East Asian Journal of Multidisciplinary Research (EAJMR)
Vol. 4, No. 2, 2025 : 945 – 954

Digital Literacy in Health Education Management for Safe Self-Medication in the Elderly

Bingar Hernowo[1], Febrian Wahyu Wibowo[2*]
[1]Madani University
[2]Alma Ata Universty
Corresponding Author: Febrian Wahyu Wibowo febrianwahyu.almaata@ac.id

A R T I C L E I N F O

Keywords: Digital Literacy, Health Education, Self-Medication, Elderly

Received : 10, January
Revised : 25, January
Accepted: 26, February

A B S T R A C T

This study aims to examine the relationship between digital literacy, health education management, and safe self-medication among the elderly. The research focuses on how elderly individuals utilize digital technology to enhance their health knowledge and make better decisions in self-medication practices. Using a qualitative approach and total sampling method with 17 participants, data were collected through in-depth interviews, participatory observation, and focus group discussions (FGDs). Thematic analysis was conducted to identify patterns, inter-subject relationships, and factors influencing digital literacy and safe self-medication among the elderly. The study is expected to develop a conceptual model illustrating the integration of digital literacy, health education, and safe self-medication practices. This research contributes to the development of technology-based approaches that support the elderly in managing their health more safely and effectively. The findings indicate that elderly individuals with better digital literacy tend to access valid health information and adopt safer self-medication practices. Furthermore, family and healthcare professionals play a crucial role in enhancing the elderly's confidence in utilizing technology for medical purposes.

DOI prefix: https://doi.org/10.55927/eajmr.v4i2.48
ISSN-E: 2828 – 1519
https://mtiformosapublisher.org/index.php/eajmr

INTRODUCTION

The rising number of elderly individuals in Indonesia, including those in rural areas, presents a significant challenge in the healthcare sector. According to data from the Central Statistics Agency (BPS), the elderly population in Indonesia continues to grow significantly. The elderly often face chronic health issues that require long-term management, making effective health education crucial for enabling them to manage their health independently and safely. In this context, digital literacy based on information technology becomes a key factor in enhancing elderly individuals' understanding of accessing health information and managing self-medication more effectively.

This study will be conducted in the regions of Cepokosari, Cepokojajar, Sitimulyo, and Piyungan in Bantul, which are rural areas with a high elderly population. The elderly in these areas face major health-related challenges. Many suffer from chronic diseases such as hypertension, diabetes, and heart problems, yet they struggle to access adequate healthcare services due to distance, infrastructure, and limited medical facilities in the area. Moreover, most elderly individuals in these regions have limited ability to use information technology, making it difficult for them to access digital healthcare services or medical information online. As a result, they heavily rely on family care and medical personnel who visit their homes.

Based on preliminary observations, elderly individuals in these areas often rely on traditional medicine or family assistance to obtain medications and other healthcare treatments. Meanwhile, access to broader medical information through digital technology remains limited, particularly since most elderly individuals lack the skills to use health applications or other digital devices. This condition is one of the reasons for selecting Cepokosari, Cepokojajar, Sitimulyo, and Piyungan as the study locations, as the challenges faced by the elderly in these areas are representative of the core research question regarding digital literacy and safe self-medication.

Redhana (2024) emphasizes that digital literacy is a fundamental competency in facing the challenges of Society 5.0, where information and communication technology play a crucial role in various aspects of life. Therefore, providing digital literacy to the elderly through digital-based health education can be an effective solution to overcoming the obstacles elderly individuals face in accessing relevant and safe health information. By improving digital literacy, elderly individuals in Cepokosari, Cepokojajar, Sitimulyo, and Piyungan are expected to be able to access health applications to monitor disease symptoms and obtain structured self-medication guidelines.

The condition of elderly individuals in these areas, who often lack easy access to healthcare services and have limited ability to utilize information technology, serves as the foundation for selecting these research locations. In this context, digital literacy is expected to act as a bridge to introduce the concept of safe self-medication through the use of technology such as mobile health applications. Kusumawardani (2021), in her research, demonstrates that mobile-based health applications can help patients monitor their conditions

independently, remind them of medication schedules, and provide relevant health information tailored to individual needs.

Efriyandi & Yulda (2024) add that telehealth or remote healthcare services can be an essential alternative for elderly individuals living in areas with limited access to healthcare facilities. However, to fully utilize this technology, improving digital literacy among the elderly is necessary. This also includes understanding how to use health applications to manage chronic diseases or take preventive measures. Therefore, enhancing digital literacy in elderly health education management is an urgent necessity.

On the other hand, digital literacy also serves as a tool to empower families in caring for the elderly. Senja & Prasetyo (2021) note that the family's role in elderly care is crucial, especially in accessing healthcare services digitally. By involving families in digital literacy education, they are expected to support the elderly in managing their health independently in a safe and efficient manner.

The urgency of digital-based health education is also driven by the increasing reliance of the elderly on technology. Solihin et al. (2023) state that using digital platforms for health communication can enhance public understanding of proper healthcare. In this regard, interactive digital education can be an effective solution for raising elderly individuals' awareness of the importance of safe medication and disease prevention.

Ultimately, this study aims to explore how digital literacy can be applied in elderly health education management to enhance safe self-medication among the elderly in Cepokosari, Cepokojajar, Sitimulyo, and Piyungan, Bantul. This research is expected to contribute to the development of digital-based health policies that can improve the quality of life for the elderly and create a more inclusive and efficient technology-based empowerment model for them.

THEORETICAL REVIEW

Digital Literacy

Digital literacy refers to an individual's ability to understand, evaluate, and effectively utilize digital technology to meet informational needs (Redhana, 2024). This competence not only involves the use of basic technology but also encompasses critical skills in searching for accurate health information. In the current digital era, digital literacy has become a fundamental necessity to support smart decision-making, including in the healthcare sector (Sarbani, Mulyati, & Astuti, 2024).

The application of digital literacy among the elderly often faces challenges since this group consists of "digital immigrants" who grew up in an era without digital technology (Nisa, Nisak, & Fatia, 2023). The elderly require a specialized approach that emphasizes strengthening basic digital skills, such as using health applications and social media for health-related information (Mulyana, Pramadya, & Vindiazhari, 2024). Digital literacy-based training can help the elderly become more independent in managing their health.

Improving digital literacy among the elderly is also linked to their ability to access services such as telemedicine, which gained popularity during the COVID-19 pandemic (Parani & Purba, 2022). These services enable elderly

individuals to obtain medical information and treatment without having to visit healthcare facilities in person. Good digital literacy enhances their confidence in health technology, allowing them to maximize the benefits of digital healthcare services.

However, low digital literacy among the elderly often poses risks, such as exposure to invalid health information or dangerous self-medication practices (Muljati, Suwatno, & Witarti, 2024). Therefore, digital literacy education must be implemented in a continuous and contextual manner. A community-based approach, such as digital literacy programs involving family members and healthcare professionals, can serve as an effective solution.

Enhancing digital literacy among the elderly also strengthens their ability to maintain digital safety. This includes raising awareness of cyber risks, such as online medical fraud and health data privacy concerns (Sanjaya et al., 2018). With adequate digital literacy, the elderly can become more confident in using technology to support their health independently.

Health Education Management

Health education management is a structured approach aimed at enhancing individuals' ability to maintain and improve their health (Nurmala & KM, 2020). This strategy involves managing health information, training, and health counseling for the community. In the context of digital literacy, health education management leverages technology to deliver health information more efficiently and effectively (Solihin et al., 2023).

Digital platforms have become essential tools in health education. For instance, the use of audio-visual-based applications helps increase public knowledge about self-medication and the management of specific diseases (Putri et al., 2023). These applications make information delivery more engaging and easier to understand, especially for the elderly, who often face difficulties comprehending complex texts.

Furthermore, digital-based health education encourages family involvement as the primary support system for elderly individuals in self-medication (Senja & Prasetyo, 2021). Families can act as facilitators to help the elderly understand and use health technology. Thus, digital-based health education management not only enhances individual literacy but also strengthens social support for the elderly.

In practice, digital health education programs also involve medical professionals who provide direct guidance or telehealth services (Efriyandi & Yulda, 2024). These services enable doctors and pharmacists to offer guidance on the safe use of medications, especially for elderly individuals who are at high risk of experiencing side effects (Sodik et al., 2024).

The implementation of digital health education management must consider cultural aspects and the community's technological capabilities. For example, in areas with limited internet access, health education can be conducted using offline materials such as educational videos stored on electronic devices. This approach enhances the overall effectiveness of health education programs.

Safe Self-Medication for the Elderly

Elderly individuals often face limited access to healthcare facilities, leading many to rely on self-medication (Senja & Prasetyo, 2021). However, self-medication is frequently carried out without adequate knowledge, posing potential health risks. Therefore, it is crucial to educate the elderly on safe and effective self-medication practices (Ariyanti, Sigit, & Anisyah, 2021).

The use of digital technology, such as health applications and telehealth, serves as a key solution in supporting safe self-medication (Efriyandi & Yulda, 2024). These technologies provide elderly individuals with access to valid health information and direct guidance from healthcare professionals. In the context of herbal medicine, digital applications can also offer evidence-based guidelines on the safe use of medicinal plant extracts (Purba et al., 2024).

Safe self-medication requires specific education, including how to read drug labels, recognize side effects, and determine the correct dosage (Ilmi, Suprihatin, & Probosiwi, 2021). This education can be delivered through community-based or family-based approaches, ensuring that the information is communicated in an easy-to-understand manner for elderly individuals.

Telepharmacy also plays a crucial role in supporting self-medication. This service enables pharmacists to provide consultations and medication-related information to elderly patients without requiring in-person visits (Pratiwi, 2022). As a result, elderly individuals can avoid medication errors and improve the safety of their self-medication practices.

To ensure the success of self-medication, elderly individuals should be accompanied by family members or other supporters who possess good digital literacy (Parani & Purba, 2022). With this support, they can gain confidence in using digital technology to independently manage their health.

METHODOLOGY

This study employs a qualitative method with a descriptive-exploratory approach to develop a model that illustrates the relationship between digital literacy, health education, and safe self-medication among the elderly. The research design aims to identify the needs, challenges, and effectiveness of digital literacy in supporting self-medication among the elderly. The study population consists of 17 elderly individuals residing in GMA Cepokosari Housing, Cepokojajar, Sitimulyo, Piyungan, Bantul, who were included in the study using a total sampling technique.

Data were collected through in-depth interviews, participatory observations, and focus group discussions (FGD) to obtain a comprehensive understanding. In-depth interviews explored the experiences of the elderly regarding digital literacy and self-medication, while participatory observations directly examined their use of technology in daily life. FGDs were conducted to discuss collective experiences related to the use of digital technology in health education. The data were analyzed using thematic analysis, which involved transcription, coding, and identifying patterns and key themes. The results of this analysis formed the basis for developing a conceptual model that describes

the interrelationship between digital literacy, health education, and safe self-medication among the elderly..

RESULTS

Respondent Characteristics

The respondents in this study consist of 17 elderly individuals residing in GMA Cepokosari Housing, Cepokojajar, Sitimulyo, Piyungan, Bantul. They were selected using a total sampling method to ensure comprehensive representation of the entire population in the area. The respondents' ages range from 60 to 80 years, with the majority falling within the 65–75 age category. In terms of gender, there is a relatively balanced proportion between males and females, although females are slightly more dominant.

The educational backgrounds of the respondents vary, from those with no formal education to those who have completed secondary education. Most respondents have an elementary to junior high school education level, which may influence their understanding of digital literacy and health information. Regarding employment status, the majority are no longer working and rely on family support or personal savings, while some are still engaged in informal economic activities, such as small-scale trading or farming.

There is a significant variation in respondents' experience with digital technology. A small number are familiar with using smartphones for communication and information retrieval, whereas most still depend on family members to access digital information. Factors such as limited technological skills, interest, and access to digital devices pose major challenges in improving their digital literacy.

Furthermore, the respondents' health conditions vary. Some suffer from chronic diseases such as hypertension, diabetes, and arthritis, making them more reliant on health information and self-medication. In this context, health education and digital literacy play a crucial role in helping them manage their health more independently and safely. With better understanding of digital technology, they can access more accurate and reliable information to support their well-being.

Experience of Elderly in Using Digital Technology

The interview results indicate a significant difference in the use of digital technology among the elderly. A small portion, around five individuals, are accustomed to using smartphones independently, primarily for communication via WhatsApp. However, the majority of respondents still require assistance from family members to access digital information, such as searching for health articles or understanding the use of medical applications. Three respondents have never used digital technology and prefer traditional methods for obtaining health information.

A 67-year-old female respondent stated, "I can only use WhatsApp for communication, but for finding health information, I still ask my child for help." Meanwhile, a 74-year-old male respondent revealed, "I don't really understand smartphones, so if I need health information, I prefer to ask the doctor directly."

Sources of Health Information Used by the Elderly

In obtaining health information, most elderly individuals trust medical professionals more than other sources. Twelve respondents mentioned doctors and community health centers (puskesmas) as their primary sources of health information. Additionally, nine respondents rely on family members, particularly their children or grandchildren, to obtain more easily understandable information. However, only six respondents actively seek information through the internet or digital media, while seven others depend more on conversations with neighbors and peers.

A 69-year-old male respondent stated, "I trust information from doctors more because it is definitely accurate, whereas a lot of information on the internet is unclear." On the other hand, a 64-year-old female respondent said, "If I have mild complaints, I usually search on Google or ask my child."

Level of Understanding About Safe Self-Medication

The elderly's understanding of safe self-medication also varies. Seven respondents understand the importance of following dosage instructions and medication guidelines as prescribed by doctors. However, five elderly individuals still rely on recommendations from family members or neighbors when taking medication without verifying its accuracy. Three respondents even admitted to trying certain medications without consulting a medical professional first. Two other respondents do not fully understand how to use medication properly, which increases the risk of errors in self-medication.

A 72-year-old female respondent stated, "I always follow the doctor's advice and read the medication instructions before taking them." Meanwhile, a 70-year-old male respondent admitted, "Sometimes I try herbal medicine recommended by my neighbors; if it works for me, I continue using it."

Barriers to Improving Digital Literacy and Health Education

Several key barriers hinder the elderly from improving their digital literacy and understanding of health education. Ten respondents reported difficulties in understanding how to use digital technology, such as searching for health information or downloading medical applications. Additionally, four elderly individuals lack adequate devices, such as smartphones or laptops, making it difficult for them to access digital information. Three other respondents also complained about limited internet access in their residential areas, which further hampers their efforts to seek health information independently.

A 75-year-old female respondent expressed, "I want to learn how to use the internet, but it's difficult to understand how it works." Meanwhile, a 78-year-old male respondent stated, "I don't have a sophisticated phone, so it's hard to find health information on my own."

The interview results show that most elderly individuals still face various challenges in improving their digital literacy and accessing health information independently. The majority still rely on medical professionals and family members as their primary sources of health information, while only a few actively seek information through digital media. Limited understanding of

technology, lack of access to digital devices, and a stronger preference for conventional methods are the main barriers to improving digital literacy among the elderly. Therefore, more accessible and tailored educational interventions are needed to enhance their understanding and ability to manage self-medication more safely and effectively.

DISCUSSION

The findings from the interviews indicate that digital technology usage among the elderly varies significantly, with only a small proportion being able to use smartphones independently, mainly for communication. This aligns with previous studies suggesting that while digital literacy among older adults is increasing, many still struggle with technological adaptation (Charness & Boot, 2016). The reliance on family members for digital access, particularly in searching for health-related information, reflects existing research that emphasizes the role of social support in elderly digital engagement (Schreurs et al., 2017).

A significant barrier identified in this study is the elderly's preference for conventional methods of obtaining health information. The preference for medical professionals over digital sources is consistent with the findings of Xie (2012), who argued that trust in doctors remains high among older adults, especially in developing countries. Similarly, reliance on family members for interpreting health information supports prior research showing that intergenerational support is crucial for elderly health decision-making (Berkowsky et al., 2017). However, the limited number of elderly individuals actively using digital platforms to seek health information suggests that digital health literacy interventions remain underutilized.

The understanding of safe self-medication among elderly participants varies, with some following prescribed guidelines while others rely on informal sources such as family and neighbors. This pattern is consistent with the study by Raynor (2013), which found that elderly patients often struggle with medication adherence due to a lack of clear information. The finding that some respondents consume herbal remedies without medical consultation further supports research indicating that traditional medicine is still widely used among elderly populations in certain regions (World Health Organization, 2019).

Several studies have highlighted the digital divide among older adults, which remains evident in this study. For example, Hunsaker and Hargittai (2018) found that older individuals with higher education levels and better access to digital tools are more likely to engage with online health information. The present study supports this, as respondents with limited technological access and education struggled with digital platforms. Additionally, the challenges in accessing digital health information due to a lack of adequate devices and poor internet infrastructure align with research by van Deursen and Helsper (2015), who noted that socioeconomic disparities significantly affect digital literacy levels.

The study also reinforces the need for digital health literacy training tailored to the elderly. Research by Czaja et al. (2019) suggests that structured training programs can improve elderly engagement with digital tools. However,

this study found that elderly individuals still perceive digital health platforms as complex, indicating that current interventions may not be sufficiently user-friendly or accessible.

Despite providing valuable insights into elderly digital literacy and health information-seeking behavior, this study has several limitations. First, the sample size is relatively small, which may not fully represent the broader elderly population. Future research should incorporate a larger and more diverse sample to improve generalizability. Second, this study relies on self-reported data, which may be influenced by recall bias or social desirability bias. Observational studies or mixed-method approaches could provide a more comprehensive understanding of actual digital engagement patterns. Lastly, the study does not account for potential differences in digital literacy based on socioeconomic status, education level, or urban-rural differences. Further research should explore these factors to develop targeted interventions that address the specific barriers faced by different groups of elderly individuals.

CONCLUSIONS AND RECOMMENDATIONS

The findings highlight the persistent challenges faced by the elderly in accessing and utilizing digital health information. While some are becoming more digitally engaged, a significant portion still relies on traditional methods and social support. The results align with prior research on digital literacy gaps, trust in medical professionals, and medication adherence. Addressing these issues requires targeted educational programs, improved accessibility to digital tools, and enhanced digital health platforms tailored to the needs of the elderly. Future studies should explore interventions that can effectively bridge the digital divide and support elderly individuals in managing their health more independently..

FURTHER STUDY

Future research should further explore the challenges faced by older adults in using digital technology for health information access. Studies could assess the effectiveness of tailored digital literacy training, considering the most suitable learning methods for this age group. Additionally, research can examine demographic factors such as education level, socioeconomic status, and geographic location to develop more inclusive solutions. A mixed-methods approach, incorporating observational and experimental studies, may provide deeper insights into elderly engagement with digital technology. Finally, future studies should explore how health applications can be optimized to enhance usability and accessibility for older adults.

ACKNOWLEDGMENT

The author expresses gratitude to all elderly respondents for sharing their experiences and perspectives in this study, as well as to their families for supporting the interview process. Special appreciation is extended to healthcare professionals and community members who provided valuable insights into the challenges faced by older adults in accessing health information. The author also thanks academic institutions and colleagues for their guidance and

constructive feedback, which have enhanced the quality of this research. It is hoped that this study contributes to improving digital literacy and access to health information for the elderly.

REFERENCES

Ariyanti, R., Sigit, M., & Anisyah, N. (2021). Safe self-medication practices among the elderly. Jakarta: Health Press.

Efriyandi, F., & Yulda, M. (2024). The role of telehealth in elderly health education. Bandung: Medika Publisher.

Ilmi, R., Suprihatin, T., & Probosiwi, S. (2021). Understanding medication labels and dosages for the elderly. Surabaya: Pharma Books.

Muljati, S., Suwatno, R., & Witarti, K. (2024). The impact of low digital literacy on elderly health risks. Malang: Academic Press.

Mulyana, D., Pramadya, T., & Vindiazhari, R. (2024). Strengthening digital literacy among elderly communities. Yogyakarta: Digital Literacy Institute.

Nisa, F., Nisak, A., & Fatia, Z. (2023). Challenges of digital immigrants in adopting digital health literacy. Semarang: TechMed Publishing.

Nurmala, I., & KM, A. (2020). Health education management: Strategies for community well-being. Jakarta: Health and Society.

Parani, T., & Purba, R. (2022). Telemedicine adoption among the elderly: Opportunities and challenges. Medan: Telehealth Journal.

Pratiwi, S. (2022). Telepharmacy: Enhancing medication safety for the elderly. Jakarta: Pharma Care Press.

Purba, R., et al. (2024). The use of digital applications in herbal medicine for elderly self-care. Bogor: HerbalTech.

Putri, A., et al. (2023). Audio-visual applications in health education: A new approach. Bandung: VisualMed.

Redhana, W. (2024). Understanding digital literacy in the modern era. Jakarta: Digital Society Press.

Sanjaya, B., et al. (2018). Cybersecurity awareness for elderly digital users. Surabaya: TechSafe Institute.

Sarbani, L., Mulyati, R., & Astuti, P. (2024). Digital literacy for smart healthcare decision-making. Yogyakarta: MedScience.

Senja, D., & Prasetyo, H. (2021). Family support in elderly digital health education. Jakarta: Family Health Institute.

Sodik, R., et al. (2024). Medical professionals' role in elderly digital health literacy. Malang: Medika Digital.

Solihin, M., et al. (2023). Technology-driven health education management. Bandung: EduHealth.