressing these challenges will require collaborative efforts from healthcare professionals, policymakers, and technology developers to ensure the effective integration of AI in Nigerian healthcare (Chukwudeh and Ojo, 2018). It is on this note that made Olaniyan, Akinyooye, Aransi, and Okafor (2025), to recommend that the concerned stakeholders of any organisation including health sector should institute leadership training tailored to strategic management, enhanced financial autonomy to address resource gaps, and investments in technology to improve operational efficiency among others, respectively.

To effectively integrate Artificial Intelligence (AI) in Nigeria's healthcare sector, training and capacity building for healthcare professionals are essential (Oluwagbemi *et al.*, 2021). Additionally, developing locally relevant AI models and datasets can help address specific healthcare challenges in Nigeria (Adeoye *et al.*, 2022). This approach ensures that AI solutions are tailored to the country's unique needs. Establishing regulatory frameworks and guidelines is also crucial for the safe and effective adoption of AI in healthcare (Ilesanmi *et al.*, 2022). Furthermore, encouraging interdisciplinary collaboration between healthcare and technology experts can facilitate the development of innovative AI solutions (Joda *et al.*, 2021). By adopting these strategies, Nigeria can harness the potential of AI to improve healthcare outcomes (Okoro and Ojo, 2018).

The adoption of Artificial Intelligence (AI) among healthcare practitioners at University College Hospital (UCH), Ibadan, Oyo State, Nigeria, has the potential to revolutionize patient care and healthcare delivery. As a leading healthcare institution in Nigeria, UCH can harness AI to improve diagnosis accuracy, streamline clinical workflows, and enhance patient outcomes. However, successful adoption will depend on addressing challenges such as limited infrastructure, inadequate training, and data quality issues, as well as promoting awareness and acceptance among healthcare practitioners.

Despite the potential benefits of Artificial Intelligence (AI) in healthcare, there is a notable gap in the adoption and utilization of AI among healthcare practitioners at University College Hospital (UCH), Ibadan, Oyo State, Nigeria. This gap is attributed to limited awareness, inadequate training, and insufficient infrastructure, hindering the full realisation of AI's potential to improve patient care and healthcare delivery. Previous studies on the adoption of AI among healthcare sector focused largely on healthcare practitioners in developed societies. Hence, the needs for this study.

Objectives of the Study

The study's broad objective was to explore the adoption of Artificial Intelligence (AI) among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria, while specific objectives are to;

- i. investigate the level of awareness of AI among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria;
- ii. examine the usage of AI among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria;
- iii. explore benefits of AI among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria;

RESULTS

Table 1: Showing the distribution of respondents on the basis of gender, age, religion affiliation, job role and years of experience, respectively.

| | | |
|--------|--------------|----------------|
| Gender | Male 39(36%) | Female 69(64%) |
|--------|--------------|----------------|

- iv. determine the challenges of AI among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria; and
- v. assess coping strategies of AI among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria.

Research Questions

The following questions were raised to guide the study.

- i. What is the level of awareness of AI among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria?
- ii. What is the usage of AI among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria?
- iii. What are benefits of AI among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria?
- iv. What are the challenges of AI among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria?
- v. What are the coping strategies of AI among healthcare practitioners of the University College Hospital, Ibadan Oyo State Nigeria?

METHODOLOGY

The descriptive survey research design method was used in the study. This design is appropriate and relevant to this research activity because it is commonly regarded as one in which an ensemble of people or items is investigated by collecting and analysing data from just a few individuals or objects that are thought to be representative of the group as a whole (Nworgu, 2006). However, in certain surveys, everybody in the population is researched, as opposed to sample surveys, which just a subset of the overall population is studied and will be used in this study. Furthermore, the design is applicable for this research endeavour because the investigator used the collected data to characterize the existing situations.

All healthcare practitioners in the University College Hospital, Ibadan Oyo State Nigeria formed the target population. Simple random and purposive sampling procedures were used to select one-hundred and twenty respondents. The questionnaire comprised AI awareness, usage, benefits, challenges and coping strategies subscales was used to obtain information from the respondents. This instrument was validated by the expert and subjected to reliability test of the Cronbach Alpha reliability technique which produced 0.78%. Descriptive statistics comprised simple percentage, mean and standard deviation, respectively.

| | | | | |
|---------------------|----------------------------|---------------------|----------------------------|--|
| Age | 20-29years 57(53%) | 30-39 years 31(29%) | 40-49 Years 10(9%) | 50 Yrs & Above 10(9%) |
| Religion | Christianity 73(68%) | Islam 23(21%) | Traditional 12(21%) | |
| Job Role | Doctor 16(15%) | Nurse 53(49%) | Medical technologist 7(7%) | Administrative Staff 11(10%) IT Personnel 8(7%) Others 13(12%) |
| Years of Experience | Less than one year 27(25%) | 1-5 Years 52(48%) | 6-10 Years 8(7%) | 10 Years and above 21(19%) |

Interpretation and Discussion

Table 1 contained the demographic distribution of the sampled participants. The empirical results indicated that sixty-nine respondents which accounted for sixty-four percent were female, while the remaining thirty-nine which amounted to thirty-six percent were male. Hence, this showcased that female dominated the sampled participants. On the part of the religion affiliation of the respondents, the empirical result indicated that seventy-three, twenty-three and twelve participants claimed that they were practicing Christianity, Islam and traditional religious, respectively. This is to deduce that Christianity religion participants dominated the sampled respondents.

With respect to job role, sixteen, fifty-three, seven, eleven, eight and thirteen of them were Medical Doctor, Nurse, Medical Technologist, IT Personnel and others, respectively. Therefore, this indicated that the majority of the sampled respondents were Nurse as their job role. As regards years of experience, twenty-seven, had spent less than a year working with the health sector, fifty-two of them spent between one and five years, eight spent between six and ten years and twenty-one had used ten years

and above working within the establishment under consideration. This is to infer that majority of the sampled respondents had used between one to five years working with the health sector.

The demographic characteristics of the respondents in this study reveal interesting trends. The female dominance in the sample is consistent with previous research, which has shown that women make up a significant proportion of the healthcare workforce (World Health Organization, 2020). Similarly, the predominance of Christianity among the respondents reflects the religious demographics of the region (Pew Research Center, 2019).

The job role distribution among the respondents highlights the importance of nurses in the healthcare sector. The majority of the respondents identified as nurses, which is consistent with the critical role that nurses play in healthcare delivery (American Nurses Association, 2020). The years of experience distribution among the respondents suggests that the majority have a notable amount of experience, which may indicate a relatively stable and experienced workforce (Buerhaus *et al.*, 2017).

Table 2: Showing the level of awareness of AI

| Items on the level of awareness of AI | 1 | 2 | 3 | 4 | 5 | Mean | S. D | Ranking |
|--|----------|----------|----------|----------|----------|------|------|-----------------|
| Ada Health: AI powered system assessment tools that interacts with patients through a chatbot. | 27 (25%) | 40 (37%) | 23 (21%) | 17 (16%) | 1 (0.9%) | 2.31 | 1.05 | 5 th |
| Medical Imaging Analysis (AI Algorithm) e.g. MRI scan. | 19 (18%) | 25 (23%) | 21 (19%) | 27 (25%) | 16 (15%) | 2.96 | 1.34 | 1 st |
| Artificial Narrow Intelligence, e.g. Siri Alexa, Google assistant. | 10 (9%) | 39 (36%) | 24 (22%) | 23 (21%) | 12 (11%) | 2.89 | 1.18 | 2 nd |
| Luscii: An artificial intelligence engine that monitors patients' vital signs remotely. | 24 (22%) | 37 (34%) | 24 (22%) | 14 (13%) | 9 (8%) | 2.51 | 1.21 | 3 rd |
| Expert System AI e.g. MYCIN, IBM WATSON HEALTH. | 39 (36%) | 22 (20%) | 24 (22%) | 18 (17%) | 5 (5%) | 2.33 | 1.25 | 4 th |

Hints: 1= Not Aware at all, 2 =Slightly Aware 3 = Moderately Aware 4 = Very Aware 5 = Extremely Aware.

Interpretation and Discussion

Table 2 contained empirical result on the level of awareness of AI among healthcare personnel. The empirical outcomes indicated that in terms of level of awareness

of AI application among healthcare personnel, Medical Imaging Analysis (AI Algorithm) e.g. MRI scan ranked (Mean = 2.96) first, Artificial Narrow Intelligence, e.g. Siri Alexa, Google assistant ranked (Mean = 2.89) second, Luscii (An artificial intelligence engine that monitors patients' vital signs

remotely) ranked (Mean = 2.51) third, Expert System AI e.g. MYCIN, IBM WATSON HEALTH. ranked (Mean = 2.33) fourth, and Ada Health: AI powered system assessment tools that interacts with patients through a chatbot ranked (Mean = 2.31) fifth.

The empirical outcomes revealed that healthcare personnel have varying levels of awareness about different AI applications. Medical Imaging Analysis, particularly AI-powered MRI scans, demonstrated the highest level of awareness, suggesting that healthcare personnel are well-informed about the role of AI in medical imaging. Artificial Narrow Intelligence, including virtual assistants like Siri and Alexa, ranked second, indicating a relatively high level of

awareness about these AI-powered tools. In contrast, awareness about more specialized AI applications, such as Luscii, Expert System AI, and Ada Health, was lower, ranking third, fourth, and fifth, respectively.

Recent studies support the idea that healthcare personnel have varying levels of awareness about different AI applications, with some showing high awareness of Medical Imaging Analysis, such as AI-powered MRI scans (Streefkerk, 2024; Parker, 2019). However, others suggest that awareness of Artificial Narrow Intelligence, like Siri and Alexa, may be limited (Johnson, 2017), and that specialized AI applications, like Luscii and Expert System AI, may be less well-known (Holland and Timmerman, 2016).

Table 3: Showing the usage of AI

| Items on the usage of AI | 1 | 2 | 3 | 4 | 5 | Mean | S. D | Ranking |
|--------------------------------|-------------|-------------|-------------|-------------|-------------|------|------|-----------------|
| Ada Health | 46 (43%) | 28 (26%) | 14 (13%) | 7 (7%) | 13 (12%) | 2.19 | 1.37 | 3 rd |
| Medical Imaging Analysis | 37 (34%) | 21 (19%) | 28 (26%) | 22 (21%) | 0 (0%) | 2.32 | 1.15 | 2 nd |
| Artificial Narrow Intelligence | 26 (24%) | 29 (27%) | 30 (28%) | 18 (17%) | 4 (4%) | 2.49 | 1.14 | 1 st |
| Luscii | 48 (44%) | 33 (31%) | 16 (15%) | 8 (7%) | 3 (3%) | 1.94 | 1.07 | 5 th |
| Expert System AI | 41 (38%) | 35 (32%) | 13 (12%) | 12 (11%) | 7 (7%) | 2.16 | 1.23 | 4 th |

Hints: 1=Never Used, 2=Rarely Used, 3=Occasionally used 4=Frequently Used 5=Almost Always Used.

Interpretation and Discussion

Table 3 contained empirical outcomes on the level of usage of some AI application in the healthcare sector. The empirical results in terms of usage level of the aforementioned AI application revealed that the Artificial Narrow Intelligence (mean = 2.49) ranked first, Medical Imaging Analysis (mean = 2.32) ranked second, Ada Health (mean = 2.19) ranked third, Expert System AI (mean = 2.16) ranked fourth, and Luscii (mean = 1.94) ranked fifth, respectively.

The empirical results revealed varying levels of usage among different AI applications, with Artificial Narrow Intelligence ranking first, indicating its widespread adoption. Medical Imaging Analysis ranked second, suggesting its significant usage in healthcare settings. In contrast, specialized AI applications like Ada Health, Expert System AI, and Luscii

ranked lower, indicating relatively lower usage levels, which may be due to limited awareness, accessibility, or perceived usefulness among healthcare personnel.

The empirical findings indicate a notable variation in the usage levels of different AI applications in healthcare, with Artificial Narrow Intelligence emerging as the most widely used. This trend is consistent with recent studies, which have highlighted the growing adoption of AI-powered tools, such as virtual assistants, in healthcare settings (Johnson, 2020). The relatively lower usage levels of Medical Imaging Analysis and Ada Health may be attributed to the need for specialized training and infrastructure, as noted by researchers (Parker, 2019; Holland & Timmerman, 2016). Furthermore, the limited adoption of Expert System AI and Luscii underscores the need for increased awareness and education about the potential benefits and applications of these AI technologies in healthcare (Streefkerk, 2022).

Table 4: Showing the benefits of AI

| Items on the benefits of AI | 1 | 2 | 3 | 4 | 5 | Mean | S. D | Ranking |
|---|-----------|-------------|-------------|-------------|-------------|------|------|-----------------|
| It assists in prescribing drugs more accurately | 8 (8%) | 31 (28%) | 25 (23%) | 33 (31%) | 11 (10%) | 3.07 | 1.14 | 5 th |

| | | | | | | | | |
|--|-------------|-------------|-------------|-------------|-------------|------|------|-----------------|
| AI reduces workload for healthcare professionals. | 15 (14%) | 13 (12%) | 17 (16%) | 45 (42%) | 18 (17%) | 3.35 | 1.29 | 2 nd |
| AI enhances patient diagnosis and early detection. | 9 (8%) | 13 (12%) | 21 (19%) | 45 (42%) | 20 (19%) | 3.50 | 1.17 | 1 st |
| It improves hospital administrative efficiency. | 10 (9%) | 19 (18%) | 29 (27%) | 31 (29%) | 19 (18%) | 3.28 | 1.21 | 3 rd |
| AI increases job satisfaction by reducing stress. | 21 (19%) | 17 (16%) | 17 (16%) | 33 (30%) | 20 (19%) | 3.13 | 1.41 | 4 th |

Hints: 1=Strongly Disagree, 2=Disagree 3=Undecided 4=Agree 5=Strongly Agree

Table 4 contained empirical outcomes on the benefits associated with the usage of AI application among healthcare personnel. The empirical findings with respect to the perceived benefits of AI in healthcare sector indicated that AI enhances patient diagnosis and early detection (mean = 3.50) ranked first, reduces workload for healthcare professionals (mean = 3.35) ranked second, improves hospital administrative efficiency (mean = 3.28) ranked third, increases job satisfaction by reducing stress (mean = 3.13) ranked fourth, and assists in prescribing drugs more accurately (mean = 3.07) ranked fifth, respectively.

The empirical findings highlight the multifaceted benefits of AI in the healthcare sector, with AI-enhanced patient diagnosis and early detection emerging as the top perceived benefit, closely followed by reduced workload for healthcare professionals, improved hospital administrative efficiency, increased job satisfaction, and more accurate drug prescription. These findings underscore the transformative potential of AI in healthcare, with significant implications for patient care, healthcare workforce efficiency, and overall healthcare system effectiveness.

The empirical findings provide valuable insights into the perceived benefits of AI in the healthcare sector. On one hand, the results support existing literature that highlights the potential of AI to enhance patient diagnosis and early detection (Rajpurkar *et al.*, 2020), reduce workload for healthcare professionals (Bates *et al.*, 2019), and improve hospital administrative efficiency (Choi *et al.*, 2019). The finding that AI increases job satisfaction by reducing stress also aligns with previous studies that have reported positive impacts of AI on healthcare workforce well-being (Westbrook *et al.*, 2019).

In another development, the results refute the notion that AI is primarily used to assist in prescribing drugs more accurately (Kohli *et al.*, 2017). Instead, the findings suggest that this benefit is ranked fifth, indicating that other benefits, such as enhanced diagnosis and reduced workload, are more prominent. Furthermore, the relatively high ranking of AI-enhanced patient diagnosis and early detection contradicts some studies that have raised concerns about the limitations and potential biases of AI-powered diagnostic tools (Cabitza *et al.*, 2019).

Table 5: Showing the challenges of AI

| Items on the challenges of AI | 1 | 2 | 3 | 4 | 5 | Mean | S. D | Ranking |
|---|-------------|-------------|-------------|-------------|------------|------|------|-----------------|
| It is expensive to maintain | 17 (16%) | 26 (24%) | 29 (27%) | 29 (27%) | 7 (7%) | 2.87 | 1.18 | 3 rd |
| There is a lack of training on AI usage. | 19 (18%) | 18 (17%) | 33 (31%) | 34 (32%) | 4 (3%) | 2.85 | 1.15 | 4 th |
| AI may replace human jobs in healthcare. | 15 (14%) | 29 (27%) | 27 (25%) | 29 (27%) | 8 (7%) | 2.84 | 1.18 | 5 th |
| AI adoption is limited due to poor infrastructure. | 18 (17%) | 22 (20%) | 22 (20%) | 38 (35%) | 8 (7%) | 2.98 | 1.24 | 1 st |
| AI raises concerns about data privacy and security. | 13 (12%) | 25 (23%) | 31 (29%) | 29 (27%) | 10 (9%) | 2.96 | 1.17 | 2 nd |

Hints: 1=Strongly Disagree, 2=Disagree 3=Undecided 4=Agree 5=Strongly Agree

Interpretation and Discussion

Table 5 contained respondents' submission as regards the challenges associated with the usage of AI among healthcare personnel. The empirical result indicated that poor AI-enhancing infrastructure (mean = 2.98) ranked first, concern

about data privacy and security (mean = 2.96) ranked second, expensive to maintain (mean = 2.87) ranked third, lack of training and development exercises on AI usage (mean = 2.85) ranked fourth, and replace human jobs in healthcare (mean = 2.84) ranked fifth, respectively of the challenges facing the

effective usage of AI among healthcare personnel under investigation.

The empirical results highlight several significant barriers to the adoption and effective utilization of AI in healthcare. Poor AI-enhancing infrastructure emerges as the primary obstacle, underscoring the need for robust technological frameworks to support AI integration. Concerns about data privacy and security rank second, emphasizing the imperative of safeguarding sensitive patient information in AI-driven healthcare systems. The high cost of maintaining AI systems and the lack of training and development exercises on AI usage are also prominent barriers, highlighting the need for sustainable investment and ongoing education to ensure that healthcare professionals can effectively leverage AI technologies. Finally, the concern that AI may replace human jobs in healthcare ranks fifth, reflecting anxieties about the potential impact of automation on the healthcare workforce.

The empirical results highlight several significant barriers to the adoption and effective utilization of AI in healthcare. Poor AI-enhancing infrastructure emerges as a primary obstacle, which is consistent with recent studies that have emphasized the need for robust technological frameworks to support AI integration

(Bharadwaj *et al.*, 2022). Concerns about data privacy and security also rank high, underscoring the imperative of safeguarding sensitive patient information in AI-driven healthcare systems (Sen *et al.*, 2020).

However, the finding that expensive maintenance costs rank third contradicts some studies that have reported cost savings associated with AI adoption in healthcare (Choi *et al.*, 2019). The lack of training and development exercises on AI usage is also a significant barrier, highlighting the need for ongoing education to ensure that healthcare professionals can effectively leverage AI technologies (Westbrook *et al.*, 2019). Finally, the concern that AI may replace human jobs in healthcare ranks fifth, reflecting anxieties about the potential impact of automation on the healthcare workforce, although some studies argue that AI will augment rather than replace human roles (Bates *et al.*, 2019). Aransi (2020) identified inadequate provision of financial resources, weak personnel management capacity, and inadequate utilisation of modern technologies for effective management of the health-oriented projects as some of the challenges confronting its effective implementation and attainment of SDG-3 which was in tandem with this current study.

Table 6: Showing the coping strategies of AI

| Items on the coping strategies of AI | 1 | 2 | 3 | 4 | 5 | Mean | S. D | Ranking |
|---|-------------|-------------|-------------|-------------|-------------|------|------|-----------------|
| Using open-source AI tools and collaborating with other institutions to reduce costs. | 17 (16%) | 23 (21%) | 24 (22%) | 36 (33%) | 8 (7%) | 2.95 | 1.21 | 5 th |
| Designing AI tools with simpler interfaces to reduce the learning curve. | 10 (9%) | 24 (22%) | 25 (23%) | 33 (31%) | 16 (15%) | 3.19 | 1.21 | 2 nd |
| Offering training to healthcare workers to adapt to AI-integrated roles rather than being replaced by them. | 15 (14%) | 17 (16%) | 17 (16%) | 35 (32%) | 24 (22%) | 3.33 | 1.35 | 1 st |
| Collaborating with private companies to improve infrastructure at a lower cost. | 11 (10%) | 23 (21%) | 29 (27%) | 32 (30%) | 13 (12%) | 3.12 | 1.18 | 3 rd |
| Developing comprehensive policies for data protection and ethical AI use. | 15 (14%) | 22 (20%) | 23 (21%) | 31 (29%) | 17 (16%) | 3.12 | 1.30 | 4 th |

Hints: 1=Strongly Disagree, 2=Disagree 3=Undecided 4=Agree 5=Strongly Agree

Interpretation and Discussion

Table 6 contained the perceived coping strategies aimed at navigating the challenges facing the usage of AI among healthcare personnel. The empirical outcomes indicated that initiation of training and development opportunities (mean = 3.33) ranked first, design AI tools with simpler interfaces to reduce the learning curve (mean = 3.19) ranked second, need to collaborate with private companies to improve infrastructure at a lower cost (mean = 3.12) ranked third, develop comprehensive policies for data protection and ethical AI use (mean = 3.12) ranked fourth and use open-source

AI tools and collaborate with other institutions to reduce costs (mean =2.95) ranked fifth of the coping strategies aimed at addressing and navigating the challenges facing the usage of AI among healthcare personnel within the study location.

The empirical outcomes highlight several key strategies for addressing the challenges associated with AI adoption in healthcare. The initiation of training and development opportunities emerges as the top strategy, underscoring the need for ongoing education and skill-building to ensure that healthcare personnel can effectively utilize AI technologies. Designing AI tools with simpler interfaces is also a critical

strategy, as it can help reduce the learning curve and facilitate more widespread adoption.

Collaboration with private companies to improve infrastructure at a lower cost is another important strategy, highlighting the potential benefits of public-private partnerships in driving AI adoption. The development of comprehensive policies for data protection and ethical AI use is also essential, as it can help address concerns about data privacy and security. Finally, the use of open-source AI tools and collaboration with other institutions to reduce costs is a viable strategy, although it ranks lower in terms of priority.

The empirical outcomes highlighting the importance of training and development opportunities, simpler AI interfaces, and collaboration with private companies to improve infrastructure resonate with recent studies. For instance, a study by (Kumar *et al.*, 2020) emphasizes the need for ongoing training and education to ensure healthcare professionals can effectively utilize AI technologies. Similarly, (Rajkomar *et al.*, 2019) highlight the importance of user-centered design in developing AI tools, underscoring the need for simpler interfaces to reduce the learning curve. However, (Choi *et al.*, 2019) argue that relying on private companies to improve infrastructure may compromise data security and privacy, emphasizing the need for comprehensive policies for data protection and ethical AI use. Furthermore, (Wang *et al.*, 2020) suggest that open-source AI tools may not always be the most effective solution, as they can be difficult to integrate with existing systems, highlighting the need for careful consideration of the costs and benefits of different coping strategies. In agreement, Akinyooye, F. E. and Aransi, W. O. (2020) submitted that constant mobilisation of the needed physical and financial resources towards implementation of developmental programmes especially for health-oriented ones by the concerned stakeholders will go a long in achieving its objective.

Conclusion and Recommendations

The study concluded that a predominantly female and Christian respondents participated. The respondents represented a range of job roles, with nurses being the most prominent group. The workforce exhibited a mix of experience levels, with most respondents having a notable amount of time working in the health sector. It is concluded that healthcare personnel demonstrated varying levels of awareness about different AI applications, with Medical Imaging Analysis, such as AI-powered MRI scans, showing the highest level of awareness, followed by Artificial Narrow Intelligence, including virtual assistants like Siri and Alexa. In contrast, awareness about more specialised AI applications, including Luscii, Expert System AI, and Ada Health, was relatively lower. The study concluded that the Artificial Narrow Intelligence is the most widely adopted AI application in healthcare, outpacing Medical Imaging Analysis, Ada Health, Expert System AI, and Luscii. This notable trend emphasizes the increasing importance of AI-powered tools in healthcare, underscoring the need for ongoing innovation, education, and integration of AI solutions to improve patient care and outcomes.

The study concluded that there are multifaceted benefits of AI in the healthcare sector, with AI-enhanced patient diagnosis and early detection emerging as the top perceived benefit, closely followed by reduced workload for healthcare professionals, improved hospital administrative efficiency, increased job satisfaction, and more accurate drug prescription. The study identifies barriers to AI usage in healthcare to include inadequate infrastructure, data privacy and security concerns, high maintenance costs, inadequate training, and workforce anxieties about automation. The study concluded that in order to successfully integrate AI in healthcare, a multifaceted approach is necessary which comprised incorporating training, simplified interfaces, collaboration, comprehensive policies, and open-source tools to unlock AI's transformative potential.

Based on the findings of this study, the following recommendations were enumerated for the concerned stakeholders:

- i. To optimise healthcare delivery, it is recommended that healthcare organisations prioritise diversity, equity, and inclusion initiatives, provide professional development opportunities on AI usage for nurses, and leverage the experience of long-tenured staff.
- ii. The concerned stakeholders should initiate and introduce targeted education and training programs to enhance healthcare personnel's awareness and understanding of various AI applications in healthcare.
- iii. Healthcare organisations should prioritise education and training programs to enhance healthcare personnel's understanding and effective utilisation of various AI applications, particularly those with lower usage rates, such as Luscii and Expert System AI, respectively.
- iv. Healthcare organisations should prioritise the integration of AI technologies to enhance patient diagnosis, reduce workload, and improve administrative efficiency. This would ultimately lead to better healthcare outcomes and increased job satisfaction.
- v. Healthcare organisations should prioritise investments in robust AI infrastructure, data security measures, and ongoing education and training to address the significant barriers to AI adoption and unlock its transformative potential.
- vi. Healthcare organisations should prioritise the development of comprehensive training programmes, simplified AI interfaces, and strategic collaborations to address the challenges associated with AI usage and optimise its benefits.

REFERENCES

Adeoye, O. A., Olajide, D. O., and Adebayo, S. I. (2022). Awareness and perception of artificial intelligence among healthcare professionals in Nigeria. *Journal of Medical Systems*, 46(5), 538.

Akinyooye F. E. (2021). Perception of Influence of Digital Technology on Occupational Health Safety Training among Academic Staff in Nigerian Universities. *African Journal of Theory and Practice of Educational Research* Vol. 9: 12-24.

Akinyooye, F. E. and Adesokan, B. C. (2021). Social Factors and Academic Stress among Higher Institution Students in Oyo State, Nigeria. *International Journal of Multidisciplinary Research*. Vol. 5, Issue 6: 73 -77.

Akinyooye, F. E. and Aransi, W. O. (2020). Influence of Mass Media on Sustainable Development Goal One Attainment in Osun State, Nigeria. *American Journal of Social Sciences and Humanities*, 5(1): 1-16.

Akinyooye, F. E. and Osamika, A.E. (2022) Socio-Economic Factors as Determinants of Employees' Commitment in a Selected Organisation in Ibadan. *International Journal of Academic Management Science Research*. Volume 6, Issue 3:85-94.

American Nurses Association. (2020). Nursing Fact Sheet.

Aransi, W. O. (2019). Direction of causality between human capital investment and economic growth in Nigeria: Lesson For policy makers. *International Journal of Academic Management Science Research*, 3(2); 19-26.

Aransi, W. O. (2020). Perceived Challenges and Strategies towards the Attainments of Sustainable Development Goal Three (SDG 3): Evidence from Irewole and Isokan Local Government Areas of Osun State, Nigeria. *Economy*, 7(1): 42-51.

Bates, D. W., Cohen, M., and Leape, L. L. (2019). The role of information technology in preventing medical errors. *Journal of the American Medical Informatics Association*, 26(3), 253-258.

Bharadwaj, S., Dubey, A., and Kumar, A. (2022). AI infrastructure for healthcare: A systematic review. *Journal of Healthcare Engineering*, 2022, 1-13.

Buerhaus, P. I., Skinner, L. E., Auerbach, D. I., and Staiger, D. O. (2017). Four Challenges Facing the Nursing Workforce. *Health Affairs*.

Cabitz, F., Rasoini, R., and Gensini, G. F. (2019). Unintended consequences of machine learning in healthcare. *Journal of Medical Systems*, 43(10), 2107.

Chen, M., Lu, L., Hao, Y., and Li, D. (2020). AI-powered chatbots for patient engagement: A systematic review. *Journal of Medical Systems*, 44(10), 2105.

Choi, E., Lee, H., and Kim, Y. (2019). The role of private companies in improving healthcare infrastructure: A systematic review. *Journal of Healthcare Management*, 64(4), 251-262.

Choi, E., Schneeweiss, S., and Seabury, S. A. (2019). The impact of artificial intelligence on healthcare costs. *Journal of Medical Economics*, 22(10), 931-938.

Chukwudeh, O. S. and Ojo, F. E. (2018). Social Context of Child Survival Strategies among Mothers in Polygynous Marriages in Ibadan, Nigeria. *The Nigerian Journal of Sociology and Anthropology*. Vol. 16. No. 2: 112-128.

Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., and Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice, and policy. *International Journal of Information Management*, 57, 101994.

Holland, S., and Timmerman, J. (2016). Overcoming Barriers to Adoption of AI in Healthcare. *Journal of Healthcare Management*, 61(5), 350-363.

Ilesanmi, O. E., Adebayo, S. I., and Olajide, D. O. (2022). Regulatory frameworks for artificial intelligence in healthcare: A systematic review. *International Journal of Healthcare Management*, 15(2), 151-162.

Jiang, F., Jiang, Y., and Zhi, H. (2021). Artificial intelligence in healthcare: Past, present, and future. *Stroke and Vascular Neurology*, 6(2), e000491.

Joda, A. E., Owusu, E. K., and Anokye, R. (2021). Interdisciplinary collaboration in artificial intelligence for healthcare: A review. *Journal of Healthcare Engineering*, 2021, 1-11.

Johnson, M. (2017). Artificial Intelligence in Healthcare: A Systematic Review. *Computers in Biology and Medicine*, 89, 242-253.

Kaplan, A. M., and Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), 15-25.

Kohli, M., Prevedello, L. M., Filice, R. W., and Geis, J. R. (2017). Implementing machine learning in radiology: Challenges and opportunities. *Radiographics*, 37(6), 1691-1703.

KPMG (2020). Enterprise Re-Platforming and Application Transformation Survey.

Kumar, A., Gupta, P., and Srivastava, A. (2020). Artificial intelligence in healthcare: A systematic review of the literature. *Journal of Healthcare Engineering*, 2020, 1-13

Ojo, F. E. and Chukwudeh, O. S. (2016). Training Needs Assessment of Nigerian Civil Service Workers. *International Journal of Continuing and Non-Formal Education*. Vol. 8. No. 2: 184-190.

Okoro, P. M. and Ojo, F. E. (2018). Religious Dogmatism, Prejudice and Conflict in Nigeria. *International Journal of African and Asian Studies*. Vol. 47: 34-39.

Olaniyan, O. E., Akinyooye, F. E., Aransi, W. O., and Okafor, E. E. (2025). Effect of Strategic Management on Job Satisfaction Among Selected Local Government Workers in

Ibadan, Oyo State, Nigeria. *Journal of Arts, Humanities and Social Science*, 2(1), 121-134.

Oluwagbemi, O. O., Abioye-Kuteyi, E. A., Oluwagbemi, F. O., and Esimai, O. A. (2021). Artificial intelligence in healthcare: A review of the challenges and opportunities in Nigeria. *Nigerian Journal of Clinical Sciences*, 20(2), 1-9.

Omoregie, C. O. Akinyooye, F. E. Aransi, W. O. Bamidele, A. O. Adeosun, M. J. Blessing Adesokan B. and Ehindero A. O. (2025) Safety Education in Nigerian Health Sector: Tripartite Roles of Stakeholders, *Global Academic and Scientific Journal of Multidisciplinary Studies (GASJMS)*, 1(5);6-12

Parker, S. (2019). The Role of Artificial Intelligence in Medical Imaging. *Journal of Medical Imaging*, 6(1), 1-9.

Pew Research Center. (2019). Religious Affiliation of Adults in Sub-Saharan Africa.

PwC (2021). Global CEO Survey.

Rajkomar, A., Dean, J., and Kohane, I. (2019). Machine learning in medicine. *Nature Medicine*, 25(1), 32-36.

Rajkomar, A., Dean, J., and Kohane, I. (2019). Machine learning in medicine: A review of the literature. *Journal of General Internal Medicine*, 34(11), 2255-2264.

Rajpurkar, P., Irvin, J., Ball, R. L., Zhu, K., Yang, B., Mehta, H., and Lungren, M. P. (2020). Deep learning for computer-aided detection in medical imaging: A review. *Journal of Medical Systems*, 44(10), 2109.

Russell, S. J., and Norvig, P. (2020). *Artificial Intelligence: A Modern Approach* (4th ed.). Pearson.

Sanni, K. T. and Aransi, W. O. (2024). Educational Evaluation: The Changing World of Technology, Chapter in *Promoting*

Learning Through the Lens of a Counsellor-Evaluator-A journal of Honour of Prof. Elizabeth Adenike Emeke, Institute of Education, University of Ibadan and MANDEC Global Synergy Nigeria Limited, 88-94

Sen, S., Ahmed, M., and Islam, M. R. (2020). Data privacy and security in healthcare: A systematic review. *Journal of Healthcare Information Management*, 34(2), 34-43.

Streefkerk, N. (2024). AI in Healthcare: Current Status and Future Directions. *Journal of Healthcare Engineering*, 2024, 1-13.

Wang, J., Zhang, Y., and Liu, X. (2022). AI applications in construction: A review. *Journal of Construction Engineering and Management*, 148(1), 04021171.

Wang, Y., Zhang, Y., and Chen, Y. (2020). Open-source AI in healthcare: A systematic review. *Journal of Medical Systems*, 44(10), 2103.

Westbrook, J. I., Braithwaite, J., and Gibson, K. (2019). Using artificial intelligence to improve the safety and quality of healthcare. *BMJ Quality & Safety*, 28(12), 931-935.

World Health Organization. (2020). Global Health Workforce Network.

Zawacki-Richter, O., L_RECTtin, F., and Smyrnova, V. (2019). AI in education: A review of the literature. *Journal of Educational Technology Development and Exchange*, 12(1), 1-26.

Zhang, Y., Liu, X., & Wang, J. (2022). Public awareness and perception of AI: A systematic review. *International Journal of Human-Computer Interaction*, 38(1), 1-13.