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E-health Literacy and Older Adults: Challenges, Opportunities, and Support Needs

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A B S T R A C T

This study aimed to explore the challenges, opportunities, and support needs related to e-health literacy among older adults. By identifying these key areas, the study seeks to inform the development of targeted interventions and resources to enhance e-health literacy within this demographic. A qualitative research design was employed, involving semi-structured interviews with 16 older adults who have interacted with e-health platforms in the past year. Participants were purposively selected to ensure a diverse range of experiences. Data were analyzed using thematic analysis to identify major and minor themes related to e-health literacy challenges, opportunities, and support needs. The analysis revealed three major themes: Challenges, Opportunities, and Support Needs. Under Challenges, participants identified Technological Barriers, Health Literacy Issues, Accessibility Concerns, and Privacy and Security Fears. Opportunities highlighted were Enhanced Access to Health Information, Improved Patient-Provider Communication, and Personal Health Management. For Support Needs, the study found a demand for Educational Programs, Technical Assistance, and Customizable E-Health Tools. These findings underscore the multifaceted nature of e-health literacy among older adults and the need for comprehensive support mechanisms. Older adults face significant barriers to fully leveraging e-health resources, yet there exist substantial opportunities to enhance their e-health literacy through targeted support and interventions. Addressing the identified challenges and support needs can lead to improved health outcomes for older adults by facilitating more effective use of digital health platforms. The study underscores the importance of developing tailored e-health literacy resources that consider the unique circumstances and preferences of older adults.

Keywords: *E-health Literacy, Older Adults, Challenges, Opportunities, Support Needs.*

1. Introduction

In the rapidly evolving landscape of healthcare, the significance of health literacy has never been more pronounced, especially for older adults navigating the complexities of the digital age. Health literacy, as a critical determinant of well-being, encompasses the ability to access, understand, and use information to make informed health decisions. This concept takes on an added layer of complexity with the advent of e-health literacy, which specifically refers to the competencies required to engage with electronic health resources effectively. Pourrazavi et

al. (2020) highlight the importance of e-health literacy as an essential skill set for accessing, comprehending, and applying online health information in decision-making processes. Despite its importance, research indicates that e-health literacy levels among older adults are often insufficient, posing significant barriers to utilizing digital health resources optimally (Pourrazavi et al., 2020). Shi et al. (2021) note this trend within populations like Chinese older adults, underscoring a global challenge that transcends cultural and geographical boundaries (Shi et al., 2021).

The implications of inadequate health literacy in older adults extend far beyond mere inconvenience, leading to a cascade of adverse outcomes. Moeini et al. (2022) link poor health literacy to diminished physical activity levels, suboptimal health outcomes, and a lack of proactive engagement in healthcare decisions (Moeini et al., 2022). The inability of older adults with low health literacy to effectively manage chronic conditions further exacerbates their physical and mental health, creating a cycle of health decline and increased vulnerability (Verney et al., 2019). Moreover, low health literacy contributes to disparities in health outcomes and preventive health behaviors, highlighting a pressing issue of equity among older adults (Bennett et al., 2009). Darvishpour et al. (2022) emphasize the critical role of addressing health literacy to boost self-efficacy, self-care behaviors, and overall health in the aging population (Darvishpour et al., 2022).

The current digital era presents a unique set of challenges and opportunities for older adults in managing their health. Watkins & Xie (2014) point out a concerning gap in tailored interventions aimed at improving e-health literacy among older adults (Watkins & Xie, 2014). Despite the recognition of its significance, efforts to develop and implement effective strategies have been limited, leaving a substantial portion of the older population at a disadvantage (Jung et al., 2022). The intersection of cognitive function and health literacy further complicates the landscape, as Kaphingst et al. (2014) and Nguyen et al. (2013) explore the intricate relationships between cognitive abilities and the capacity to navigate and comprehend health information effectively (Kaphingst et al., 2014). This multifaceted interplay underscores the necessity for a comprehensive approach to enhancing health literacy among older adults, considering the diverse factors that influence their ability to engage with e-health resources.

The vulnerability of older adults to inadequate health literacy underscores an urgent need for targeted interventions and support systems. As the population ages and digital health resources become increasingly integral to healthcare delivery, ensuring that older adults are not left behind becomes a matter of both equity and public health. Reisi et al. (2014) advocate for the development of specific strategies to bolster the e-health literacy skills of older adults, suggesting a path forward that involves tailored educational programs, accessible technological solutions, and supportive environments that encourage engagement with digital health tools (Reisi et al., 2014).

In light of these considerations, the present study aims to delve deeper into the challenges, opportunities, and support needs related to e-health literacy among older adults. By employing a qualitative research approach, this study seeks to uncover the nuanced experiences and perspectives of older adults as they navigate the digital health landscape. Through this investigation, we aspire to contribute valuable insights to the body of knowledge on e-health literacy, informing the development of targeted interventions that address the unique needs of this demographic group. As we embark on this exploration, the goal remains clear: to enhance the well-being of older adults by equipping them with the skills and resources needed to harness the full potential of digital health innovations.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a qualitative research design to comprehensively explore the challenges, opportunities, and support needs associated with e-health literacy among older adults. Given the subjective and complex nature of e-health literacy experiences, a qualitative approach was deemed most appropriate for capturing the depth and diversity of older adults' interactions with e-health resources. The study was guided by an interpretivist paradigm, which allows for the understanding of social phenomena through the meanings individuals attach to them.

Participants were recruited using a purposive sampling strategy to ensure a diverse representation of experiences, backgrounds, and levels of e-health literacy. Inclusion criteria included adults aged 65 years and older, who have interacted with e-health platforms in the past year. Efforts were made to include participants with varying degrees of e-health literacy, from different socio-economic backgrounds, and residing in both urban and rural areas. The final sample consisted of 30 participants, ensuring a rich and varied data set for analysis.

Participants were provided with an informed consent form, which outlined the study's purpose, procedures, potential risks, and benefits, as well as confidentiality and privacy measures. Participation was voluntary, and participants could withdraw from the study at any point without penalty.

2.2. Data Collection

Data were collected through semi-structured interviews, allowing for the exploration of personal experiences, perceptions, and the context surrounding older adults' e-health literacy. Interviews were conducted via video conferencing to accommodate participants' comfort and to reach those in remote areas. Each interview lasted approximately 60 minutes and was recorded with participants' consent. The interview guide covered topics such as personal experiences with e-health, perceived challenges and benefits, and the types of support that would enhance their e-health literacy. The following questions were included in the semi-structured interviews:

"Can you describe your level of comfort and experience using digital devices and the internet? How frequently do you engage with digital health resources?"

"What are the main challenges or barriers you face when using online health information and services? Can you provide specific examples or experiences?"

"In what ways have e-health resources been beneficial to you? Are there any particular tools or websites that you find especially helpful in managing your health?"

"What types of support or assistance would enhance your ability to use e-health services effectively? Have you ever accessed any educational programs or technical help related to e-health?"

"How concerned are you about privacy and security when using e-health services? Can you share any concerns or precautions you take?"

"Based on your experiences, what improvements or changes would you suggest to make e-health resources more accessible and useful for older adults like yourself?"

In addition to interviews, participants were asked to complete a brief demographic questionnaire to gather information on age, educational background, and general health status. This information helped in contextualizing the interview responses and understanding the diverse backgrounds of the participants.

2.3. Data Analysis

The recorded interviews were transcribed verbatim and analyzed using thematic analysis. This method allowed for the identification, analysis, and reporting of patterns (themes) within the data. The analysis was conducted in several phases: familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and finally, producing the report. NVivo, a qualitative data analysis software, was utilized to assist with the organization and analysis of the data. Rigor was ensured through researcher triangulation, member checking, and maintaining a reflective journal throughout the study process.

3. Findings

In this study, a total of 16 participants were interviewed to understand the challenges, opportunities, and support needs they face with e-health literacy. The participants ranged in age from 65 to 84 years, with an equal distribution across the age groups: 25% (n=4) were between 65-69 years, 31.25% (n=5) were between 70-74 years, 25% (n=4) were between 75-79 years, and 18.75% (n=3) were 80 years or older. The sample comprised 9 females (56.25%) and 7 males (43.75%). Regarding educational background, 37.5% (n=6) had completed high school, 31.25% (n=5) had some college or associate degree, and 31.25% (n=5) held a bachelor's degree or higher. The majority of participants (62.5%, n=10) resided in urban areas, while 37.5% (n=6) lived in rural settings. Concerning their self-reported health status, 50% (n=8) described their health as "good", 31.25% (n=5) as "fair", and 18.75% (n=3) as "excellent".

Table 1

Challenges

Categories	Subcategories
Technological Barriers	1. Complexity of Platforms
	2. Interface Usability
	3. Internet Connectivity Issues
	4. Lack of Familiarity with Devices

Health Literacy Issues	1. Difficulty Understanding Medical Information
	2. Navigating Health Information
	3. Misinterpreting Online Resources
Accessibility Concerns	1. Visual Impairment Adjustments
	2. Auditory Impairment Solutions
	3. Physical Navigation of Devices
Privacy and Security Fears	1. Concerns over Personal Data Misuse
	2. Fear of Scams and Frauds
	3. Distrust in Online Health Resources

In exploring the challenges faced by older adults regarding e-health literacy, four major categories emerged: Technological Barriers, Health Literacy Issues, Accessibility Concerns, and Privacy and Security Fears. Participants frequently cited Technological Barriers, with one noting, "The complexity of some platforms just overwhelms me. I can't seem to navigate through all the menus and options," highlighting a prevalent issue among older adults. Another significant concern was Health Literacy Issues, where a participant mentioned, "Even when I find the information, understanding the medical jargon is another hurdle."

Accessibility Concerns were particularly poignant for those with sensory impairments. One interviewee stated, "As someone with reduced vision, I struggle to read the tiny text on most websites." Moreover, Privacy and Security Fears were common, with participants expressing apprehension about online health resources. "I'm always wary of scams and sharing my personal information online," reflected a participant's concern over digital safety.

Table 2

Opportunities

Categories	Subcategories
Enhanced Access to Health Information	1. Comprehensive Resources Available 24/7
	2. Diverse Sources of Information
	3. Updates on Latest Health Trends and Research
Improved Patient-Provider Communication	1. Online Consultations and Follow-ups
	2. Electronic Health Records Access
	3. Platforms for Questions and Feedback
Personal Health Management	1. Health Monitoring Apps
	2. Personalized Health Recommendations
	3. Reminder Systems for Medication and Appointments

The opportunities identified through the study highlight the potential benefits e-health literacy can bring to older adults, categorized into Enhanced Access to Health Information, Improved Patient-Provider Communication, and Personal Health Management. One participant excitedly shared, "Having access to health information 24/7 has been a game-changer for me. I can learn about my conditions at my own pace." This statement underscores the Enhanced Access to Health Information category, emphasizing the value of readily available resources.

Improved Patient-Provider Communication was another key opportunity, with a participant noting, "Online consultations have made it easier for me to communicate with my doctor, especially during these challenging times." Lastly, the Personal Health Management category reflected a proactive approach to health, with an interviewee stating, "Using health monitoring apps has helped me keep track of my medications and appointments without relying on others."

Table 3

Support Needs

Categories	Subcategories
Educational Programs	1. Basic Digital Literacy Courses
	2. E-Health Navigation Workshops
	3. Health Information Interpretation Classes

	4. Privacy and Security Awareness Training
Technical Assistance	1. Help Desks and Hotlines
	2. In-Person Tech Support Options
	3. User-Friendly Guides and Manuals
Customizable E-Health Tools	1. Adjustable Interface Options
	2. Voice-Controlled Navigation
	3. Personalized Content and Recommendations

Regarding support needs, three main categories were identified: Educational Programs, Technical Assistance, and Customizable E-Health Tools. The need for Educational Programs was evident, with participants expressing a desire for more resources to improve their digital and health literacy. "I wish there were more workshops available to help us navigate these health websites," one participant lamented, pointing out the gap in available resources.

Technical Assistance was another critical support need, with a participant sharing, "Having access to a help desk or hotline would make me feel more confident in using e-health services." This highlights the importance of readily available assistance for older adults encountering technical issues. Lastly, the desire for Customizable E-Health Tools was articulated by an interviewee: "If I could adjust the settings to make things easier to read and use, that would make a big difference."

4. Discussion and Conclusion

This study aimed to explore the challenges, opportunities, and support needs related to e-health literacy among older adults. Our findings reveal that older adults face significant barriers to accessing and utilizing e-health resources, including technological difficulties, health literacy issues, and concerns regarding privacy and security. Despite these challenges, opportunities exist in the form of enhanced access to health information, improved patient-provider communication, and personal health management tools that can facilitate better health outcomes. The study also identified a critical need for targeted support and interventions to improve e-health literacy among older adults, emphasizing the importance of educational programs, technical assistance, and customizable e-health tools.

In this qualitative study, three major themes were identified concerning e-health literacy among older adults: Challenges, Opportunities, and Support Needs. Each major theme comprised several minor themes that detailed specific aspects of older adults' experiences with e-health. The Challenges theme included minor themes such as Technological Barriers, Health Literacy Issues, Accessibility Concerns, and Privacy and Security Fears. Opportunities were articulated through Enhanced Access to Health Information, Improved Patient-Provider Communication, and Personal Health Management. The theme of Support Needs was broken down into Educational Programs, Technical Assistance, and Customizable E-Health Tools, illustrating the various areas where participants felt they required more support to effectively utilize e-health resources.

The theme of Challenges revealed significant barriers older adults face in engaging with e-health. Technological Barriers were highlighted as a major obstacle, with participants often feeling overwhelmed by the complexity of digital platforms and the usability of interfaces. Health Literacy Issues pointed to difficulties in understanding medical terminology and navigating health information online. Accessibility Concerns were particularly pronounced for those with sensory or physical impairments, indicating that many e-health resources are not designed with these needs in mind. Privacy and Security Fears encompassed worries about personal data misuse and the potential for scams, reflecting a general distrust in online health resources.

Opportunities for enhancing the e-health literacy of older adults were found in the access to comprehensive health information, the facilitation of patient-provider communication, and tools for personal health management. Enhanced Access to Health Information was seen as a major benefit, allowing older adults to explore health-related content at their own pace and on their own terms. Improved Patient-Provider Communication emerged as a critical factor in building trust and ensuring clarity in healthcare interactions, with online platforms offering a new venue for dialogue. Personal Health Management was identified as an area of opportunity, with various apps and tools providing means to track health metrics, manage medication, and schedule appointments, thereby promoting greater autonomy in health management.

The theme of Support Needs encapsulated the various areas where older adults expressed a desire for more assistance to improve their e-health literacy. Educational Programs were noted as essential for building basic digital literacy and understanding how to navigate e-health environments. Technical Assistance was highlighted as a need for those facing immediate technical issues or requiring help with the use of e-health applications and devices. Customizable E-Health Tools suggested a demand for e-health resources that can be tailored to the unique preferences and needs of older adults, including adjustable interfaces and content that is relevant and easy to understand.

The findings of our study resonate with the existing body of literature, underscoring the crucial role of e-health literacy in the well-being and healthcare management of older adults. E-health literacy, defined as the ability to access, understand, and apply electronic health information, emerges as a pivotal skill set for informed health decision-making. This study's outcomes align with Shi et al. (2021), who identified significant challenges faced by older adults, including those from specific populations such as Chinese older adults, in achieving adequate levels of e-health literacy (Shi et al., 2021). These challenges are not isolated incidents but part of a broader issue affecting older adults' ability to leverage digital health resources effectively.

The negative consequences of low health literacy, highlighted by our findings, mirror those reported in earlier studies. Bennett et al. (2009) established a correlation between low health literacy among older adults and adverse outcomes such as reduced physical activity, poor health status, and disparities in health outcomes (Bennett et al., 2009). These outcomes highlight the tangible impact of e-health literacy on the physical well-being and quality of life of older adults, emphasizing the need for interventions aimed at enhancing health literacy levels within this demographic.

Addressing the gap in e-health literacy among older adults is critical for fostering improved self-efficacy, self-care behaviors, and overall health outcomes. This is supported by Rudd (2019), who emphasizes the importance of enhancing health literacy to empower older adults in their healthcare management (Rudd, 2019). However, as Watkins & Xie (2014) note, there is a stark lack of tailored interventions designed to bolster e-health literacy among older adults, underscoring a significant gap in current healthcare strategies aimed at this demographic (Watkins & Xie, 2014). Our study supports the call for targeted initiatives that cater to the unique needs and challenges of older adults in navigating the digital health landscape.

The multifaceted nature of factors influencing health literacy levels in older adults, including cognitive function and sociodemographic factors (Watkins & Xie, 2014), further complicates the development of effective interventions. This complexity necessitates a comprehensive approach that considers the diverse influencers of e-health literacy. Chesser et al. (2016) identify additional factors such as social support, organizational facilities, and socioeconomic status as critical determinants of health literacy (Chesser et al., 2016), suggesting that interventions must adopt a holistic perspective to be effective.

Moreover, the interplay between health literacy, self-efficacy, and self-care behaviors, particularly in managing chronic conditions, underscores the critical role of e-health literacy in health management. Our study builds on the work of Darvishpour et al. (2022), who explored the relationship between health literacy, self-efficacy, and self-care behaviors in older adults with hypertension (Darvishpour et al., 2022), reinforcing the importance of e-health literacy in chronic disease management.

The association between cognitive function and health literacy, as highlighted by Shi et al. (2021), points to the necessity of considering cognitive abilities in the design and implementation of health literacy interventions (Shi et al., 2021). Cognitive challenges may pose additional barriers to e-health literacy, emphasizing the need for interventions that are not only tailored to the older adult population but also accessible to those with varying levels of cognitive function.

In conclusion, this study underscores the complexity of e-health literacy among older adults, highlighting significant barriers that impede their full participation in the digital health landscape. Despite these challenges, there are meaningful opportunities to leverage e-health resources for improved health management. Addressing the identified support needs through targeted interventions can empower older adults to navigate e-health platforms more effectively, leading to enhanced health outcomes and quality of life. This research contributes to the broader discourse on health literacy, offering insights into the specific needs of older adults in the context of e-health.

5. Limitations and Suggestions

This study is not without its limitations. The sample size of 16 participants may limit the generalizability of the findings to all older adults. Additionally, the qualitative nature of the research, while providing in-depth insights, may not capture the full spectrum of experiences across different demographic groups. The reliance on self-reported data also introduces the potential for bias. Future studies could benefit from a larger, more diverse sample and the inclusion of quantitative measures to complement qualitative findings.

Future research should aim to address the limitations of this study by incorporating larger, more diverse samples and employing mixed-methods approaches to capture a broader range of experiences and validate findings. There is also a need to explore the effectiveness of specific interventions designed to improve e-health literacy among older adults, including the development and testing of tailored educational programs and technical support services. Investigating the long-term impacts of enhanced e-health literacy on health outcomes would further contribute to the field.

The findings from this study have important implications for healthcare providers, policymakers, and developers of digital health resources. To improve e-health literacy among older adults, it is critical to develop and implement targeted educational programs that cater to their specific learning needs and preferences. Healthcare providers should consider integrating e-health literacy assessments into routine care to identify individuals who may benefit from additional support. Additionally, digital health resources must be designed with older adults in mind, ensuring accessibility, usability, and the provision of clear, jargon-free health information. By addressing these areas, we can move towards a more inclusive digital health ecosystem that empowers older adults to engage actively in their health management.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were observed.

References

Bennett, I. M., Chen, J., Soroui, J., & White, S. (2009). The Contribution of Health Literacy to Disparities in Self-Rated Health Status and Preventive Health Behaviors in Older Adults. *The Annals of Family Medicine*. https://doi.org/10.1370/afm.940

Chesser, A., Woods, N. K., Smothers, K., & Rogers, N. (2016). Health Literacy and Older Adults. *Gerontology and geriatric medicine*. https://doi.org/10.1177/2333721416630492

Darvishpour, A., Mansour-Ghanaei, R., & Mansouri, F. (2022). The Relationship Between Health Literacy, Self-Efficacy, and Self-Care Behaviors in Older Adults With Hypertension in the North of Iran. *HLRP Health Literacy Research and Practice*. https://doi.org/10.3928/24748307-20221013-01

Jung, S. O., Son, Y. H., & Choi, E. (2022). E-Health Literacy in Older Adults: An Evolutionary Concept Analysis. *BMC Medical Informatics and Decision Making*. https://doi.org/10.1186/s12911-022-01761-5

Kaphingst, K. A., Goodman, M. S., MacMillan, W. D., Carpenter, C. R., & Griffey, R. T. (2014). Effect of Cognitive Dysfunction on the Relationship Between Age and Health Literacy. *Patient Education and Counseling*. https://doi.org/10.1016/j.pec.2014.02.005

Moeini, B., Barati, M., Heidarimoghadam, R., Tapak, L., & Shahryar, P. (2022). The Factors in Older Adults' Health Literacy in the Field of Physical Activity: A Qualitative Study. *BMC Geriatrics*. https://doi.org/10.1186/s12877-022-03320-z

Pourrazavi, S., Kouzekanani, K., Bazargan-Hejazi, S., Shaghaghi, A., Hashemiparast, M., Fathifar, Z., & Allahverdipour, H. (2020). Theory-Based E-Health Literacy Interventions in Older Adults: A Systematic Review. *Archives of Public Health*. https://doi.org/10.1186/s13690-020-00455-6

Reisi, M., Javadzade, H., Heydarabadi, A. B., Mostafavi, F., Tavassoli, E., & Sharifirad, G. (2014). The Relationship Between Functional Health Literacy and Health Promoting Behaviors Among Older Adults. *Journal of education and health promotion*. https://doi.org/10.4103/2277-9531.145925

Rudd, R. E. (2019). Health Literacy Considerations for a New Cancer Prevention Initiative. *The Gerontologist*. https://doi.org/10.1093/geront/gnz032

Shi, Y., Ma, D., Zhang, J., & Chen, B. (2021). In the Digital Age: A Systematic Literature Review of the E-Health Literacy and Influencing Factors Among Chinese Older Adults. *Journal of Public Health*. https://doi.org/10.1007/s10389-021-01604-z

Verney, S. P., Gibbons, L. E., Dmitrieva, N. O., Kueider-Paisley, A., Williams, M., Meyer, O. L., Manly, J. J., Sisco, S., & Marsiske, M. (2019). Health Literacy, Sociodemographic Factors, and Cognitive Training in the Active Study of Older Adults. *International Journal of Geriatric Psychiatry*. https://doi.org/10.1002/gps.5051

Watkins, I., & Xie, B. (2014). eHealth Literacy Interventions for Older Adults: A Systematic Review of the Literature. *Journal of medical Internet research*. https://doi.org/10.2196/jmir.3318