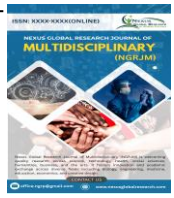
Nexus Global Research Journal of Multidisciplinary; Vol-1. Issue- 4 (Oct 2025):210-216

ISSN: XXX-XXXX (Online)

Nexus Global Research Journal of Multidisciplinary

Journal homepage: https://nexusglobalresearch.com/journal/ngrjm/



Research Article

Exploring Patient Attitude on Adoption of Artificial Intelligence in Diabetes Care

Usman Abdullahi [1], Abubakar Sadiq Bunu [2]

[1]*Office Technology and Management Department, Gombe State Polytechnic, Bajoga, Gombe State, Nigeria*

[2]*Information Technology Department, Modibbo Adama University, Yola, Adamawa State, Nigeria*

ABSTRACT

The adoption of Artificial intelligence (AI) into diabetic care has a potential to improve patient management especially in Nigeria, where diabetes poses a serious health challenge. The effectiveness of AI in patient management significantly depends on patient attitude. The paper addresses the gap in understanding the attitude of diabetic patients toward AI. The aim is to study the perspective of patient on the use of AI technologies and applications in managing diabetes. This study examines the patterns of acceptance and understanding of AI among diabetic patients. Qualitative data using interview with diabetic patient at diabetic clinic of Federal Teaching Hospital Gombe, was collected. Thematic analysis was performed in accordance with established standard for data analysis. The data revealed three central themes related to their attitudes toward the use of artificial intelligence in managing diabetes which are perceived acceptability, recognized advantages of AI tools, and the perceived necessity for such technologies. Most participants shared favorable opinions about incorporating AI into diabetes care. These results provide a foundation for developing a theoretical model to better understand how patients view AI in this context, highlighting the influence of their health experiences, technological familiarity, and social factors.

Key words: *Artificial Intelligence, Diabetes, Health management, Patient attitude*

INTRODUCTION

Artificial Intelligence (AI) has rapidly evolved into a transformative technology reshaping multiple sectors, including healthcare. Its ability to process vast datasets, recognize patterns, and support clinical decision-making has made it a valuable tool for improving disease management and patient outcomes [1]. In diabetes care, AI has demonstrated promise through mobile health applications, wearable sensors, and intelligent monitoring systems that track blood glucose levels and assist in medication adherence. Despite these technological advancements, the rate of AI adoption in healthcare remains uneven across different regions, particularly in developing countries such as Nigeria, where diabetes continues to pose a serious and growing public health challenge.

Although global studies have examined the clinical benefits and technical performance of AI-based healthcare systems, limited attention has been paid to the human and cultural dimensions of AI adoption, especially from the perspective of patients in low-resource settings. In Nigeria, the successful implementation of AI in diabetes management requires not only technical feasibility but also patient acceptance, trust, and readiness to engage with these tools [2]. Most existing literature focuses on physicians' or developers' perspectives, leaving a critical gap in understanding how patients themselves perceive AI technologies—their acceptability, perceived usefulness, and potential concerns [3]. Without this insight, AI systems may be underutilized or rejected by end-users, thereby reducing their potential impact on health outcomes.

This study therefore seeks to address this research gap by exploring patients' attitudes,

Corresponding author: Usman Abdullahi

DOI: 10.5281/zenodo.17987458

Received 02 Oct 2025; **Accepted** 06 Oct 2025; **Available online** 10 Oct 2025.

understanding, and acceptance of AI tools in diabetes care within the Nigerian healthcare context. By focusing on patients attending the Diabetes Clinic at the Federal Teaching Hospital, Gombe, the study aims to capture firsthand perspectives on the perceived benefits, needs, and trust issues associated with AI-driven diabetes management. The findings will contribute to developing a patient-centered framework for AI adoption in chronic disease care, ensuring that future AI solutions are culturally relevant, user-friendly, and aligned with the lived experiences of diabetic patients in Nigeria. This understanding is essential for policymakers, healthcare professionals, and technology developers seeking to promote equitable and effective digital health transformation in the country.

LITERATURE REVIEW

Artificial intelligence is an emerging technology that focuses on developing theories, technologies and application systems that imitate, enhance human intelligence in machines [4][5]. A popular definition of AI is making machine to behave in ways that would be referred to as intelligent if human were so behaving [6]. AI also can be seen as a systems' ability to interpret external data correctly, to learn from such data and to use those leaning to achieve specific goals and task through flexible adaptation [7].

Diabetes is considered as global health challenge in the 21stcentury due to its rising prevalence. Therefore, the emergence of AI, an enabler of digital health technology can aid in managing diabetic patient that cannot attain physical clinical appointment and improve patient self-management [8].

The adoption of AI-assisted applications is increasingly being used in medical settings recently [9]. Some of the medical AI systems are designed for clinical usage instead of direct patient engagement [9], and it can be very applicable to diabetes management [10]. for instance, there are AI tools that used to predict the risk of diabetes based on genome data, and some tools can diagnose diabetes by using electronic health record (EHR) data as well as diagnosis of diabetic retinopathy [10]. advance countries are investing in AI intergraded portable health devices and apps to enhance patient safety, increase patient care management and minimize medical bills. The AI-assisted diabetes care is shown in figure 1 [8].

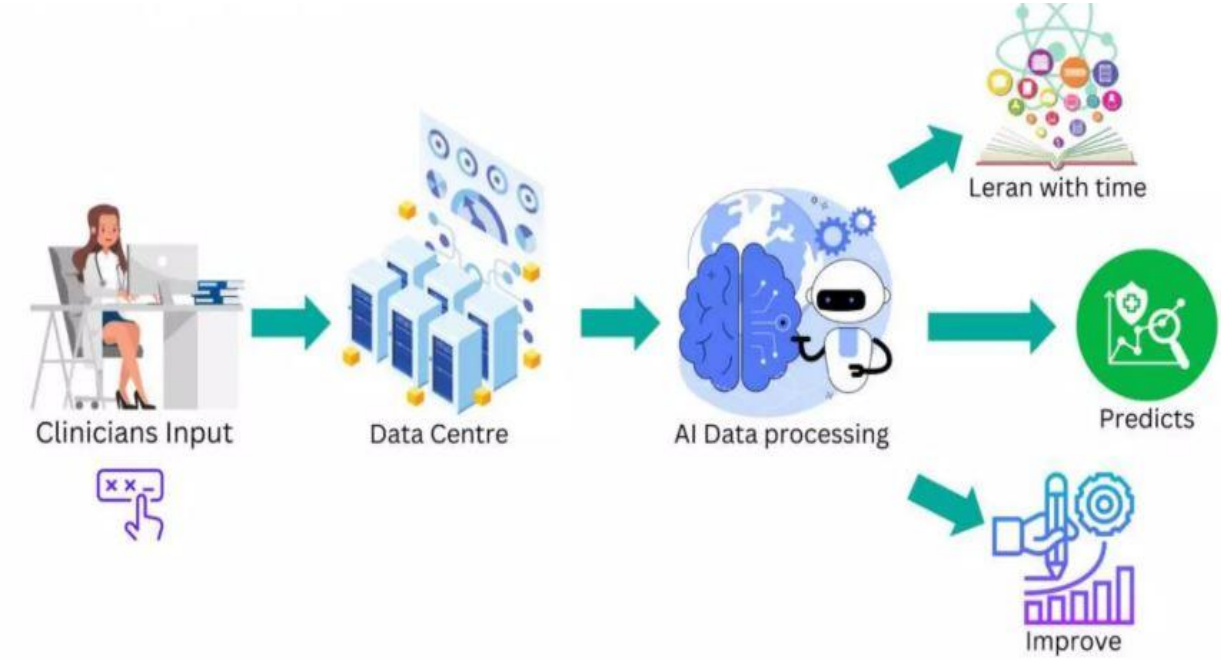


Figure 1: AI-assisted diabetes care

The AI-assisted tools provide information and guidance that is tailored to each patient unique needs and preference enhancing health outcome through improve self-management and engagement with healthcare professionals.

Table1: AI tools for diabetes management

AI tools	Sudy	Functions
PEPPER adaptive bolus advisor	Avari etal [16]	It aids in precise and adaptive treatment decision
Advanced Bolus calculator for type I diabetes	Unsworth rtal [17]	It supports better glycemic outcome
AI based dietery management and continous monitoring	Park etal [18]	It provides real-time actionable insight

The willingness to use the technology depends on the attitude of the patient toward it. Some patient may feel uncomfortable with the idea of using digital tools instead of communicating to a human doctor while some may accept the accessibility and convenience of the tools. People with negative attitude toward technology in general may also be likely to reject the use of AI tools for self-assessing.

It is anticipated that the role of AI in diabetes care will increase in the future. Thus, this technology should be adopted by patients who are important stakeholders [13]. since AI is getting dominance in health care studying the patient attitude towards AI tools in diabetes care is recently. This paper explores how patients view the application of AI in diabetes management interns of acceptability, need and benefits. This contribution is important in order to identify the precondition for the development of AI tools and provide guide on whether there is need for patient enlightenment on this technology.

METHODOLOGY

A qualitative research method was employed in this study where interview was conducted with the patient in order to identify their attitude towards using AI in diabetes care. Participants were drawn using purposive random sampling at diabetes clinic of specialist hospital Gombe, Gombe state. The participants were all more than 18 years old and fluent in either Hausa or English. A group of patients living with type 2 diabetes mellitus for at least one year were able to describe their situation each participant gave verbal consent at the onset of the interview. The demography of the participant is shown in table 2

Table 2: Demographic of respondents

		Frequency	**Percentage**
Age	26-35 years old	20	11.8
	36-49 years old	60	35.3
	50-65 years old	90	52.9
	Total	**170**	**100**
Gender	Male:	75	44.1
	Female	105	55.9
	Total	170	100
Marital status	Single	35	20.6
	Married	95	55.9
	Divorced	40	23.5
	Total	170	100
Level of Education	No formal Education	10	5.9
	Primary School	130	76,5
	Secondary School	10	5.9
	Advanced Level	20	11.8

	Total	170	**100**
Do you have any diseases other than Type 2 diabetes?	Yes	90	52.9
	No	80	47.1
	Total	170	100
Do you have experience in Using technology to monitor diabetes?	Yes	30	17.6
	No	130	82.4
	Total	170	100

Measures and intervention

The interview questions were first created in two stages by a team of survey experts, led by [13] and [14], in the Netherlands. Their goal was to understand patients' opinions about the use of AI in radiology. For this study, we used and adjusted those questions. The interview was semi-structured and followed a list of main topics.

Before each interview, participants filled out a short survey to collect basic personal information. Two members of the research team carried out the semi-structured interviews: one led the conversation while the other took notes. The interviewer began by asking about the participants' general knowledge and opinions on AI, then gave a simple explanation of AI. The interviews ended with a discussion on key topics, such as concerns about AI in diabetes care and reasons why patients are interested in it. After each interview, the interviewers compared their notes and wrote a summary for that session. This process helped improve the interview guide to make it clearer and more effective during the study.

Analyses

All interviews were recorded and written out word for word. To fully understand the data, we listened to the recordings and checked the transcripts for any mistakes. We then used a method called thematic coding to find patterns in what people said, especially focusing on their thoughts, feelings, and understanding of the topic.

Two team members read and coded each transcript line by line, working separately at first. They then met regularly to compare notes and make sure the codes made sense. If they disagreed, the whole research team discussed and agreed on the final decision.

We kept reviewing and updating the themes until no new ideas were coming up. This meant we had gathered enough information, and no more interviews were needed. We did not go back to participants to check the findings. A software program called ATLAS.ti was used to organize and manage the data.

RESULT AND DISCUSSIONS

The demographic details of the participants (patients) with type 2 diabetes are shown in Table 2. Most of the participants were women and they have other disease other than the diabetes. The study followed Braun and Clarke's [15] six-phase framework for thematic analysis (shown in Table 3). These phases are flexible, meaning the process can move back and forth between them rather than following a strict order

Table 3. SIX-PHASE FRAMEWORK

STEPS	TASK
Step 1	Become familiar with the data
Step 2	Generate initial codes
Step 3	Search for themes
Step 4	Review themes
Step 5	Define themes
Step 6:	Write-up

Regarding AI tools in diabetes care, after reviewing and interpreting the data, we identified four main areas that reflect patients' attitudes.

a) **Perceived Acceptability**

Perceived acceptability refers to patients' belief that AI tools are suitable, appropriate, and helpful for them. Many patients say they are comfortable with AI tools and are willing to use them. They are not worried about the technology and have positive expectations about how it can help. Thus, this area highlights the need to understand and consider patients' personal views and beliefs about AI tools in diabetes care to ensure the tools are accepted and effective in improving health outcomes.

b) **Perceived Need**

Perceived need refers to how patients understand their health needs and see the importance of using AI tools for support. Patients say that AI tools can help them track their blood sugar levels and suggest the right foods to eat. They also note that AI tools can send both positive and negative messages about their health status. These messages act as alerts, encouraging them to take action when needed. In short, perceived need focuses on how patients recognize and accept the importance of medical support and management through AI technology.

c) **Perceived Benefit**

Peer review benefit refers to how patients value the advantages of using AI technologies to manage their health. Patients say that AI can give them regular alerts and help monitor their health more closely. Some patients mention that AI tools can save time and money, as they only need to visit the doctor when the system signals a problem, such as unusual symptoms or reminders about possible complications. Many patients also believe that AI tools make diabetes care easier and can provide support when no one is available to help.

d) **Perceived Trust**

Perceived trust refers to how much patients believe in the reliability, accuracy, and usefulness of AI technologies in managing their health. Trust is an important factor in whether patients will accept and use AI tools. Some patients worry about how accurate AI predictions are and feel that human care is better than AI. They are also concerned about how AI tools will be used, especially for people who are not good with technology. However, patients say they are not concerned about data privacy.

Perceived trust is key to the successful use of AI in healthcare, especially for diabetes management. Building trust helps patients feel confident that AI tools are accurate and reliable. Understanding the potential of AI is important for improving the lives of people with diabetes and other long-term health conditions.

The results of this study show that patients' attitudes toward AI tools in diabetes care are complex and influenced by different factors. Some patients are excited and open to using AI tools, while others are cautious or have concerns.

From the four key areas identified, we can conclude that:

(a) patients are more likely to accept AI tools if they feel the tools are suitable and easy to use (acceptability),

(b) they see the tools as meeting their health needs (need),

(c) they recognize the benefits, such as continuous monitoring and saving time or money (benefit), and

(d) they trust the accuracy and reliability of the technology (trust).

These four areas provide a useful framework for understanding how patients view AI in diabetes care. By understanding patient attitudes, developers can create AI tools that better match patients' preferences, making care more personalized and improving the chances that patients will follow their care plans.

If patient attitudes are ignored, AI tools may be developed in a one-size-fits-all way, which might

not meet the different needs of patients. This can result in lower satisfaction and reduced effectiveness. To avoid this, it is important to listen to patient feedback, design user-friendly AI tools, and ensure that the technology is integrated into diabetes care in a way that res

pects patients' values and concerns.

This study had a few limitations. First, the results were based on data from patients at a single diabetes clinic, so they may not represent all patients with diabetes. Second, the sample size was small, with only 170 patients. While this number was enough for a qualitative study, it is not enough to draw strong conclusions about patient attitudes in other situations. Future studies could use a quantitative approach with a larger group of patients to confirm these findings.

CONCLUSION

This study found that patients' attitudes toward AI tools in diabetes care are shaped by multiple factors, which can range from enthusiasm and trust to skepticism and concern. The findings suggest that four key domains—perceived acceptability, perceived need, perceived benefit, and perceived trust—play a crucial role in determining whether patients are willing to adopt AI technologies in their diabetes management. Patients are more likely to embrace these tools if they find them suitable, recognize their relevance to personal health needs, perceive clear advantages such as continuous monitoring and cost savings, and trust the reliability and accuracy of the technology.

Understanding these attitudes is essential for designing AI tools that align with patient preferences, leading to more personalized care and better adherence to treatment plans. Ignoring patient perspectives may result in generic, one-size-fits-all solutions that fail to address the diverse needs of individuals with diabetes, ultimately reducing the effectiveness of such interventions.

ACKNOWLEDGMENT

The authors gratefully acknowledge the support of the Tertiary Education Trust Fund (TETFund) for sponsoring this research. We also extend our appreciation to the management and staff of the Federal Teaching Hospital, Gombe, for their assistance and cooperation during data collection.

REFERENCES

[1] C. Robertson, A. Woods, K. Bergstrand, J. Findley, C. Balser, and M.J.Slepian, "Diverse patients' attitudes towards artificial intelligence (AI)in diagnosis", Plos Digital Health, vol. 2, no. 5, pp. 1-16, May 2023J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68–73.

[2] A.W.K Yeung, A. Torkamani, A. J. Butte, and A.G. Atanasov, "The promise of digital healthcare technologies", Front. Public Health 11:1196596.September 2023, doi: 10.3389/fpubh.2023.1196596

[3] S. Sarwar, A. Dent, K. Faust, M. Richer, U. Djuric, R. Van Ommeren, P. Diamandis, "Physician perspectives on the integration of artificialintelligence into diagnostic pathology", NPJ Digit Med. 2019 Apr 26;2(1):1–7.

[4] E. Jussupow, K. Spohrer, A. Heinzl, J. Gawlitza, "Augmenting medical diagnosis decisions? An investigation into physicians' decisionmakingprocess with artificial intelligence", Inf Syst Res. 2020:tba. 31.Wilholt T. Epistemic trust in science. British J Phil Science. 2020 Dec23.

[5] J. McCarthy, M.L. Minsky, and C.E. Shannon, "A proposal for theDartmouth summer research project on artificial intelligence", AIMag., vol. 27, pp. 12-14, August 2025.

[6] S.J. Fritsch, A. Blankenheim, and J. Bickenbach,"Attitudes and perception of artificial intelligence in healthcare: across-sectional survey among patients",Digital Health, vol. 8, pp. 1-16, 2022.

[7] A. Kaplan, and M. Haenlein, "Siri, Siri, in my hand: who's the fairestin the land? On the interpretations, illustrations, and implications ofartificial intelligence", Bus Horiz, 62, pp. 15–25, 2019.

.

[8]] Z. Guan, H. Li, R. Liu, C. Cai, Y. Liu, J. Li, X. Wong, S. Huang, L. Wu, D. Liu, S. Yu, Z. Wang, J. Shu, X. Hou, X. Yang, W. Jia, and B. Sheng, "Artificial intelligence in diabetes management: advancements, opportunities, and challenges," Cell Reports Medicine, vol. 4, no. 10, 101213, Oct. 2023.

[9] E. Y. Kang, D.-R. Chen, and Y.-Y. Chen, "Association between literacy and attitudes toward artificial intelligence-assisted medical consultations: the mediating role of perceived distrust and efficiency of artificial intelligence," Patient Education and Counseling, vol. 139, 107529, 2023.

[10] R. Singla, A. Singla, Y. Gupta, and S. Kalra, "Artificial intelligence/machine learning in diabetes care," Indian Journal of Endocrinology and Metabolism, vol. 23, pp. 495–497, 2019.

[11] P. Esmaeilzadeh, "Use of AI-based tools for healthcare purposes: a survey study from consumers' perspectives," BMC Medical Informatics and Decision Making, vol. 20, no. 170, pp. 1–19, 2020.

[12] A. Mahlknecht, A. Engl, P. Giuliano, and C. J. Wiedermann, "Supporting primary care through symptom-checking artificial intelligence: a study of patient and physician attitudes in Italian general practice," BMC Primary Care, vol. 24, no. 174, 2023.
[13] Y. P. Ongena, M. Haan, D. Yakar, and T. C. Kwee, "Patients' views on the implementation of artificial intelligence in radiology: development and validation of a standardized questionnaire," European Radiology, vol. 30, pp. 1033–1040, 2020.
[14] M. Haan, Y. P. Ongena, S. Hommes, T. C. Kwee, and D. Yakar, "A qualitative study to understand patient perspective on the use of artificial intelligence in radiology," Journal of the American College of Radiology, vol. 16, pp. 1416–1419, 2019.
[15] V. Braun and V. Clarke, "Using thematic analysis in psychology," Qualitative Research in Psychology, vol. 3, pp. 77–101, 2006.
[16] P. Avari et al., "Safety and feasibility of the PEPPER adaptive bolus advisor and safety system: a randomized control study," Diabetes Technology & Therapeutics, vol. 23, no. 3, pp. 175–186, 2021.
[17] R. Unsworth et al., "Safety and efficacy of an adaptive bolus calculator for type 1 diabetes: a randomized controlled crossover study," Diabetes Technology & Therapeutics, vol. 25, no. 6, pp. 414–425, 2023.
[18] S. W. Park, "Validation of the effectiveness of a digital integrated healthcare platform utilizing an AI-based dietary management solution and a real-time continuous glucose monitoring system for diabetes management: a randomized controlled trial," BMC Medical Informatics and Decision Making, vol. 20, no. 156, 2020.
[19] I. Contreras and J. Vehi, "Artificial intelligence for diabetes management and decision support: literature review," Journal of Medical Internet Research, vol. 20, no. 5, 2018.
[20] A. Bohr and K. Memarzadeh, The Rise of Artificial Intelligence in Healthcare Applications, in Artificial Intelligence in Healthcare, Amsterdam, Netherlands: Elsevier, pp. 25–60, 2020.