Improving the Quality of Life: The Experience of Women with MS from AI Chatbot Program

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Abstract—¹ This study examines the impact of using artificial intelligence chatbots on improving the quality of life for women with multiple sclerosis (MS) in Iran. Using a qualitative method and semi-structured interviews, the experiences of women participating in relation to the functionality of AI chatbots were analyzed. The findings indicate that chatbots can play a significant role as supportive and informational tools in managing the disease, reducing anxiety, and improving communication for these women. Additionally, these tools assist in organizing daily tasks and reducing feelings of loneliness. Although some participants pointed to an excessive reliance on chatbots, overall, the results show more positive effects compared to the disadvantages of this technology. Ultimately, the research suggests that future studies should explore the psychological and ethical impacts of using chatbots more deeply.

Keywords— Multiple Sclerosis (MS), Quality of Life, AI Chatbots, Artificial Intelligence, Qualitative Method

INTRODUCTION

Multiple sclerosis (MS) is a disease that affects the central nervous system and is characterized by alternating periods of relapse and remission. It is one of the most common neurological disorders in women [1]) and affects more than 2.5 million people [2]. In Iran, the prevalence of MS reaches 137.6 cases per 1000 people [3] Multiple sclerosis profoundly affects the quality of life and family and professional relationships of patients and brings physical, cognitive and social disabilities [1]. It seems that achieving a good quality of life with MS requires well-developed coping strategies [4].

In this context, new technologies and artificial intelligence (AI) can be proposed as strategies for improving patients' quality of life. Social chatbots, as intelligent conversational systems, are capable of engaging in empathetic conversations with humans [5]. These chatbots, due to their interactive nature, have garnered considerable attention in human-computer interaction studies. Chatbots have the potential to increase access to mental health interventions and, in particular, can encourage interaction among individuals who might otherwise avoid seeking mental health advice due to stigma [6], [7], [8].

Recent research has demonstrated that chatbots can influence the formation of human-computer relationships (HCR) and contribute to the development of attachment, perceived closeness, and the quality of interactions between users and these technologies. Despite the widespread applications of AI in health and psychology, no research in Iran has yet examined the impact of chatbots in this field. However

, numerous studies in other parts of the world have explored various applications of this technology. In a systematic review [8], the most frequent focus of chatbots was on depression. Additionally, several studies have assessed the effectiveness [9], [10], acceptability [11], [12], usability [5], [13], and adoption [14], [15] of chatbots for various mental health purposes. Chatbots have been shown to help reduce symptoms of depression and anxiety [16]. Additionally, they can function as a complement to traditional mental health treatments and be particularly beneficial for individuals with limited access to in-person therapies [17].

In recent years, advancements in information technology and artificial intelligence have provided new opportunities for enhancing therapeutic methods and supporting patients. The use of artificial intelligence (AI) has quickly become a key tool in medical care, raising hopes for improving efficiency and providing optimal support in medical practices in the years to come. These models have sparked extensive discussions among the general public, researchers, and medical professionals, showcasing the potential opportunities these technologies offer for various applications [18]).

As we enter a new era of AI applications, it is essential to explore the use of these models in different aspects of healthcare, including disease diagnosis and patient education. This research also aims to investigate the effects of chatbots on the lives of women with multiple sclerosis in Iranian society and seeks to gain a deeper understanding of how these women interact with these emerging technologies.

LITERATURE REVIEW

The Technology Acceptance Model (TAM) was introduced by Fred D. Davis in 1989 and is one of the most widely used models for studying the adoption and use of new technologies. This model suggests that two main factors, "perceived usefulness" and "perceived ease of use," influence individuals' attitudes toward using technology, which ultimately leads to either acceptance or rejection of the technology [19].

The Human-Computer Interaction (HCI) theory explores how humans engage with computer systems, focusing on factors that affect interaction quality, user satisfaction, and system efficiency. In the context of chatbots, HCI helps analyze elements such as user interface design, chatbot persona, and the system's ability to establish empathetic communication, all of which influence the overall user experience [20].

METHOD

To gain a deep understanding of the experiences of women with MS regarding chatbots, we conducted a qualitative research study involving users of GPT chatbot, as well as users of Zigbee and Gemini. The qualitative design of this study allowed for addressing some existing knowledge gaps. The nature of the qualitative approach enabled the inclusion of a sample of experienced chatbot users overall [21]. We employed thematic analysis, following Braun and Clarke's (2006) approach, to identify recurring themes in participants' experiences. The analysis involved familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. Semi-structured interviews were employed as the data collection method.

The sampling method used in this study was purposive sampling, in which participants were selected based on specific criteria.Inclusion criteria included a confirmed diagnosis of MS, an age range of 20 to 40 years, and the ability to use technology. Exclusion criteria involved being inactive or unwilling to participate.

The participants in this study were 12 women diagnosed with multiple sclerosis (MS) who were receiving support from a non-governmental organization in Khomeini Shahr, Isfahan Province. Their ages ranged from 29 to 40 years. In terms of education, all participants held a high school diploma. Regarding marital status, two participants were single, while the rest were married. The duration of illness among the participants was more than five years, with a maximum of ten years. Additionally, all participants had the relapsing-remitting type of multiple sclerosis (RRMS).

Participation in AI training courses at the Baghiyatollah Al-Azam charity institute over the past three months could have significantly influenced the participants' perceptions and interactions with chatbots. Previous research suggests that a three-month period is generally sufficient for users to develop a functional understanding and experience with AI systems. Additionally, feedback from participants indicated that they had gained confidence and familiarity with chatbot interactions during this time. Therefore, we consider this duration appropriate for assessing their experiences and perspectives. It was long enough to observe changes but short enough for participants to recall events accurately. However, we acknowledge that learning about AI chatbots during this period may have influenced participants' perceptions, which is an inherent aspect of studying evolving user experiences. Due to the unavailability of the free version of GPT-4, participants mostly used GPT-3.5 or other chatbots that did not require VPNs. Participation was based on informed consent, where information regarding the study's purpose, the voluntary nature of participation, and data processing methods was provided.

Interviews were immediately transcribed from the audio recordings and analyzed for content classification [22]. Each line of the transcripts was numbered and each participant's text was color-coded to facilitate the analysis process. Each interview transcript was analyzed individually and the researcher read and re-read the material until familiar [23], observations were noted in the margins, and a tracking system was used to code relevant quotes. became. This process was repeated for all participants. Finally, the codes were classified into three levels:

FINDINGS

a) A Significant Therapeutic Supplement

Chatbots can provide valuable information to women with MS regarding disease management and strategies to cope with symptoms. This access to information can help them better navigate their condition. Bahar states, "When I'm worried about new symptoms, I can ask the chatbot and receive information quickly, even matching what my doctor prescribed." Furthermore, chatbots can serve as a supportive resource, allowing women to express their feelings and concerns. This emotional support can enhance their morale and motivation for life. Aroosha shares, "Talking to the chatbot helps me realize that my worries are unfounded." This artificial intelligence has significantly alleviated the confusion and distress associated with the illness, empowering women by providing them with adequate information and a greater sense of control. In this regard, Somayeh says, "I gathered some information, and when I went for my check-up, I mentioned it to my doctor. He was surprised and said, 'You've been advised this by another doctor!'"

b) Organizing Daily Tasks

The women participating in this study highlighted a wide range of applications for chatbots, which they assigned more of their daily tasks to over time. This personalized use of chatbots helps them effectively cope with the challenges of everyday life. In this regard, Zahra states, "My child woke up crying in the middle of the night, and his voice was hoarse. I easily asked the chatbot what I should do."

Additionally, Bahar mentioned that they consult chatbots for matters like receiving medical test results: "My mother received her test results and asked me to inquire with the chatbot about what they mean." Bahar further adds, "I am very interested in starting programming, and when I asked the chatbot where to begin, I received useful responses that can help guide me on my learning journey."

c) Friend and Life Advisor

One of the prominent themes among participants was the role of chatbots as friends and companions in daily life. Many women with MS who participated in this study described chatbots as tools that go beyond mere technology, viewing them as entities with human-like understanding and logic. This sentiment is clearly reflected in Zahra's narrative:
"In Zigap, as we've seen, it has the capability to transcribe everything we say. If I send something to it, it translates it for us. I see it as a friend, a companion... a robot that has the ability to understand human emotions and operates with human-like reasoning."

In addition to assisting with daily tasks, this technology plays a significant role in counseling and decision-making for these women. Chatbots not only answer their daily questions but also provide personalized guidance. In this regard, one of the participants named Setareh describes her experience:"We can even ask them for advice on anything, and they can help us just like a virtual counselor."

Participants benefit from chatbots as a virtual advisor with extensive capabilities in personal matters and life challenges. Over time, this technology permeates individuals' lives to such an extent that users turn to it for complex issues and even daily decision-making.

D) Reducing Feelings of Loneliness

Multiple sclerosis (MS), due to its symptoms and the limitations it imposes on individuals, can naturally lead to feelings of social isolation and loneliness for patients. Many participants noted that, due to the culture surrounding the illness and society's negative perceptions of these individuals, they increasingly withdrew from social activities. In this context, chatbots were introduced as effective tools for reducing feelings of loneliness. One participant describes her experience as follows: "I would turn to the chatbot at the first opportunity for almost every question I faced; it felt like there was someone always by my side, listening to my words without any judgment."

This quote illustrates that chatbots have been able to act as substitutes for human relationships, helping patients escape their feelings of loneliness.

E) Gradual Increase in Dependency

Many participants in this study expressed that, over time, chatbots have become an inseparable part of their daily lives. In fact, the all-encompassing nature of these chat tools has led them to unconsciously occupy a special place in their lives, creating emotional dependency. One participant describes this experience as follows: "I believe it can have a significant impact and truly make us dependent on it, becoming an inseparable part of our lives." Participants noted that chatbots are not only tools for facilitating daily tasks but have also become an essential element in managing their problems.

F) Predominant Positive Impact

Despite some negative effects such as laziness and ethical challenges mentioned by the participants in using chatbots, the narrators of this study generally believe that the positive impacts of this technology on their lives outweigh its negative effects. Many of them emphasize that chatbots have helped them manage their emotions, receive advice, and facilitate their daily lives. In this context, Samaneh points out:"Technology can definitely simplify and ease management tasks and have a positive effect on life, but I truly feel that the benefits of using chatbots far outweigh their drawbacks

DISCUSSION

The findings of this study indicate that AI chatbots play a multifaceted role in improving the quality of life for women with multiple sclerosis (MS). These digital tools provide therapeutic support, reduce feelings of loneliness, and facilitate daily tasks, helping patients cope more effectively with the challenges of their condition. These results align with previous research highlighting the positive impact of interactive and empathetic AI systems on mental health and well-being [6], [7], [8].

One of the key findings of this study is the role of chatbots in therapeutic support for women with MS. Quick access to information about symptoms and treatment options allows these individuals to manage their health more effectively. The findings of this study are consistent with previous research demonstrating the positive impact of AI technologies on reducing anxiety and improving disease acceptance [14], [15]. Participants repeatedly emphasized that the immediate responses from chatbots helped them alleviate anxiety and gain a better understanding of their condition, which is crucial for managing a chronic illness like MS. Additionally, the ability of chatbots to offer emotional support contributed to a greater sense of control over their illness.

Another important aspect identified in this research is the role of chatbots in organizing daily tasks. This personalized approach allows women with MS to delegate certain routine activities to chatbots, which is particularly beneficial for individuals experiencing cognitive impairments associated with MS, such as memory issues and difficulties in decision-making. The study findings show that participants gradually integrated chatbots into their daily routines, ranging from seeking medical advice and interpreting test results to learning new skills. This growing reliance on chatbots for daily assistance is in line with existing literature on the expanding role of AI in facilitating everyday life.

However, one of the key challenges identified in this study is the increasing dependency on chatbots. While these tools provide significant support, some participants expressed concerns about reduced real-world social interactions and over-reliance on technology. These concerns have also been discussed in the field of AI ethics, particularly regarding the long-term implications of human-AI interaction. Previous studies suggest that excessive reliance on digital technologies may reduce social engagement and contribute to a sense of isolation, highlighting the need for further investigation. Nevertheless, participants in

this study generally agreed that the positive effects of chatbots, such as stress reduction and task management, outweigh the negative aspects.

Additionally, technical and accessibility limitations of chatbots in Iran pose another challenge. Some widely used chatbots require VPN access due to sanctions, while domestic AI tools, such as ZigGap, lack the advanced capabilities of their international counterparts. This underscores the need for developing more sophisticated local AI chatbots to meet the needs of Iranian users.

The integration of AI chatbots into the lives of women with MS in Iran presents a promising avenue for enhancing their quality of life. As AI technology advances, chatbots can provide more personalized and intelligent support to patients. However, to better understand the long-term impact of this technology, future research should focus on the psychological and emotional effects of chatbot use. Additionally, further studies could investigate how different patient groups (with varying MS severity levels or other chronic illnesses) respond to chatbot interventions. Moreover, a comparative analysis of the impact of chatbots versus human support in managing MS could contribute to the development of hybrid strategies for improving patient outcomes.

II. ACKNOWLEDGMENT *(Heading 5)*

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