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RESEARCH REPORT

Learning Health Systems

Exploring the use of ChatGPT as a virtual health coach for chronic disease management

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Abstract

Introduction: ChatGPT has been widely researched for its potential in gealthcare applications. However, its efficcy as a virtual health coach is one of the important areas, which can significantly contribute to the sustainablility in healthcare operations, especially in managing critical illnesses. Therefore, this study aims to analyze the use of ChatGPT as a virtual health coach for chronic disease managemet.

Methods: This study used a quasi-experimental design because ChatGPT is a relatively new technology and few people have experience with it. Patients who were receiving care outside of the hospital were included. Semi-structured interviews were conducted after a 2-week period in which participants used ChatGPT to search for health information about chronic disease management. Thirty-nine outpatients were interviewed and thematic analysis was used to analyze the interview data.

Results: The findings suggested both opportunities and challenges of using ChatGPT as a virtual health coach for chronic disease management. The major opportunities identified included life-long learning, improved health literacy, cost-effectiveness, behavioral change support, scalability, and accessibility. The major challenges identified included limited physical examination, lack of human connection, legal and ethical complications, and lack of accuracy and reliability.

Conclusion: ChatGPT-based technologies may serve as a supplementary or intermediate support system. However, such applications for managing chronic diseases must protect privacy and promote both short- and long-term positive outcomes.

KEYWORDS
ChatGPT, disease management, heath informatics

1 | INTRODUCTION

As technology advances, so does the opportunity to offer tailored self-health management and fitness coaching. Artificial intelligence (AI) is one of the most promising methods for providing individuals with individualized health management, especially for people with chronic diseases. AI can evaluate data and deliver personalized counsel to individuals depending on their specific needs.[1] Individuals can receive individualized recommendations on workouts and physical activities, diet, and maintaining healthy lifestyles with AI-powered fitness and health coaching. People can also get personalized guidance from AI on how to achieve their health goals. This can be accomplished by automatically assessing a person's health and fitness data and delivering advice tailored to their specific requirements.[2,3] AI-powered health and fitness coaching can also aid in the identification of underlying health conditions and the alerting of users to potential

health dangers.[4] Individuals can also receive personalized reminders and notifications from AI-powered health and fitness coaching, which can help them stay on track with their health and fitness goals. AI can also track and provide feedback on a person's development and results.[5,6] AI-powered health support is gaining popularity because it provides individuals with customized advice and guidance tailored to their specific needs. Individuals can use AI to rapidly and effectively achieve their health goals and manage their conditions.

Self-care for people living with chronic illnesses is heavily influenced by their level of health literacy, which can be greatly increased with the use of AI-powered solutions. Individuals with higher levels of health literacy are better able to make educated choices regarding their health. It equips people with the ability to think critically about health-related information, weigh potential consequences, and select effective methods of self-health management.[7] People may not take proper care of themselves, or make informed decisions about their health if they lack the knowledge necessary to do so. The ability to understand and use healthcare services and find relevant information for self-care is also influenced by health literacy. Higher levels of health literacy are associated with improved access to, comprehension of, and participation in all aspects of the healthcare system. As a result, they are better able to take charge of their health.[8,9]

Breastfeeding rates, children's medication dosing, and mental and physical health consequences like depression, asthma, and other symptoms are all possible repercussions of inadequate health literacy in families,[10-15] as shown in the literature on health literacy. Health literacy can be influenced greatly through the medium of education. Increased death rates, larger healthcare expenses, and increased emergency room visits are all associated with a lack of health education.[11] It is also connected to people being less likely to get regular preventative care. Care for patients with chronic illnesses may be complicated by low health literacy, and centrally planned measures toward prevention, early detection, and treatment may fail to materialize.[16,17]

The importance of health literacy research in advancing public health is growing. The role of human behavior in both the development and prevention of disease is growing.[18] A holistic perspective on health recognizes the interdependence of the individual and their surroundings[19] and places an emphasis on health as a dynamic, interactive, and complex phenomenon. Health literacy has an impact on both health-related behaviors and the prevention of disease. Keep in mind that health literacy is connected to the efficacy of healthcare decisions, the avoidance of infectious and chronic diseases, and the promotion of health to maintain or improve quality of life.[16-19]

Generative AI tools can be an effective intervention for improving the health literacy of people, thereby supporting effective self-management and preventive care for various conditions.[20] When it comes to health management and information access, ChatGPT is a game-changer. The platform is powered by AI. ChatGPT can make it simpler than ever for people to get the help they need to achieve their health goals and disease management[21] by combining the power of AI with the personalized touch of human coaches. The ChatGPT platform uses natural language processing (NLP) technology to interpret and react to user inputs, making it possible to deliver specific health and exercise recommendations. Users can now pose queries and receive insightful, precise responses in a matter of seconds.[22] Users can keep tabs on their development toward their objectives, and the platform's built-in AI will keep them inspired. ChatGPT's low price is just one more reason to use it for fitness and health coaching. ChatGPT is a free alternative to expensive health and fitness coaching services. This means consumers can get individualized recommendations for health and fitness without worrying about the expense.[23] The ChatGPT platform is user-friendly and easy to navigate. Users have access to the system at all times of the day and night. This facilitates instant access to assistance for users.

ChatGPT has been found to surpass earlier models in terms of accuracy and efficiency, as demonstrated by studies.[24,25] In addition to its usefulness for content generation and summarization,[26] ChatGPT has shown that it can generate logical and well-structured text. ChatGPT has demonstrated promise as a platform for remote medical consultations and patient care.[27,28] ChatGPT's quick and precise information can help teleconsultants make educated judgments and deliver improved patient care, while also allowing people to share general health-related information.[29] More study is required, but ChatGPT shows promise as a virtual assistant for managing chronic conditions. ChatGPT has shown promise in a number of settings, but it has also raised some legitimate concerns about its possible biases and limitations. It has been shown through studies that language models like ChatGPT might have biased results because they reinforce existing biases in the data they are trained on. Further study is required to address the limits posed by the quality and diversity of the data used to train ChatGPT.[27-29]

Koko, a non-profit that offers mental health care, ran an experiment to determine how effectively it could use AI to improve the quality of its services. According to the findings, AI-generated communications outperformed those produced by humans and took 50% less time to produce. People's negative reactions to the feature's insincerity and lack of empathy led to its swift removal from the platform.[30,31] This demonstrated that while AI can help with some areas of self-health care, it is no substitute for the personal attention and emotional connection that humans provide for achieving the highest levels of mental health and happiness. However, there are a few instances, where ChatGPT was found to be highly effective in acting as a virtual coach for sports persons by preparing an effective plan for diet and physical exercises and monitoring the developments among a sports person, who won an Olympics medal in eight-lifting.[32]

Although there are very few studies focusing on the use of ChatGPT in public health, there are mixed results, which makes it complex to analyze the use of ChatGPT as a virtual health coach for managing chronic diseases. The impact of ChatGPT as a virtual assistant on chronic-ill patients in the healthcare industry is not a well-established fact as there may be limited research or data available on the topic. However, in general, ChatGPT can potentially improve self-management practices and learning processes by providing quick and accurate information to patients, helping them make informed decisions and better manage the condition. ChatGPT can also help patients save time and improve efficiency by reducing the need to manually search for information. Additionally, the use of ChatGPT can

enhance the overall patient experience by providing fast and reliable information. It is important to note that the actual impact of ChatGPT on patients in the healthcare industry will depend on various factors such as the implementation and usage of ChatGPT, the training provided to patients, and the context in which it is used. Further research and evaluation are needed to fully understand the impact of ChatGPT in healthcare. In this context, this study aims to analyze the use of ChatGPT as a virtual health coach for chronic disease management. In this context, the following research questions were formulated.

1. Can ChatGPT promote health literacy among patients?
2. Can ChatGPT support patients with chronic illnesses in self-managing their conditions?

2 | METHODS

This study used a quasi-experimental design because ChatGPT is a relatively new technology and few people have experience with it.

2.1 | Study settings and participants

Based on the preliminary research through the literature study, several aspects were evaluated for evaluating ChatGPT's function as a health information resource. Outpatients at the King Fahad University Hospital in Saudi Arabia who were receiving outpatient care for a variety of chronic diseases such as cancer, diabetes, and kidney failures were included in the study. Patients were approached and asked to take part in the study during their routine outpatient visits. Patients gave their consent to have the ChatGPT application (free version 3.5) used by themselves for 2 weeks at home to research various aspects of general health, diseases, and healthy lifestyle choices that promote self-health management. The participants were given carte blanche to pose whatever subject they liked so long as it pertained to health and lifestyle. The interviews took place at the University hospital 2 weeks after the end of the experiment. At least two persons engage in a discourse about a topic of mutual interest in a semi-structured interview, which allows for and even encourages differences of opinion on how to interpret the data and the presentation of alternative viewpoints.[33] Researchers and interviewers have the option of using semi-structured interviews[33,34] due to the flexibility they allow in terms of question formulation before the interviews and the ability to add additional pertinent questions at any point in the interviews.

2.2 | Recruitment and sampling

Researchers needed an accessible sample since they needed to give study participants adequate time to use ChatGPT. This study followed the trend of other studies using a combination of convenience and purposeful sampling.[35] About 68 adult patients were first asked if they would be interested in participating in the study, and 41 of them expressed an interest in doing so. Only 29 of the 41 patients had any idea what ChatGPT was or did. This led to the selection of 29 patients for inclusion in the study. Patients were given a complete explanation of the study's goals and a chance to provide informed consent during their outpatient appointments. The patients were given a few suggestions on using ChatGPT. Firstly, they were asked to assign a role for ChatGPT as a virtual health coach, and then proceed with the questions of their choice. After receiving permission, the patients used ChatGPT for 2 weeks while at home. For 2 weeks, participants were encouraged to spend at least 15 min each day chatting with ChatGPT3. Qualitative studies, especially those that rely on in-depth, one-on-one interviews for data collection, were found to benefit from a sample size of 20-30.[36] This qualitative quasi-experimental study therefore considered data from a total of 29 outpatients.

2.3 | Questionnaire design

There is no one set method for conducting a semi-structured interview. It is important to note that the researchers in these interviews generate a small number of first interview questions rather than using a prepared set of questions, as in structured interviews. It is possible to add new questions or expand on previous ones based on the answers of the interviewees.[37] So, the authors devised an interview sheet with four questions about age, education, employment, and gender distribution. In addition, 10 questions probe how the participants' use of ChatGPT altered their perspectives on the platform as a health information resource. The survey questions are in Appendix A. To conduct the interview in Arabic, the questions were translated by a professional translator. Two eHealth professors at Imam Abdulrahman Bin Faisal University attest to the accuracy of the questionnaire's translation. The Arabic translation has been revised to incorporate the revised grammar.

For this study's data collection, semi-structured interviews were conducted in Arabic at the university hospital. Audio recordings of the interviews were made. A median of 56 min was the length of each interview, with a range of 50–60 min. The interviews were recorded with the participants' permission.

2.4 | Data analysis

The taped interviews were transcribed into text documents using NVivo interview analysis software. The Arabic interview transcripts were translated into English for further analysis. A theme analysis approach proposed in[38] was used to analyze the interview data. Initially, each transcript of an interview was found to have a unique set of codes that emphasize certain pieces of data. The similarities between the codes led to the development of overarching themes that guided further data analysis.

2.5 | Ethical considerations

Ethical approval for the study was given by the research committee of Abdulrahman Bin Faisal University. All relevant ethical considerations

were taken into account during data collection and analysis. Both the goals of the study and the participants' rights under the law were made clear to them. Each interviewee was given a fictitious name to ensure their privacy. Participation in the interviews was voluntary, and all participants gave their informed consent before they began.

3 | RESULTS

Twenty-nine outpatients participated in the semi-structured interviews. The participants details are presented in Table 1.

The analysis of interview data resulted in identifying a total of 20 themes/factors which were categorized into opportunities (10) and challenges (10) in using ChatGPT as a virtual coach for chronic disease management. These are presented in the following sections.

3.1 | Opportunities

Based on the analysis of interview data 12 themes were identified reflecting the opportunities/advantages of using ChatGPT as a virtual health coach for chronic disease management. These include the following.

3.2 | Continuous or life-long learning

The majority of the participants (26/29) opined that ChatGPT could support them in life-long learning, especially in health education. Few participants (8/29) observed that they could enhance their awareness levels in relation to the latest developments in healthcare technologies, treatments, diagnosis, and research by collecting information from ChatGPT at regular intervals. These findings can be inferred from the following statements.

> "*Considering my busy life, and occupying with business related works, I hardly get time to learn about good healthcare practices such as diet control, physical activities in order to control my sugar levels. With ChatGPT, I can learn the healthy practices at regular intervals, which also helps me in continuous learning*"

> "*I can learn a lot now, not depending on Google, browsing different websites for information. I can simply ask ChatGPT about health information, and I get answers. The most important benefit is that, I can update myself with the prevention measures of cancer, new symptoms, treatment procedures, and also any developments in cancer research*."

TABLE 1 Demographics of the participants.

Demographic data	Frequency
Gender	
Male	14
Female	15
Age	
18–30 years	12
31–40 years	11
41–50 years	6
Education	
Diploma	9
Bachelor's degree	12
Master's degree	8
PhD	0
Employment status	
Employed	21
Unemployed	7

4 | SCALABILITY

Many participants (23/29) have observed that they find it hard to get appointments of healthcare specialists related to their chronic diseases; and also, they stated that they do not get enough time from the specialists to learn more about their conditions, preventive measures, treatment procedures, and so on. However, they observed that using ChatGPT they can decrease their reliance on specialists for information, as they find it hard to get appointments. Moreover, a few participants (11/29) observed that the application can be used by a large number of people at once, which can help in improving self-management practices and promoting this behavior. These findings can be inferred from the following statements

> "*I feel the application has scalable support and can be used by large number of patients; helping them in accessing important information and reducing the dependency on appointments for specialists for information seeking*"

> "*This can be very effective as it provides information for various diseases. This can help in promoting learning behavior and self-management practices among the patients*."

4.1 | Cost-effective

All the participants acknowledged the cost-effectiveness of ChatGPT when questioned by the researcher. They observed that it, being a free tool can be accessed by anyone with access to the internet, which can reduce the disparities among the people in accessing health information; and can effectively contribute to public health literacy levels. However, a few participants (12/29) expressed their concerns

that it may come at a price very soon, as this is only a free version, and is available only when the user demand is low.

4.2 | Reminders

One of the commonly expressed challenges of managing their conditions by the participants is that they forget to take medications or forget about daily activities like exercise, meditation, and other healthy activities as prescribed by doctors. However, they observed that they were not able to set reminders for these things using ChatGPT, but expressed their thoughts that if ChatGPT is integrated with other health management applications that are promoted by the hospitals and governments for managing diseases, they can easily set reminders simply by giving a command rather than following many steps in selecting the time, adding a note as available on other health applications.

4.3 | Behavioral change support

Most of the participants (18/29) observed that ChatGPT has assisted them in modifying their behavior in terms of healthy practices such as adopting healthy diets, having good sleep, practicing workouts daily, doing meditation, controlling thoughts, and being self-motivated. These findings can be inferred from the following statements.

> "*ChatGPT really influenced the way I think, the way I do my daily activities. By becoming more aware about the healthy lifestyles, ChatGPT motivated me in changing my daily activities, like ensuring 3000 steps walking daily, doing yoga. I feel more energetic and active after two weeks, resulting in reduction of 3kgs*."

> "*I have some health issues due to which, I feel anxiety and stress. As a result, I could not sleep, and focus on work. However, ChatGPT provided various suggestions, which helped me in controlling my mood and thoughts, getting good sleep, which I feel an important change that I observed after using the application*"

4.4 | Adaptability—Adaptable communication; Integration and analysis (wearables)

Almost half of the participants (14/29) observed that ChatGPT was able to adjust its communication styles according to their preferences and needs. Furthermore, few participants opined that, integrating the application with smart device technologies and wearables, and can analyze and monitor personal health data, based on which personalized recommendations and plans can be developed. These findings are inferred from the following statements.

> "*I use smart patches for continuous glucose monitoring; the problem is that, it does not share data in real time; and the application that records data is remotely monitored by the diabetic coach, who plans my daily routine such as diet, minutes of walking, physical activities etc. I feel if ChatGPT is integrated with device in real-time, I no longer need to wait for response from my diabetic coach, as it can provide notifications and suggestions in real-time*"

> "*I was surprised when the application started to respond to me in Arabic on my request, as I was not aware this feature. It helps many people, who are not very fluent in English language*"

4.5 | Peer support

Although ChatGPT directly does not facilitate peer and community support, it provides users with useful resources like online communities related to cancer support, and mental health support, which are used by the participants in joining various communities where they could find social support. This indirect support was observed by a few participants (11/29), who were seeking to join online social communities, and ChatGPT was able to provide many suggestions.

> "*I joined Saudi cancer support groups, after referred by ChatGPT, where I could interact with other patients and exchange my feelings and views. Thanks to ChatGPT*"

4.6 | Goal-setting; Tracking and monitoring

ChatGPT was found to be effective in supporting patients with goal setting, tracking, and monitoring key health indicators. A few participants (9/29) observed that they were able to monitor and track their weight, blood pressure, sugar levels, and positive and negative thoughts by interacting with ChatGPT by sharing the data and asking for feedback. A few participants (12/29) also stated that they were motivated by the responses from ChatGPT, which encouraged them to achieve their health goals. More than half of the participants (16/29) stated that they were satisfied with the support they received in monitoring and tracking their health conditions, which play a crucial role in self-health management.

4.7 | Engagement

The majority of the participants (23/29) found ChatGPT to be engaging as they were able to learn and interact effectively with the application. The reasons for engagement as mentioned by participants included faster responses, time saving, easy to use, and free of cost. This can be inferred from the following statements.

"*It is very simple to use. Just ask a question, you get the answer. Its quick responses made me to engage more on it, as it does not waste time and provides accurate data*"

"*It is free of cost, and provides more accurate, clear and reliable information faster than the other health applications. I feel, it is better to engage more on ChatGPT rather than wasting time on other applications, which are less reliable and slow*"

4.8 | Accessibility

Most of the participants (24/29) found that ChatGPT can be used from multiple devices from any location with internet access. They found it to be convenient for them, as they can engage with the application on their mobile phones while traveling, or when out of station, without missing a routine. It is important that patients with chronic diseases need regular monitoring and tracking of the key indicators; thus, using ChatGPT, patients can access their health data and other information from any location at any time. Moreover, few participants (7/29) observed that ChatGPT could be easily used by patients in rural areas who do not have good healthcare services, as it can be easily accessed from any mobile device with the internet, and can also be easily used, just by asking a question.

4.9 | Challenges

Based on the analysis of interview data 10 challenges were identified with using ChatGPT as a virtual health coach for chronic disease management, which include the following:

4.10 | Limited physical examination

Almost all the participants (27/29) opined that the lack of physical examination by a healthcare specialist was one of the major concerns. Few participants observed that they needed to explain symptoms to ChatGPT, and it is possible that they may forget a few symptoms, which can lead to inaccurate diagnoses of the conditions. These findings are inferred from the following statements.

"*I feel, it is important to be examined by the physicians physically, as they are experienced and knew different signs and symptoms. However, ChatGPT solely relies on our inputs, which can be sometimes dangerous as it may lead to wrong diagnosis*."

"*I always prefer physical examinations, as my condition for high blood sugar impacted other organs like my eyes and kidneys, and whose symptoms are unknown to me…I think ChatGPT is ineffective in assessing such symptoms*"

4.11 | Lack of human connection

Few participants (13/29) observed a lack of empathy, and concern for patients was missing on ChatGPT platform. They observed that when interacting with real healthcare professionals who can understand their emotions, provide personalized advice, and offer emotional support, they felt confident and motivated which goes beyond what ChatGPT could provide. However, they also expressed that it was not easy to get specialist appointments regularly, as managing chronic diseases requires regular monitoring and feedback.

4.12 | Complexity of individual cases

It was observed that ChatGPT was effective in understanding a few cases, but it was not effective in understanding complex cases that may be specific to individuals. For example, one of the participants stated that

"*ChatGPT provided accurate analysis of my condition, when I provided average blood sugar readings for a week, and suggested few ways to control blood sugar levels*"

The above statement indicated a good analysis of diabetes. However, another participant with diabetes stated that

"*I have several conditions due to uncontrolled diabetes, including kidney, liver, skin, and eyes problems. The application was ineffective in assessing my condition, as it was not able to link the causes of problems to diabetes, and provided individual suggestions related to each condition. However, my personal doctors understand the under linked connection between the other conditions and diabetes and accordingly modifies my treatment plans*"

In this case, the complexity of the condition was not understood by ChatGPT, indicating that ChatGPT may be ineffective in analyzing the complexity of individual cases, but may be effective in analyzing general conditions.

4.13 | Privacy and security

Almost half of the participants (14/29) highlighted the privacy and security concerns in using ChatGPT for personalized advice. This is evident from the following statements.

"*I am not confident enough in sharing my personal health data with ChatGPT as it is based on AI, and there is high possibility that the data could be misused*"

"*There is no anonymity feature, as I need to register for using ChatGPT, although it is free. My personal chat is*

being saved by the application. All these indicates that my data could be compromised, as there are no details about the security infrastructure of the application"

4.14 | Legal and ethical challenges

There are various legal and ethical concerns raised by the participants which included privacy, confidentiality, compliance with regulations, lack of guidelines for data protection, and policies for mitigating risks. Participants observed that they are not aware of the data protection policies, the information that they usually get from hospitals when they provide their health information for storage at hospitals. Furthermore, they are not aware of legal remedies in case their data is misused, as the application is not run by humans, but by machines. Most of the participants (16/29) observed concerns over privacy, confidentiality, and data security that are paramount when dealing with sensitive health information.

4.15 | Language and cultural barriers

Although ChatGPT was observed to be communicating in the Arabic language, there are few instances, where participants observed its ineffectiveness in understanding particular dialects and phrases leading to miscommunication. Very few participants (6/29) observed that a few phrases (informal language) were misunderstood by the application, and they had to rephrase (formal language) to get the right answers. Furthermore, the application was not effective in understanding cultural contexts in traditional medicine, which has been in practice for centuries, as observed by the participants.

4.16 | Technical limitations

Few participants (9/29) observed that the application did not provide clear answers on the data sources on which it was trained or the last time when it was trained; and it provided a general answer that it gets trained regularly. As a result, the participants observed it as a limitation, because they may miss out latest health updates on diseases or policies from the government if ChatGPT was not updated.

4.17 | Diagnostics limitations

Many participants (19/29) observed diagnostic limitations of ChatGPT, especially in relation to the analysis of radiology reports, blood tests, and other reports. Participants observed that there was no option for them to make ChatGPT analyze their reports or conditions, except by providing textual inputs, which is not possible in all the cases. Furthermore, they stated that the application always reminded them to seek medical advice from professionals for diagnosis information.

4.18 | Lack of reliability and trust

As stated in the diagnostic limitations, participants observed various aspects such as legal, ethical, and data-related limitations, which resulted in a lack of reliability and trust in ChatGPT for Virtual health coach for managing chronic diseases. For instance, one of the participants stated that

"*The application itself mentions that it may miss some data while training and its output may be inaccurate if there is bias in the data it was trained on. Furthermore, the application, frequently asks to rely on medical advice from professional. All these factors make it less reliable and trustable*"

4.19 | Emergency situations

Most of the participants (25/29) observed that ChatGPT is highly ineffective and unsafe in the events of emergencies for chronic disease patients, as it may lead to unfruitful events or serious conditions. For instance,

"*I cannot rely on the application, if I am experiencing severe pain in my chest, as I had heart attack before. I had to rush to hospital. Therefore, in emergencies, the application may not be helpful like a nurse, who can handle the situation to an extent*"

5 | DISCUSSION

The findings from the interview have indicated both opportunities and challenges of using ChatGPT as a virtual health coach for managing chronic diseases. Focusing on the opportunities, AI-based applications were identified to be effective in acting as health coaches for managing health conditions as observed in Refs. 5-9. One of the significant findings in this study is the contribution of ChatGPT in providing health education and improving health literacy, one of the common problems observed across all the countries globally.[39,40] Health literacy is associated with many benefits such as effective decision-making, improved self-management, and quality of life.[16-19] Furthermore, ChatGPT's virtual nature allows it to scale its support to reach a large number of individuals simultaneously, which can greatly contribute to improved health literacy. It can provide consistent guidance and support to a wide user base without limitations related to the availability of healthcare professionals. This scalability makes it possible to extend self-management resources to more people, potentially reducing the burden on healthcare systems. For instance, ChatGPT can assist individuals in setting goals and tracking their progress over time. It can help individuals monitor key health indicators, such as blood pressure, blood glucose levels, or weight, and provide feedback based on the data shared. This tracking and feedback

mechanism can enhance self-accountability and enable individuals to make adjustments to their self-management strategies as needed.

ChatGPT as a virtual health coach can be a valuable tool for the chronically ill, especially older patients in disease management due to its user-friendly interface and adaptable communication style. Firstly, it can offer simplified and easily understandable information about their condition, treatment plans, and medication schedules, catering to older individuals who might prefer straightforward explanations. Additionally, ChatGPT can provide reminders for medication intake, appointments, or lifestyle adjustments, assisting seniors in adhering to their healthcare regimen. Its non-judgmental and patient-centric approach can encourage open conversations, allowing older patients to discuss concerns or ask questions without feeling intimidated. Moreover, it can adapt its communication to suit various literacy levels, making it accessible to a wider range of older adults. Overall, ChatGPT's adaptability and supportive nature make it a promising virtual health coach for older patients managing chronic diseases.

ChatGPT can assist individuals in behavior change efforts by providing evidence-based strategies, personalized goal-setting techniques, and reminders for healthy habits. It can help individuals identify barriers to behavior change and explore solutions to overcome them. This behavior change support can empower individuals to adopt healthier lifestyles and adhere to self-management plans. Similarly, studies[41,42] have observed significant potential for AI-based applications in promoting health behavior changes among people, which could lead to effective self-management practices and which in turn leads to effective chronic disease management. This process can be further improved by integrating ChatGPT with other applications. ChatGPT can integrate with wearable devices, health apps, and electronic health records, allowing for seamless data sharing and analysis. By analyzing the collected data, ChatGPT can provide personalized insights, identify trends, and offer recommendations based on individual health patterns. This data-driven approach can enhance the effectiveness of self-management strategies and support better health outcomes. It can use plain language, provide explanations, and adjust its tone to ensure clear and effective communication. This flexibility enables individuals with different levels of health literacy or language proficiency to engage comfortably with the virtual health coach. The benefits of AI integration with the Internet of Things (IoT), wearables, and smart devices are observed in various studies[43-45]; however, the need for extensive research in different contexts was recognized to generalize the impact.

However, potential challenges were observed in the findings, which may significantly limit the use of ChatGPT as a virtual health coach for chronic disease management. ChatGPT lacks the ability to perform physical examinations or assess vital signs, which are crucial for diagnosing and monitoring certain chronic diseases. This limitation may restrict its ability to provide comprehensive and accurate guidance, particularly for conditions that require physical assessment. Complexity in individual cases. ChatGPT's effectiveness may vary based on language proficiency and cultural context. It may struggle to understand colloquial language, dialects, or idioms, potentially leading to miscommunication or inadequate guidance. Adapting ChatGPT to different languages and cultures requires careful consideration and customization to ensure its effectiveness across diverse populations. In addition, the unclear legal and ethical compliances, guidelines on practices, adoption of health standards, and lack of reliability and accuracy of information significantly affect the users' trust, which may limit their engagement with the application, as observed in.[46,47] However, recent evidence with newer versions of ChatGPT is proving that its diagnosis capabilities are better than the doctors, and provide reliable and accurate information.[46,48-50]

AI-enabled, empathetic technologies could play a significant role in addressing these challenges and facilitate increasing adoption and expanding reach. Although this technology can aid in the management of these obstacles, it should never supplement the time spent with a healthcare professional for managing chronic diseases. Nevertheless, ChatGPT-based technologies may serve as a supplementary or intermediate support system. However, such applications for managing chronic diseases must protect privacy and promote both short- and long-term positive outcomes.[51,52]

The findings in this study can have both theoretical and practical implications. Firstly, this study contributes to the AI-based applications in healthcare research theoretically focusing on the management of chronic diseases. Secondly, this study presents the opportunities and challenges of using ChatGPT for managing chronic diseases, which can aid researchers, developers, and policymakers in developing strategies to address the challenges and enhance its integration into healthcare, as it can significantly reduce healthcare costs, demands, and burden on the existing resources. This study also has a few limitations. Firstly, this study sample was only limited to chronically ill patients in a particular region, therefore, the results should be generalized with care. Secondly, the sample only included patients. However, using diverse samples such as patients, physicians, nurses, and other resources could have contributed to more quality results. Future research can focus on these areas and address limitations, which can be used to generalize the impact of ChatGPT in managing chronic diseases.

6 | CONCLUSION

The purpose of this study is to assess the role of ChatGPT as a virtual coach for chronic disease management. Accordingly, the results of this study show that ChatGPT has great potential for disseminating health-related information to the public thanks to its accessibility, multilingualism, convenience, availability, and ease of use, all of which can significantly cut healthcare costs and demand by promoting self-management practices for chronic diseases. However, some issues relating to ethics, privacy and security, and legality must be resolved before ChatGPT can be used as a trustworthy health coach. Research into the application of AI-based technology to manage chronic diseases is still in its infancy because health literacy, one of the important factors in self-management is influenced by a wide range of characteristics across countries. Researching the effects of ChatGPT on various communities to improve health literacy and manage chronic diseases

is important, but more extensive studies across multiple locations are needed to draw firm findings.

CONFLICT OF INTEREST STATEMENT

The author asserts that he has no conflict of interest to declare

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APPENDIX A: SURVEY QUESTIONNAIRE

1. What are the current challenges in managing chronic diseases that you think a virtual health coach like ChatGPT could help address?
2. How do you envision ChatGPT functioning as a virtual health coach for chronic disease management, and what specific tasks or interventions do you see it providing?
3. What concerns or reservations do you have about using a language model like ChatGPT as a virtual health coach for chronic disease management?
4. How do you think the use of ChatGPT as a virtual health coach could impact patient engagement and adherence to treatment plans?
5. What ethical considerations do you think should be taken into account when using a language model like ChatGPT as a virtual health coach for chronic disease management?
6. How do you see the role of healthcare providers changing if ChatGPT is used as a virtual health coach for chronic disease management?
7. What steps do you think need to be taken to ensure that ChatGPT is effective and personalized for patients with chronic diseases?
8. What challenges do you foresee in implementing ChatGPT as a virtual health coach for chronic disease management, and how do you suggest addressing these challenges?
9. What do you see as the potential benefits of using ChatGPT as a virtual health coach for chronic disease management, both in terms of patient outcomes and healthcare system efficiency?
10. How do you see the field of chronic disease management evolving with the use of advanced language models like ChatGPT, and what opportunities do you see for collaboration and innovation?